Retrospective Study of Maternal Mortality from April 2019-May 2020 at Comprehensive Emergency Obstructive and New-born Care Jabugam, of Chhotaudepur District

By

Shweta Verma

Dissertation submitted in partial fulfillment of the requirements of the degree

MBA Hospital and Health Management

Academic year, 2018-2020

The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: **www.iihmr.edu.in**

Retrospective Study of Maternal Mortality from April 2019-May 2020 at Comprehensive Emergency Obstructive and New-born Care Jabugam, of Chhotaudepur District

By

Shweta Verma

Dissertation submitted in partial fulfillment of award of

MBA Hospital and Health Management

Academic year, 2018-2020

Deepak Foundation, Vadodara, Gujarat

The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: **www.iihmr.edu.in**

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Retrospective Study of Maternal Deaths from April 2020 at Comprehensive Emergency Obstructive New-born Care Jabugam, of Chhotaudepur District** and submitted by **Shweta Verma** Enrollment No. **0835** under the supervision of **Dr. Piyush Kant Pandey** for award of MBA in Hospital and Health Management of the University carried out during the period from **3rd Feburary 2020** to **3rd May 2020** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Shweta Verma

Abstract-

Gujarat territory of India has made some amazing progress in improving the health indicators since autonomy, yet progress in lessening maternal mortality has been moderate and generally unmeasured or archived. This contextual investigation recognized a few difficulties for diminishing the maternal mortality ratio, including absence of the managerial capacity, deficiency of skilled Human Resource, non-accessibility of blood in rural areas, and infrastructural and supply bottlenecks. The Gujarat Government has taken a few activities to improve maternal health services, for example, association with private obstetricians to give conveyance care to poor ladies, a generally short training of clinical officials and attendants to give crisis obstetric consideration (EmOC), and an improved emergency transport system. Be that as it may, a few difficulties despite everything remain. Proposals are made for growing the managerial capacity with respect to maternal health, operationalization of health offices, and guaranteeing EmOC on 24/7 (24 hours per day, seven days per week) premise by posting trained nurse- midwives and prepared clinical officials for talented consideration, guaranteeing accessibility of blood, and improving the registration and auditing of every single maternal mortality. Nonetheless, every one of these interventions can possibly occur if there are generously expanded political will and social mindfulness.

Research Problem

- What has been the trend of maternal mortality in CEmONC, Jabugam from April 2019 to April 2020?
- What are the causes of maternal death in CEmONC, Jabugam Hospital from April 2019 to April 2020?

Methodology-

Study design – Cross- sectional study.

Time Frame – February 2020 – May 2020.

Type of Data- Secondary data.

Study setting- CEmONC Jabugam Hospital of Chhotaudepur District.

Target Group- Patients family and ASHA Workers.

Sample Size – 08 Verbal Autopsy from April 2019 to April 2020.

Sampling Method- Convenience Sampling.

Research Instruments – Verbal Autopsy and Telephonic interview with the ASHA and Patients family

Key Result –

Major causes of Maternal Mortality in CEmONC Jabugam hospital of Chhotaudepur district were reported to be Sickle cell crisis and Severe Anaemia.

Whereas PPH and Sepsis were reported to be the major causes of maternal death in the Gujarat.

Conclusion

1. Maternal Death is the important tool for the strengthening of the health system.
2. It sensitizes all the health care providers, district and state authorities to focus on averting maternal mortality.
3. Maternal Death Review helps in improving safe motherhood programmes for preventing maternal morbidity and mortality.
4. It helps in finding the lacunae's in the health system thus helping to overcome those lacunae's by taking necessary steps.
5. Communities can monitor availability, accessibility and quality of health services.

Acknowledgment

The opportunity of doing my dissertation with **Deepak Foundation, Vadodara** was a great chance for learning and professional development. Therefore, I consider myself as a lucky individual as I was provided with an opportunity to be part of it. I am also grateful for having a chance to meet so many wonderful people and professional who led me through dissertation period.

I express my deepest thanks to my mentor **Dr. Akash Kumar Lal (Deputy Director)** for taking part in decision making and giving necessary advice and guidance and arranging all the facilities to make this dissertation report easier.

I feel deeply privileged in expressing my deepest sense of gratitude to **Dr. Sandeep Soni (Project Coordinator)** for their careful and precious guidance, which were extremely valuable for my study both theoretically and practically.

The involvement and sharing of knowledge by the **Deepak Foundation** were of great help to my study as well as the better understanding of the Healthcare.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge is the best possible way and I will continue to work on their improvement in order to achieve desired career objectives. Hope to continue cooperation with all of you in the future.

My sincere gratitude to my mentor **Dr. Piyush Kant Pandey** for his constant support and encouragement.

Sincerely

Ms. Shweta Verma

MBA-HM 23

The IIHMR University

Table of Contents

List of Figures

List of Abbreviations

AMTSL	Active Management of Third Stage Labor
ACLS	Advanced Cardiac Life Support
ANC	Ante-natal check-up
ASHA	Accredited Social Health Activist
BPL	Below Poverty Line
CCR	Committee for Confidential Review
CDHO	Chief District Health Officer
CEmONC	Comprehensive Emergency Obstructive New-born Care
CHC	Community Health Centre
CPR	Cardio-Pulmonary Resuscitation
FHW	Frontline Health Workers
Hb	Haemoglobin
HRP	High Risk Pregnancy
IFA	Iron-Folic Acid
LSCS	Lower Section Cesarian Section
L3 Facility	Level 3 Facility
MDR	Maternal Death Review
MDSR	Maternal Death Surveillance and Response
MoHFW	Ministry of Health and Family Welfare
MTP	Medical Termination of Pregnancy
PPH	Post-partum haemorrhage
PHC	Primary Health Centre
RDD	Regional Deputy Director
THO	Taluka Health Officer

Retrospective Study of Maternal Mortality in the CEmONC Jabugam of Chhotaudepur District

Introduction

Under the Millennium development Goal (MDG) 5, the objective for India was to lessen Maternal Mortality ratio (MMR) by seventy five percent between 1990 and 2015. Maternal Mortality ratio (MMR) in India in the year 1990 was 556, which implied roughly 1.4 lakh ladies dying per year. The objective for India was thus assessed at 139 for each 1, 00,000 live births continuously by the year 2015. Internationally MMR around then was 385, which converted into about 5.32 lakh women dying each year. According to the most recent report of the Registrar General of India, sample registration system (rGisrs), Maternal Mortality ratio (MMR) of India was 167 for each 100,000 live births in the period 2011-13. As far as numbers, this converts into around 44,000 maternal mortality in India (303,000 maternal mortality during a similar period all inclusive). Regardless of a 33% decrease, India stays one of the significant contributors of maternal mortality in the world. For each demise, there are a lot more who endure changing degrees of sullen conditions. What's more, by and large of maternal mortality, the babies additionally die for need of care because of causes, for example, preterm birth complications and intrapartum-related complexities. Pregnancy-related mortality and mortality continues to have a huge impact on the lives of Indian ladies and their new-born babies. According to the ongoing sustainable development Goals, India is focused on lessening its MMR to under 70/lakh live births. Levels of maternal mortality change enormously over the areas, because of varieties in basic access to emergency obstetric care, antenatal care, anaemia rates among ladies, education levels of ladies, and different components. Around 65% - 75% of the complete assessed maternal mortality in India happen in a bunch of states – Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and Assam. All these states are a part of the 18 high focused states under National Health Mission (NHM). Uttar Pradesh alone adds to over 30% of the maternal Mortality in India. The Maternal Death Review (MDR) process started by Government of India in 2010 endeavoured to improve the nature of obstetric care and diminish maternal mortality and morbidity by investigating the lacunae in the health framework towards the prerequisites of pregnancy and labor. The significance of MDR lies in the way that it gives detailed investigation on different factors at facility, office, area, local and national level that are required to be routed to diminish maternal mortality. Investigation of these mortality can distinguish the delays that add to

maternal mortality at different levels and data used to receive to fill the gaps in the service delivery. [1]

Maternal Mortality: Magnitude of problem in Gujarat

- About 14,14,000 pregnancies per year
- 12,86,000 deliveries per year
- MMR (2015-2017) is 87/1lakh live births.
- Estimated 1900 maternal mortality per year (5-6 mortality per day) [2]

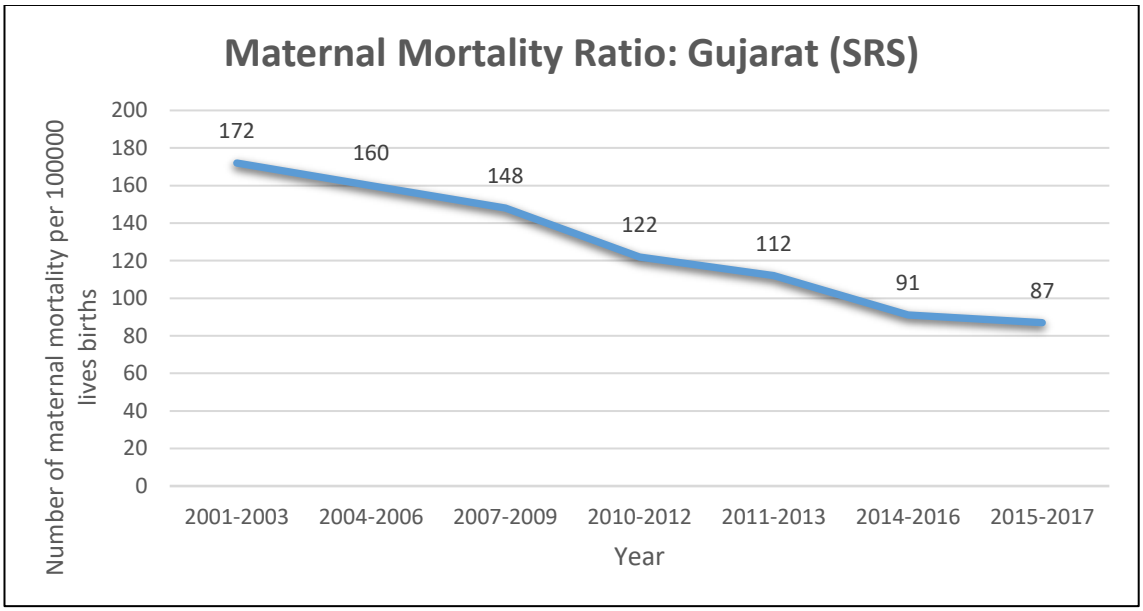


Figure: 1 Maternal Mortality Ratio

Process of MDR in Gujarat

- The state adopted the process of the Community Maternal Death Review from 2006.
- THO conducts verbal autopsy within receiving the information from the frontline workers (ASHA/AWW/OTHERS)
- District Child Health Officer (Class 1 Officer) is the District Nodal Officer for Maternal Death Review.
- Every district has a District Maternal Death Review Committee under the chairmanship of the CDHO which reviews all the maternal mortality in the district once every month.
- At the state level – State Maternal and Infant Death Review Committee under the chairmanship of the Principal Secretary (MoHFW) meets every 6 months.

Process of MDR in CEmONC Jabugam

1. Whenever the Maternal death occurs in the facility, the verbal autopsy is filled by the on-duty gynaecologist.
2. The Verbal Autopsy is sent to the Regional Deputy Director of the District within the 24hrs of the death.
3. The Maternal Death is been reviewed every month under the chairmanship of the CDHO of the Chhotaudepur District.
4. RDD Meeting is conducted every month where the reasons of the maternal mortality are reviewed and probable steps that can be taken are decided.

Causes of Maternal Mortality

Major causes of Maternal Mortality in CEmONC Jabugam hospital of Chhotaudepur district were reported to be Sickle cell crisis and Severe Anaemia.
Whereas PPH and Sepsis were reported to be the major reasons of maternal mortality in the Gujarat.

Maternal Death Review leading to the State level Action:

Maternal Death Review led to the identification of the issues and strengthening of the health systems

- Maternal Death Review Sensitized **District Authorities** to strengthen the health system and act at the local level.
- Post-partum haemorrhage (PPH), pregnancy induced hypertension (PIH) and obstructed and prolonged labor was among the major causes of maternal mortality. The districts Gujarat were instructed to use the compulsory use **partograph** and make available essential drugs in all the facilities for conducting deliveries – Inj. Magnesium Sulphate, Plasma Substitute (Dextran 70), Inj. Carboprost, Tab/Inj. Methyl Ergometrine Maleate, Tab Misoprostol and Injection Oxytocin which was implemented in all the district of the Gujarat.

- **Acute Management of the Third Stage Labor (AMTSL)**, Use of partograph and Use of Magnesium Sulphate for capacity building was initiated.

- **Newer approaches to help to understand why women die-** State has decided to go for an independent evaluation by *Confidential Enquires* into Maternal Mortality approach will be piloted in the 1 District.

- **Special vehicle (4-wheeler) for geographically difficult to access-** One of the major issues of the maternal death is the unavailability of the vehicle at the hilly terrains and especially tribal districts of the Gujarat. Even though availability of the 108 Vehicles but they could not reach to geographically area leading to the one of the major causes of the maternal death. Department of the Health and Family Welfare along with the UNICEF and willingness of EMRI-108 introduced special 4-wheel drive vehicles (12 in Number in 6 districts) in Gujarat during 2012 for reaching out to needy people in most difficult to reach areas.

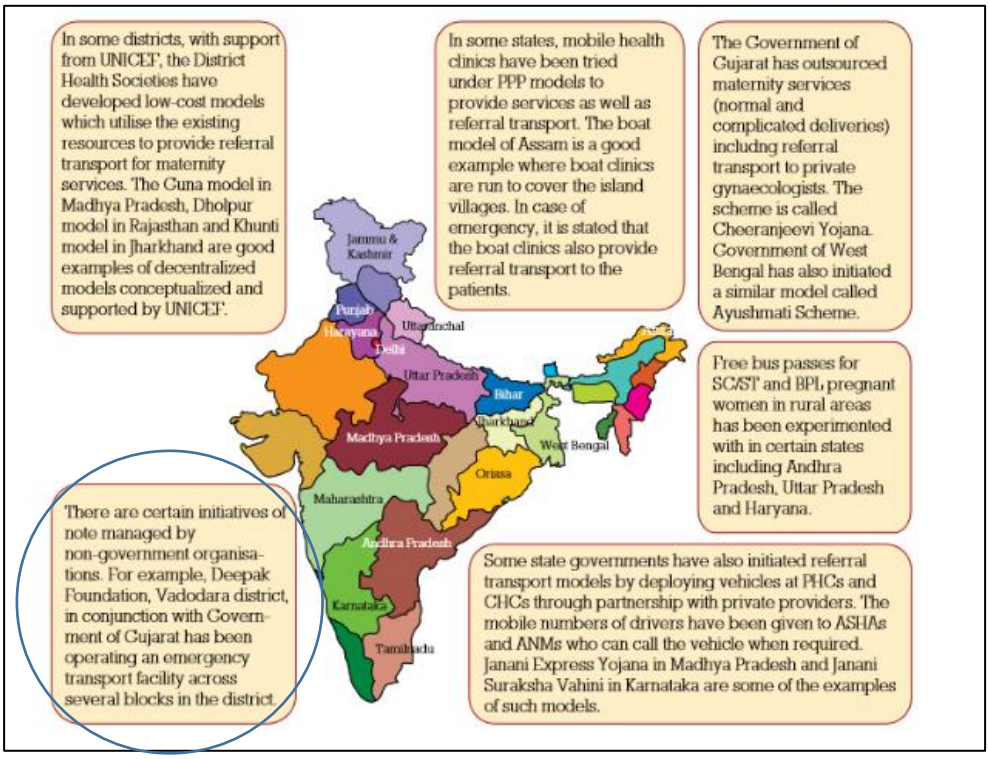


Figure: 2 Emergency Transport facility in several blocks of Vadodara

Inter-Facility Transfer (IFT) Services- Maternal Death Review identified the three delays arising due to the issues in referral services from one hospital to another which is termed as IFT. Hence, 6 vehicles were launched in the state to provide IFT Services in the first phase.

Action taken by the CEmONC Jabugam-

1. Compulsory use of the partograph during the pregnancy, use of the essential drugs like Injection Oxytocin, Inj. Magnesium Sulphate, Inj. Carboprost, Tab Misoprostol.
2. 24x7 Ambulance service is been provided by the Hospital for the Inter-facility Transfer Service.
3. Provision of Blood Supply
4. Management of the HRP, PPH, Sepsis cases.
5. 24x7 C-section service at the facility.
6. PPUICD service as well counselling on the same given to the mother as well to the family.

Literature Review-

The Maternal death review (MDR) process started by Administration of India in 2010 endeavored to improve the nature of obstetric mind and decrease maternal mortality and dismalness by investigating the lacunae in the wellbeing framework towards the necessities of pregnancy and labor. The significance of MDR lies in the way that it gives nitty gritty examination on different components at network, office, locale, local and national level that are required to be routed to decrease maternal mortality. Examination of these mortality can recognize the defers that add to maternal mortality at different levels and the data used to embrace measures to fill the holes in administration conveyance.

The above all else venture of the Maternal Death Review process is setting up a line rundown of all the maternal mortality in the territory following which Office as well as Network based maternal death reviews are to be embraced. Presently around half of the evaluated Maternal Mortality the nation over are being accounted for by States/UTs. Improving the reconnaissance and detailing of maternal mortality is in this manner basic. State level MDSR Boards must find a way to improve the equivalent:

• Screen whether Maternal Mortality are being accounted for by all high conveyance (offices directing in excess of 1000 conveyances/year).

• Screen the region astute number of mortality announced against assessed - distinguish the quantity of locale that have zero/poor revealing and spotlight on improving detailing from these areas.

• Examination of detailed maternal death information shows that roughly 20% of the maternal mortality happen at clinical universities and around 15% happen at private emergency clinics. This would clearly contrast across States. Be that as it may, information features a critical need to direct a mapping of the clinical schools and tertiary foundations in the State and screen whether they are announcing and reviewing maternal mortality. States should likewise concentrate on improving announcing from private tertiary level foundations with the assistance of administrative instruments, for example, the Clinical Foundation Act.

• Examination of accessible information likewise features that around 20% of the maternal mortality could occur during travel. States should along these lines screen the quantity of mortality happening during travel and the instrument for revealing of mortality happening during travels (both for private and government vehicles).

• Recognize territories of high home conveyance and screen whether maternal mortality are being accounted for from these regions.

All the maternal mortality detailed will be researched, regardless of the spot of death for example at home, in office or in travel; region of death for example rustic or urban. Maternal death review procedure will be embraced at two levels:

1. Facility level

2. Community level

Furthermore, classified review of instances of maternal mortality happened at office will be led at state level by the master individuals from Council for Secret Review (CCR) to review the clinical line of the board of cases.

Research Question and Objectives-

- What has been the trend of maternal mortality in CEmONC, Jabugam from April 2019 to April 2020?
- What are the causes of maternal death in CEmONC, Jabugam Hospital from April 2019 to April 2020?

Objective –

1. To study the trend of maternal mortality in CEmONC, Jabugam from April 2019 to April 2020.
2. To identify the major cause of the Maternal Death in the CEmONC Jabugam Hospital of the Chhotaudepur District.
3. To identify one of the 3 delays responsible for the maternal death in the CEmONC, Jabugam Hospital from April 2019 to April 2020.

Methodology-

Study design – Cross- sectional study.

Time Frame – February 2020 – May 2020.

Type of Data- Secondary data.

Study setting- CEmONC Jabugam Hospital of Chhotaudepur District.

Target Group- Patients family and ASHA Workers.

Sample Size – 08 Verbal Autopsy from April 2019 to April 2020.

Sampling Method- Convenience Sampling.

Research Instruments – Verbal Autopsy and Telephonic interview with the ASHA and Patients family.

Result

Case Studies-

1. **Chetnaben Pravinbhai Bariya**

a) Background

Chetnaben Pravinbhai Bariya, a 30 years old pregnant woman used to live in Singapura-Kadwal village in pavijetpur taluka of Chhotaudepur district. She was living with her husband, Pravinbhai Bariya, father and mother in law and grandparents, in a joint family, where the total numbers of family members were 6. Her Family belonged ST as well as BPL category with 10000-12000 INR family income per month. The family had own cultivable land of 5 acres and some cattle. Family has own pucca house. Her husband has education till primary level and works on their own farm whereas, she was illiterate and a housewife.

b) Medical History

Chetnaben had a history of 4 pregnancies out of which, 2 were abortions, one still birth and one live birth so, she was having a male child of 3.5 years already. She had no history of tobacco or alcohol consumption. She received 2 ANC visits and 2 doses of tetanus toxoid. During ANC period, she was taking iron tablets. She registered her name at hospital for delivery but not at CEmONC, where she was brought after referral.

She was suffering from Anaemia from the antenatal stage. When she was having 3rd month of pregnancy, her Hb was 4-5 gram/dl therefore she had to undergo treatment of blood transfusion of 3-4 unit at private hospital, Halol. She regularly visited halol private hospital as well as bodeli private hospital during her antenatal stage, as informed by the ASHA and FHW during telephonic discussion.

c) Course of Treatment and Occurrence of an Event

Chetnaben Pravinbhai Bariya came to CEmONC, Jabugam for the first time during last trimester of pregnancy. At 00:30am, she was brought to the facility with the chief complaint of labour pain. She was referred from Kadwal CHC. When she was having labour pain, they went to nearby CHC Kadwal firstly. At Kadwal CHC, they were told

by a staff nurse that baby's growth was more than expected so delivery was not possible at that facility. Then she was referred to Jabugam CHC.

On admission, she was in labour pain and serious. She came with full dilatation. Treatment was started immediately after admission. On 22 November- 2019, after 1 hr and 18 min of labour, she delivered a female child of 3.8kg through a spontaneous normal vaginal delivery with episiotomy. Apgar score for the new-born was 10/10. After repair of episiotomy, she was stable but, around 03:30am, she had two episodes of vomiting. Medications were given following this event. She was given one unit of blood also during postnatal period. However, she died at 04:30am during fourth stage of labour, due to severe anaemia and haemolytic jaundice. Despite all lifesaving efforts, her life could not be saved, and she passed away. As per her husband, she died because of low Hb level and complication after delivery.

d) Factors related

a) Lack of preparedness of CHC (Kadwal CHC)

b) Lack of prior registration for delivery at suitable health facility.

c) Irregular ANC Check-up and no treatment for the anaemia.

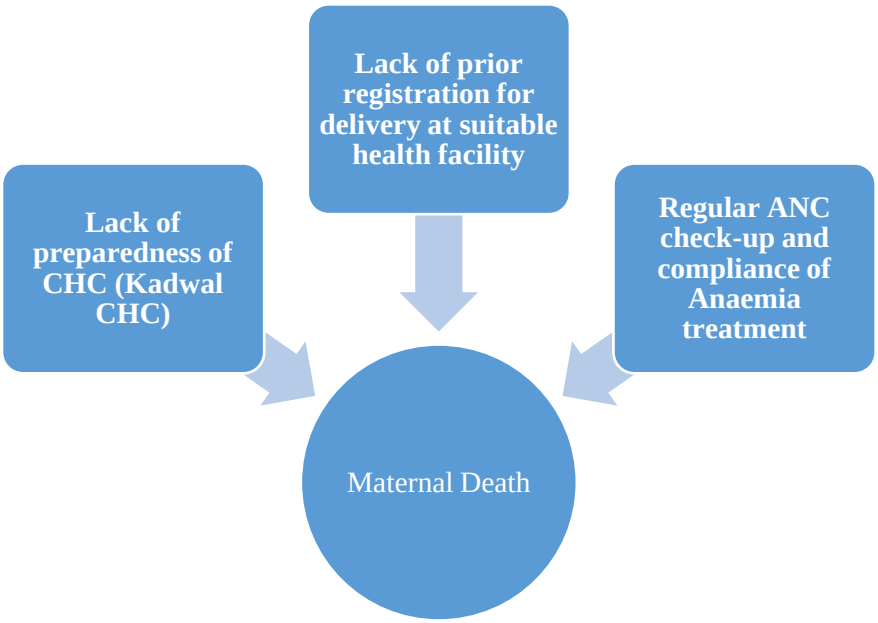


Figure: 3 Factors related with this maternal death of Chetnaben Pravinbhai Bariya

e) Delay identified in this case was-

Delay in decision to seek care and possible reason could be poor understanding of complications and risk factors in pregnancy and when to seek medical help.

2. **Daxaben Vankar**

a) Background:

Dakshaben Vankar, 20-year-old lady, from Piplad village, Kawant taluka, died on 6th march, 2020, on the way to SSG hospital which is the nearest referral point from CEmOC-CHC, Jabugam.

CEmONC is the referral centre for critical emergency maternal obstetric and new-born care, run by Deepak foundation, Vadodara and government of Gujarat, under PPP model. As this centre caters approximately 450 deliveries per month where the purpose is to provide quality maternal care, review of this death was conducted. Structured interview with patient's relative (foi-father's sister, in this case) and informal discussion with frontline health workers were conducted to review this death and find out the related factors at facility and community level.

On 5th March, 2020, Dakshaben was brought to CEmONC- CHC, Jabugam at 11:40pm with severe jaundice when she was in labour stage of pregnancy. She was referred from Kawant CHC to district hospital Chhotaudepur and then to Jabugam. After 30 min of admission, she started developing complication. Treatment was initiated immediately after admission.

b) Medical History

Daxaben Vanker had only one ANC Check-up out of the four compulsory ANC Check-up. She was suffering from the severe jaundice and didn't go for the proper treatment for the jaundice thus making it one of the probable causes for her death. Even she had low Hb level therefore making her weak. She was the patient of the sickle cell anaemia and was on medication for the treatment of the treatment of the same. She died during her first pregnancy.

c) Course of treatment and occurrence of an event is as follows:

With history of receiving antenatal care partly (only one visit of minimum 4 required), on 3rd of March 2020, she was brought to Jabugam hospital for the first time. Ultrasonography was done by gynaecologist and she was under observation for a day. On 4th evening, as physician's opinion was needed, she and her family were explained about complication and advised to consult a physician for the same. (She had a history of jaundice and subsequent hospitalization for blood transfusion. Also, she and her husband are patients of sickle cell anaemia and she was on medication for the same.) Now, Because of financial problems, family decided to go to home first and make necessary arrangements and then see a physician. However, she was not taken for further consultation with a physician. On 5th march, 2020, as she started having labour pain, she was taken to CHC Kawant as she needed an ambulance to go to Chhotaudepur district hospital. She was brought there around 8:00pm. She had the yellowish vomiting at the facility. After that, she was referred to Jabugam hospital around 8:30pm. While referring, foetal heart sounds of a baby were already low. Around 10:30pm, Dakshaben was brought to Jabugam with absolutely no foetal heart sound and with full dilatation. Around 12:06 intrauterine death was reported of a baby who was delivered normally. Condition of a mother got worsens so she was referred to SSG immediately. Death occurred on the way to SSG hospital and was brought back to Jabugam hospital around 5:30am.

Interaction with Dakshaben's husband, relative and frontline workers

Interviewing a close relative of Dakshaben

Some important information emerged from discussion with FHW and interaction with diseased husband like,

1. Mother of Dakshaben was also a patient of Sickle cell anaemia and died during delivery.

2. Both couples were sickle cell positive cases and she was already on medication.

According to ASHA worker of her village she had yellow eyes and used to get tired very frequently while doing household work. However, the relative refused to agree with that saying that she was fine, and the family has taken very good care of her. Acceptance of death was lacking which is obvious for any family. Relative were also unhappy thinking that if doctors save lot of lives then why not in their case. There was a feeling being victim. After the interview got over, Research team had to take efforts to convey the right message of how important it is to take patient to the referral point and consult a relevant specialist (Physician in this case). ASHA worker and FHW present there were also trying to explain the same thing to the relatives.

d) Related Factors:

Following three are the major factors related with this event:

1. Preparedness of Health system: Delay in referral- Unavailability of 108, ambulance since the vehicle was engaged in catering service at different place.

2. Service provision and utilization: i. less consumption of ANC services- Only one ANC visit was done by the diseased.

ii. Lacking Regular counselling regarding provision and utilization of ANC services, by frontline workers.

3. Community Factors:

i. Hiding the history of sickle cell anaemia and previous hospitalization;

ii. Casual attitude towards doctor's advice- Family didn't take the patient to the physician, as per gynaecologist's advice.

iii. Financial incapability

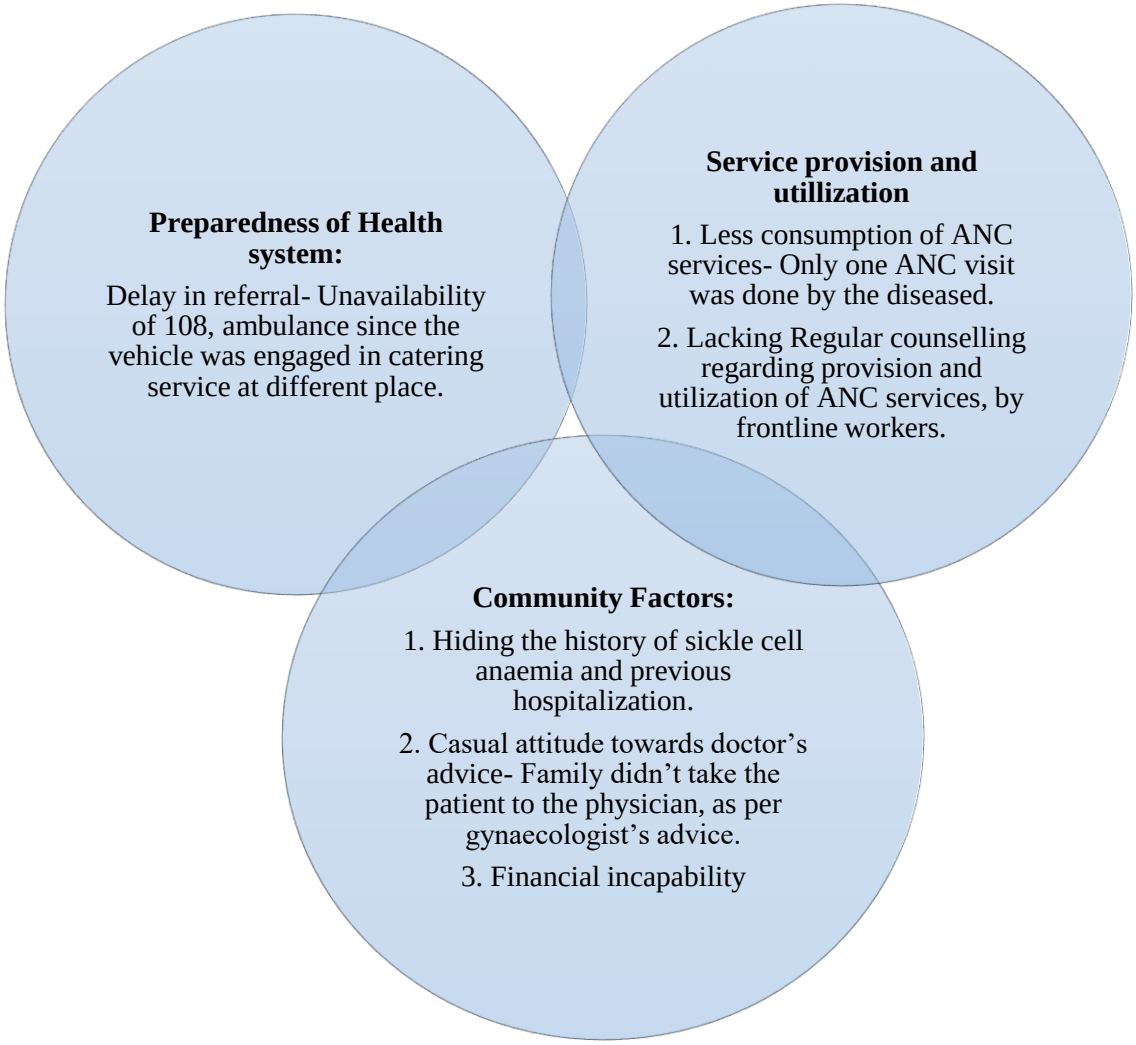


Fig: 4 Factors related with the maternal death of Daxaben Vankar

e) Delay identified in this case were-

1) **Delay in decision to seek care due to-**
   - **a.** Poor understanding of complications and risk factors in pregnancy and when to seek medical help.
   - **b.** Financial implications.

2) **Delay in receiving adequate health care due to-**

a. Inadequate referral systems.

b. Poor facilities and lack of medical supplies.

3. Jashodaben Vadesingh Nayaka

a) Background

Belonging to patra village of Jambughoda block, which is in Chhotaudepur district of Gujarat, Jashodaben Vadesingh Nayaka who was a 34 years old lady and a mother of one living child was about to give birth to the fifth kid (fifth gravida). She and her husband were illiterate and belonged to the BPL category where both were labourers. After marriage they migrated to Netra village of Kutch, Gujarat to get employment. In between they use to come to their native occasionally.

As per the ASHA worker and FHW who followed up the case, Jashodaben had a love marriage but because she did not get acceptance by the in-laws, she was living in her parental village with her husband. From there they migrated to Kutch in search of work. She was living in a separate kuccha house just besides her parent's house. During first 8 months of pregnancy, she was in Kutch and after that they came to patra for delivery.

b) Medical History

Jasodaben had only one ANC Check-up out the four compulsory ANC Check-up. She was patient of the Sickle Cell and even her mother was sickle cell patient and died during the delivery like her.

She was even suffering from the jaundice and didn't too proper treatment for it thus making it one of the factors for her death. She didn't have any history of the tobacco or alcohol consumption. He had history of multiple pregnancy from which she had only one living kid. She died during her fifth pregnancy.

c) Course of Treatment and Occurrence of an Event

When deceased returned to her village patra, it was during the end of 8th month of pregnancy. On 23rd of December 2019(at the end of 8th month of pregnancy), ASHA worker took her to Suryaghoda PHC to get the mamta card. There she got her first ANC check-up and a shot of tetanus vaccine. This was the first time the deceased went to health facility during this pregnancy. No ANC check-up and history of immunisation was reported before that.

On 15th of February 2020, around 9:00 am, ASHA worker got a call from Jashodaben and informed about her labour pain. ASHA couldn't accompany the patient because of ASHA Samelan but arranged the 108 service for the Jashodaben and was taken to the CEmONC Jabugam Hospital.

On 15th of February, Jashodaben was brought to CEmONC, Jabugam around 10:00am. At the time of admission, she was in the labour stage of pregnancy. Treatment was started immediately. She was stable when admitted but started developing complications after two hours and 15 minutes. She developed severe pre-eclampsia, ruptured uterus and obstructed labour and second stage of labour. She was given 5gm MgSO4 along with injectable labetalol to treat pre-eclampsia. One-unit blood was also transfused. Around 12:15pm, as she developed foetal distress, there was a need to conduct LSCS and for the same Jashodaben was referred to SSG hospital. While on the way to SSG, she died of hypertension and obstructed labour. Death was reported at 5:00pm in the facility.

d) Factors related

While reviewing the death, following factors came up to be related :

1. Illiteracy and poverty of this couple has showed its effect on the behaviour to consume the health services.

2. Health is not a felt need: Jashodaben's husband used to drink and smoke a lot and did not pay attention to wife's pregnancy. The couple used to have frequent fights at home.

3. Delay in woman seeking help.

4. Lack of utilization of facility-based ANC services which can help identifying risk factors and thus occurrence of complications can be prevented and/or management of complicated cases can be planned.

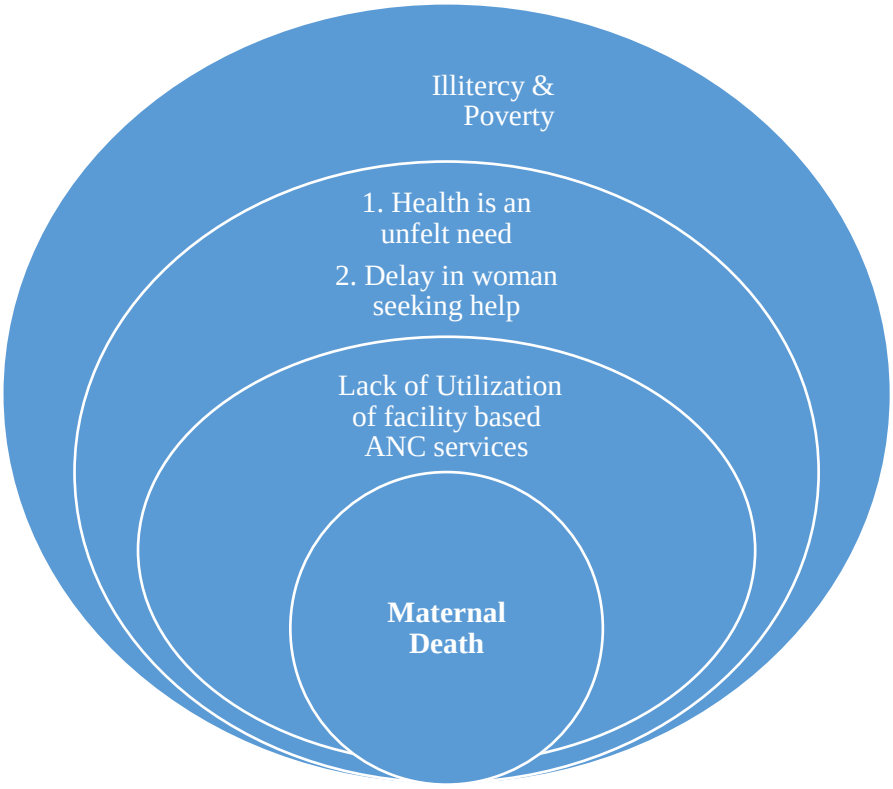


Figure: 5 Factors related with the maternal death of Jasodaben Vaadesingh Nayaka

e) Delay identified in this case were-

1) **Delay in decision to seek care due to-**

a) The low status of the women.

b) Poor understanding of complications and risk factors in pregnancy and when to seek medical help.

c) Financial Implications.

d) Acceptance of maternal death.

4. Jignisha Bhil

a) Background

Jigishaben Sandeepbhai Bhil, a 24 years old pregnant lady was living in kevdi Village of Naswadi block, Chhotaudepur district of Gujarat. It was her first pregnancy. She was living with her husband Sandeepbhai, father and mother in law and grandparents, in a joint family. They belonged to ST category of hindu religion. Belonging to the BPL category, family owned 3 acres of cultivable land and some cattle. Family owned pucca

house in their village. Her husband was educated till secondary level and worked in their own farm. She herself was educated till primary level and was a housemaker.

b) Medical History

Jignishaben was having a medical history of high blood pressure from before her marriage as per ASHA worker, FHW and her husband. Despite having a high-risk pregnancy, she did not register her name at any health facility for delivery with no history of ANC visit and any medications as well as sonography till 6 moths of ANC period. The reason behind is lack of awareness regarding the same. She took MTP kit during 6th month of ANC stage.

c) Course of Treatment and Occurrence of an Event

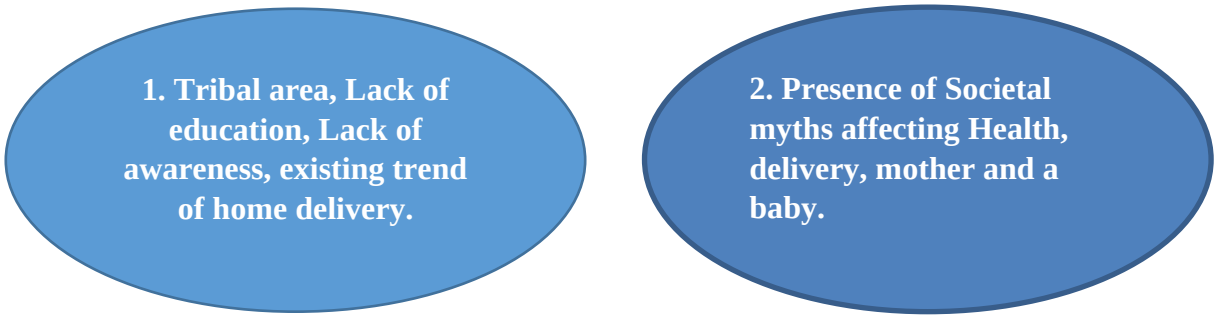
On 28th may-2019, at 08:15am, she was brought to CEmONC, Jabugam during the labour stage of pregnancy. Bleeding and preterm labour with severe anaemia were the complications during ANC period.

Jignishaben was brought to CEmONC, Jabugam with severe anaemia, S.PE with APH and lack of awareness regarding rupture of placenta. At first, they went to bhuva (A person who knows black magic) and Dayan (A Traditional birth attendant) in their village, to get relief from pain of haemorrhage during ANC period (APH). Next day she was taken to CHC Naswadi. Spontaneous Abortion was conducted there at Hb level 2-3gm% and then she was referred to CEmONC, Jabugam. On admission to CEmONC-Jabugam, her condition was critical and serious. She was brought to CHC Jabugam about 3 hours and 7 min after the onset of complication. Treatment was initiated immediately after admission. Two units of blood were transfused during treatment. She delivered spontaneously at 11:22am, through vaginal route and underwent PPH immediately after delivery. She expired at 00:07pm on 28th may, 2019 during 4th stage of labour. The cause of death was placental abruption with S.PE and severe anaemia. Intra uterine foetal death of a female child weighing 1.33 kg was reported. PPH, Hypertensive disorder and severe anaemia were the probable causes of death with atonic PPH as an underlying cause of death.

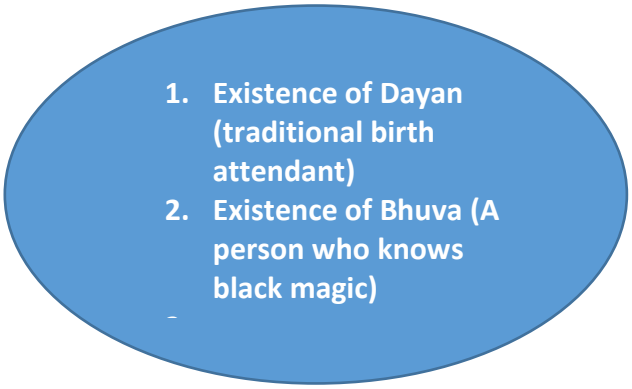
d) Factors related

Presence of multiple factors has been realised behind a single maternal death. Factors affecting at different level have been presented below:

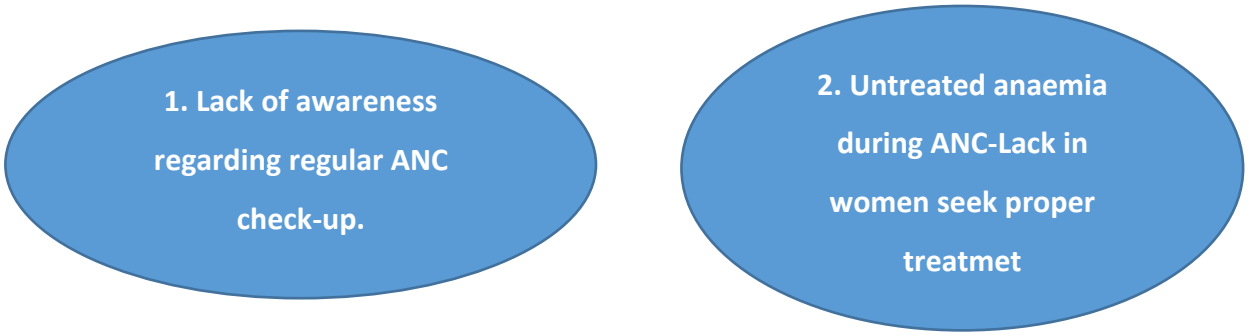
Level: 1 Social Aspect



Level: 2 Wrong practices affecting Maternal Health Outcomes



Level: 3 Health Seeking Behaviours



Level: 4 Health Facilities

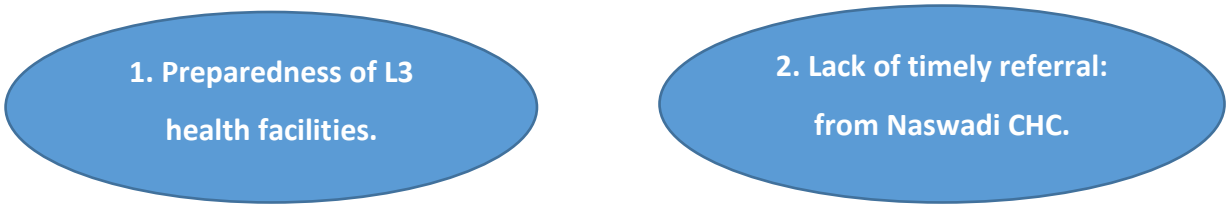


Figure: 5 Factors related with the maternal death of the Jignisha Bhil

e) Delay identified in this case were-

1) **Delay in decision to seek care due to**
    - **a)** The lower status of the women
    - **b)** Poo understanding of the complications and risk-factors in pregnancy and wen to seek medical help.
    - **c)** Financial Implications

2) **Delay in receiving adequate healthcare due to**
    - **a)** Poor facilities and lack of medical supplies
    - **b)** Inadequately trained and poorly motivated medical staff
    - **c)** Inadequate referral systems

5. Sangeetaben Pravinbhai Nayaka

a) Background

Sangeetaben Pravinbhai Nayaka, a 28 years old lady used resident of Lehvat village, Chhotaudepur district of Gujarat. She had a nuclear family where she and her husband were the only family members and belonged to the BPL category. Being an illiterate woman, she was a housewife, but they had cattle and owned a pucca house.

b) Medical History

She had a history of two abortions as communicated by the FHW, ASHA and husband of Sangeetaben. However, this was her third gravida with the history of 2 still births. During last pregnancy, she was having a history of two ANC check-ups and two doses of tetanus vaccine. Once she visited PHC Devhat and once Hadvad CHC for the same.

c) Course of treatment and occurrence of an event

On 12th June 2019, at 05:15 Am., she was brought to CEmONC, Jabugam as referred from district hospital Chhotaudepur. She was serious on admission. On 11th June, at 10:00pm., she delivered an IUD baby at Chhotaudepur district hospital, but post-partum bleeding couldn't stop, and further blood transfusion was required so she was referred to CEmONC. She was brought to CEmONC Jabugam as she started having abdominal pain and vaginal bleeding. By utilizing service of 108, she was admitted to CEmONC

Jabugam. At the same time, she also had a history of bleeding before, during and after delivery. After prolonged labour of 12 hours, she delivered through vaginal route. She was severely anaemic and having respiratory distress with grunting. This was a PNC case with severe anaemia and respiratory grunting with hypovolemic shock where the woman expired within 10 minutes of admission.

"Her condition was too serious to manage as communicated by doctors at Jabugam" said FHW, ASHA and husband of the deceased.

d) Factors related

e) Poor Emergency Management of PPH

f) Unavailability of the required blood units at L3 facility

g) Delay in referral

h) No proper treatment of anaemia

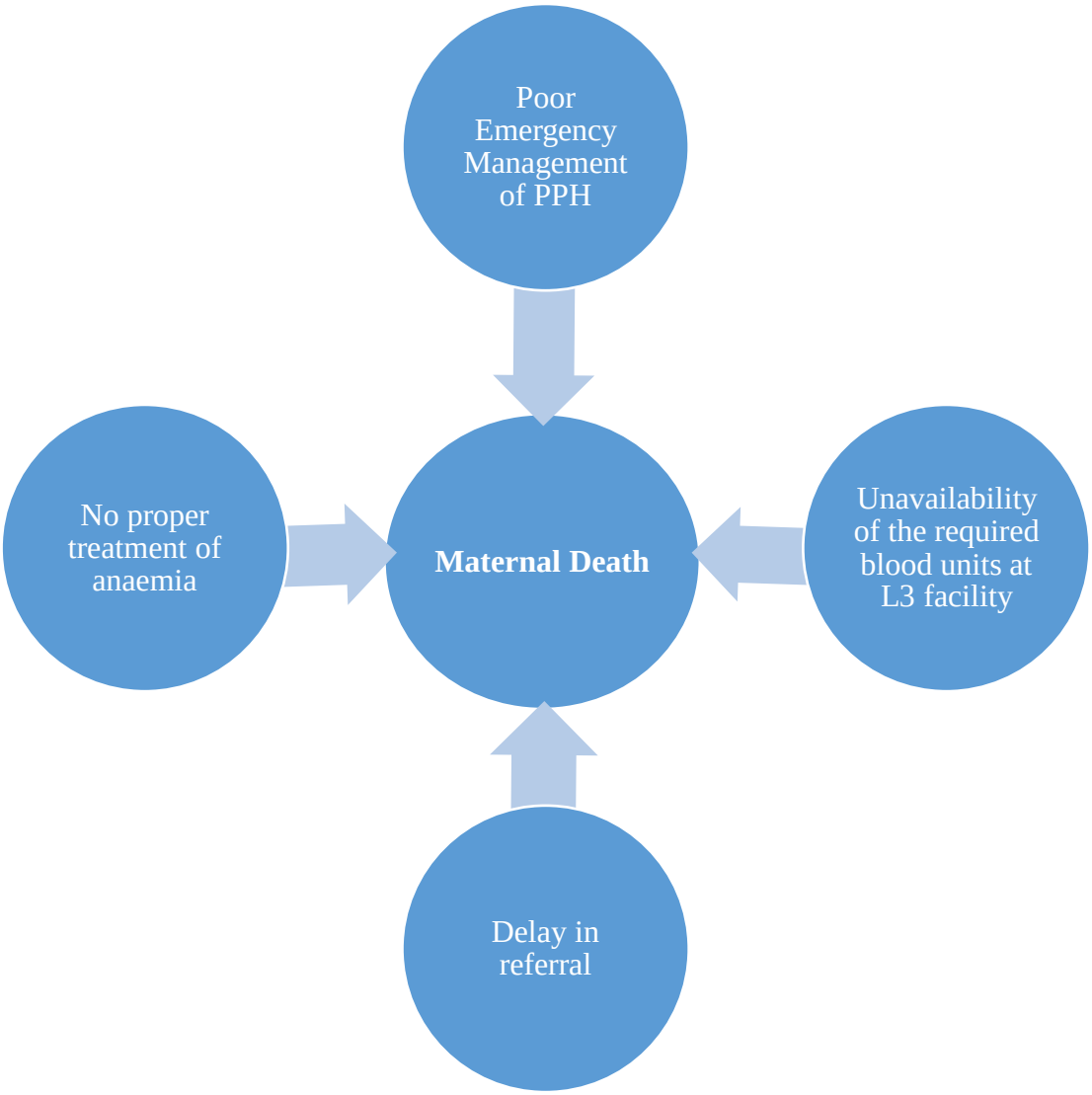


Figure: 6 Factors Related with the maternal death of Sangeetaben Pravinbhai Nayaka

e) Delay identified in this case were-

1) **Delay in decision to seek care due to**
    - **a.** The lower status of the women
    - **b.** Poor understanding of complications and risk factors in pregnancy and when to seek medical help.
    - **c.** Financial Implications

2) **Delay in receiving adequate health care due to**
    - **a.** Poor facilities and lack of medical supplies.
    - **b.** Inadequately trained and poorly motivated medical staffs.
    - **c.** Inadequate referral systems.

6. Urmilaben Virambhai Rathwa

a) Background

Urmilaben Virambhai Rathwa, a 24-year-old woman was reciding at tadgam village of bodeli block in chhotaudepur district. She was living with her husband Virambhai. She was having her own cultivable land and a pucca house. Her husband had education till higher secondary level and was in service sector. She was a housewife. To review her death, her husband, ASHA worker and FHW were interviewed by telephonic communication.

b) Medical History

Urmilaben was in last trimester of pregnancy. During ANC period, she completed 3 ANC visits and got 2 doses of tetanus toxoid. She used to take iron tablets as per doctor's advice. As such she was not dealing with any kind of heavy work but, she used to have breathlessness on and off during ANC period. Urmilaben was suffering from sickle cell disease before her marriage as per her Husband, ASHA worker and FHW. During 2nd

month of pregnancy, she went to a nearby PHC (Atadungri). There she got her HB level checked which was 9gm%. During 6th month of pregnancy, she visited CEmONC, Jabugam where her sonography and blood tests were conducted.

She was admitted at CEmONC, Jab gam on 2nd September, 2019 at 2:20 pm. It was her first pregnancy. Within two hours (4:21am) of admission, she delivered a IUD baby and after 3 hours and 9 minutes of delivery she died at 7:30am. To find out the preventable factors which contributed to her death, our team reviewed her death. Both, facility based as well as community-based review of this maternal death was conducted.

c) Course of Treatment and Occurrence of an Event

On 30/8/2019, Urmilaben had episodes vomiting so she was taken to CHC Kawant. She was admitted there for one day and then was discharged. But, as she started having labor pain, she was again taken to Kawant CHC. On examination, no foetal heart sounds were found so patient was referred to Jabugam CHC.

Urmilaben was brought to CEmONC around 2:20pm by her parents. On admission, she was in the labour stage of pregnancy and had labour pain, her condition was serious because death of the baby inside the womb and moreover, she was having sickle crisis (her Hb was 6gm %). Complication started arising after 24hours of admission. However, the reasons for delay to reach CEmONC are unknown. She delivered spontaneously through vaginal route. After 2 hours of delivery, she went into sickle cell crisis. She had profuse vomiting, severe body ache and chest pain and despite all efforts (CPR and ACLS was given) she expired. The Baby weighted 2.39kg and was reported as a still birth.

d) Factors related

e) **Delay in Timely referral:** Urmila reached to CEmONC 24 hours after complication aroused.

f) **Lack of preparedness of facility:** Preparedness is the key for any L3 facility to tackle the medical emergency **(sickle cell crisis in this case)**.

g) High Prevalence of Sickle cell anaemia: In the tribal belt of Chhotaudepur district.

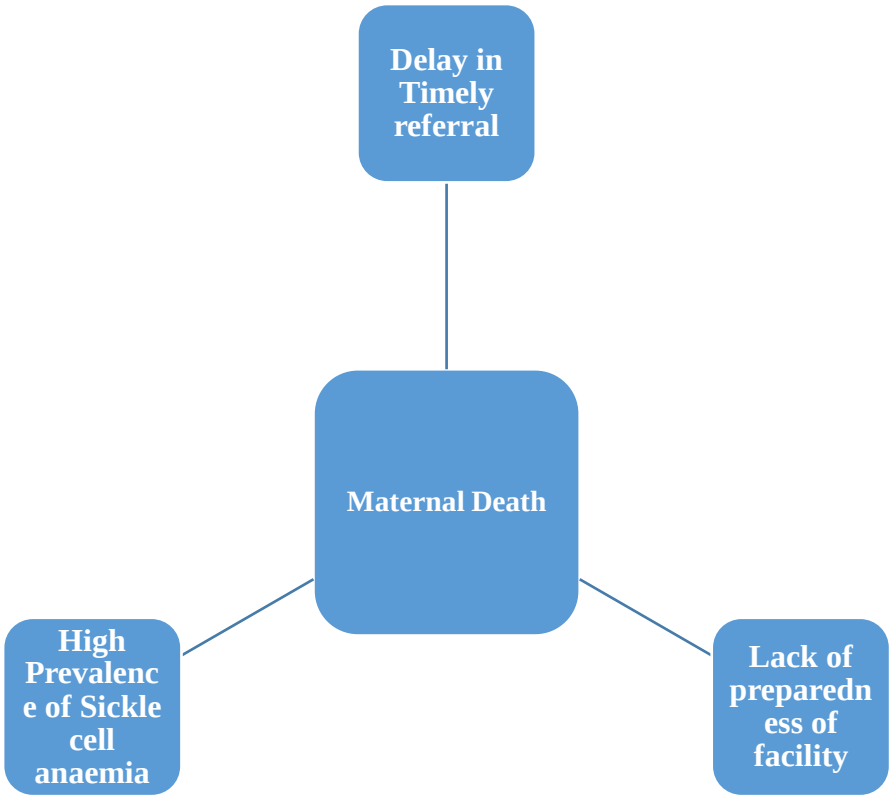


Figure: 7 Factors Related with maternal death of Urmila Virambhai Rathwa

e) Delay identified in this case were-

1) **Delay in decision to seek care due to**
   - **a)** The lower status of the women
   - **b)** Poor understanding of complications and risk factors in pregnancy and when to seek medical help.
   - **c)** Financial Implications

2) **Delay in receiving adequate health care due to**
   - **a)** Poor facilities and lack of medical supplies.
   - **b)** Inadequately trained and poorly motivated medical staffs.
   - **c)** Inadequate referral systems.

7.Ushaben Hiteshbhai Rathwa

a) Background

Ushaben Hiteshbhai Rathwa, a 20 years old lady used to live in Baroda with her husband. It was her first pregnancy. She could pursue only till primary education and was a housewife. Her husband had education till higher secondary level and working in service sector. When event occurred, she was brought to facility from her parent's house which is in Devat village of Devat taluka in Chhotaudepur district, Gujarat.

Team could not contact her husband as his phone was continuously switched off but a telephonic interview of one FHW was conducted who is serving at kawant CHC. According to her, Ushaben was staying at Baroda with her husband. There she used to go to the health facility for ANC check-up. Before one week of her death, she came to her father's house. When she visited Kawant CHC, there was a strike going on so from Kawant CHC, she was taken to CEmONC, Jabugam. It was her last trimester.

b) Medical History

She received more than 3 ANC check-ups and 2 doses of tetanus vaccine. She used to have breathlessness on and off during the whole period of pregnancy and she was sickle cell positive.

c) Course of Treatment and Occurrence of an Event

On 24th December 2019 at 10:00 Am., Unshaven was brought to CEmONC, Jabugam for the first time. While admitted, she was in ANC period and was having false labour pain and breech presentation. However, she was kept under observation and labour pain started progressively. On 25th of December, at 7:00am., she started having difficulty in breathing. She was given oxygen and with all emergency management she was referred to SSG hospital Vadodara for higher level management. On the way to SSG hospital, her blood pressure and oxygen concentration went down and she died due to cardiorespiratory arrest where sickle cell crisis and abnormal foetal presentation were the contributory factors.

d) Factors related

1. High Prevalence of Sickle cell anaemia in Chhotaudepur district.

2. Discontinuation of utilization of maternal health services from the same health facility till the lady delivered: In this case, Ushaben got her 3 ANC check-ups, 2 doses of tetanus vaccine and she might/might not have received treatment for sickle cell anaemia. However, she never visited CEmONC during ANC period and there is no information on from where she got this treatment and then why she chose to deliver at CEmONC where she never visited before.

8. Vanitaben Udesingh Rathwa

a) Background

Vanitaben Udesingh Rathwa belonged to Navatimbarva village of bodeli taluka in Chhotaudepur district, Gujarat. After her marriage last year, she had to migrate with her husband to Morbi. Both were illiterate and were working as labourers belonging to the BPL category. However, she was at her native from fifth month of pregnancy till the delivery occurred. Only the grandparents were living at navatimbarava. Her in-laws were residing at halol and a brother in-law and family in Kutch as all three families have employment at different places. She was close to her husband. It was her first delivery.

Telephonic interview was conducted with the husband and an ASHA worker who followed up the case to review this death.

b) Medical History

Vanitaben had only 1 ANC Check-up out of compulsory 4 ANC Check-ups. She was severely anaemic and was suffering from jaundice. No treatment for the anaemia and

jaundice was taken by the vanita or her husband. She didn't have any proper history of vaccination taken or consumption of IFA Tablets which is necessary during pregnancy and specially in case of HRP. She had Hb level of 6 gm/dl therefore making her severely anaemic. She was suffering from the high-grade from 15 days before she delivered and didn't took any treatment for the same making it one of the contributory factor for the maternal death.

c) Course of Treatment and Occurrence of an Event

On 4th of November 2019, Vanitaben was brought to CEmONC, Jabugam at 4:20pm in labour stage of pregnancy with the history of high-grade fever and jaundice. She was severely anaemic (6gm/dl). The next day after 12 hours of labour, on 5th of November, she delivered an IUD baby of 2.08kg at 5:36am by a vaginal route followed by episiotomy. One and half hour after delivery, she collapsed at 7:00am when she was in the fourth stage of labour. Cause of death was reported to be untreated long standing (15 days) high grade fever, Jaundice and severe anaemia. During ANC period, she already had anaemia and jaundice. However, she did not take any treatment for the same.

According to ASHA worker when she met her for the first time, it was fifth month of pregnancy of deceased. ASHA took her to Chalamali PHC an issued a mamta card. Iron and calcium tablets were given to her but laboratory tests were not performed as it was Saturday and no lab technician was available in the afternoon when they visited. After that she went back to Kutch so ASHA could not take up the follow-up. Then during the month of October 2019, when she came back, she was in labour pain and having fever and jaundice since past 15 days. She was taken to Kawant CHC and admitted for one night but did not get any treatment so next day she came home. While at home, she vomited once, still she continued being at home for that day and next day, on 05/11/2019, she was taken to CEmONC Jabugam for delivery. From Vanitaben received one ANC check-up and one dose of tetanus vaccine at Chalamali PHC during 5th month of pregnancy. She was having fever since last fifteen days till death. She delivered a dead baby girl of 2.80kg weight.

As per her husband, neither any ANC check-up was done nor were medicines taken till 5th month of pregnancy. Because of engagement in the labour work they could not consult any doctor. At Jabugam hospital, doctor checked, gave medicines and informed that patient was critical. Doctor tried but could not save neither mother nor the kid.

d) Factors related

1. Patient did not seek any treatment for long-standing high-grade fever, jaundice and anaemia. Not all the reasons are known to explain the same.

2. Lack of Prioritization of Maternal health over work at household level: In this case, earning a daily wage was more important.

3. Illiteracy: No proper education about the maternal health and importance of ANC Check-up and consumption of IFA Tablets and Calcium tablets.

4. Poverty

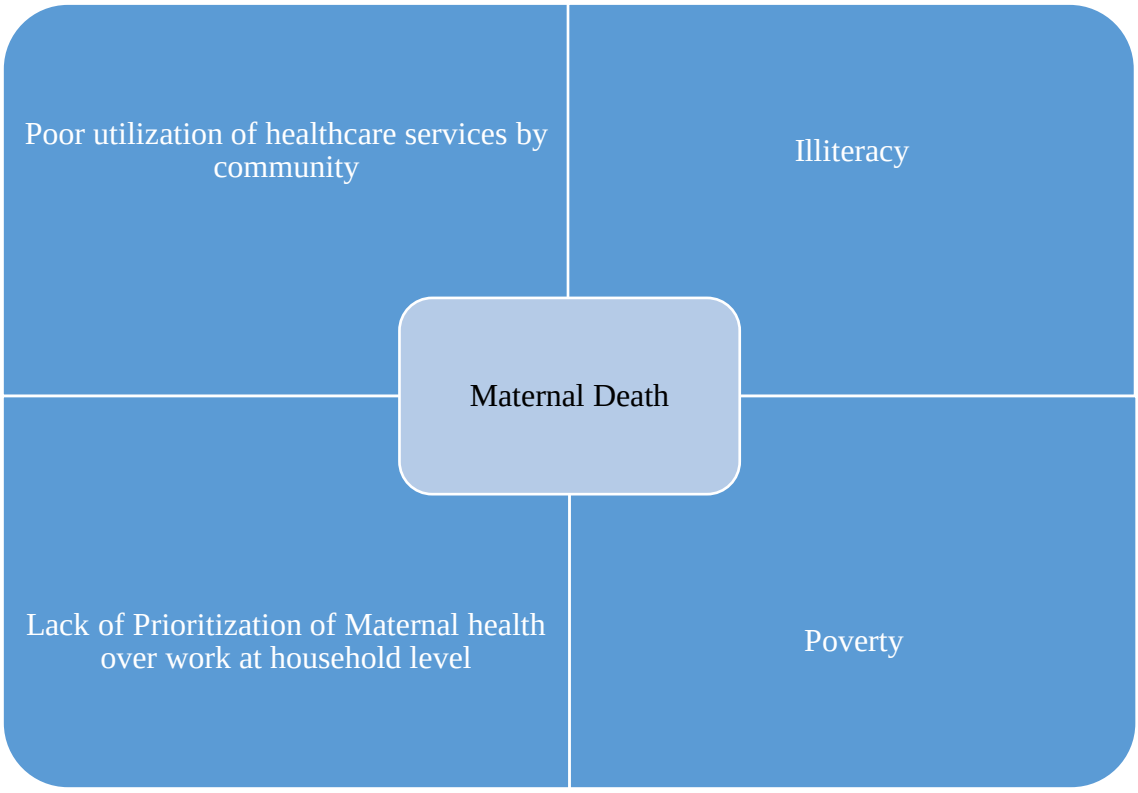


Figure: 8 Figure related with maternal death of Vanitaben Udesingh Rathwa

e) Delay identified in this case were-

1) **Delay in decision to seek care due to**

a) The lower status of the women

b) Poor understanding of the complications and risk-factors in pregnancy and wen to seek medical help.

c) Financial Implications.

2) **Delay in receiving adequate healthcare due to**

a) Poor facilities and lack of medical supplies

b) Inadequately trained and poorly motivated medical staff

c) Inadequate referral systems

Conclusion-

6. Maternal Death is the important tool for the strengthening of the health system.
7. It sensitizes all the health care providers, district and state authorities to focus on averting maternal mortality.
8. Maternal Death Review helps in improving safe motherhood programmes for preventing maternal morbidity and mortality.
9. It helps in finding the lacunae's in the health system thus helping to overcome those lacunae's by taking necessary steps.
10. Communities can monitor availability, access and quality of health services.
11. Through Maternal Death Review major causes leading to the death of the mother can be identified.
12. Maternal Death Review helps in identifying one the delays leading to the maternal death.
13. It helps in increasing the transparency and accountability throughout the process.
14. The tool also included issues to be explored in community level discussions, like socio cultural practices, discrimination and HIV or disability related exclusion, geography related exclusion from health services.
15. The apparatus remembered areas for: foundation data on the family, the individual history of the perished lady, her conceptive history, clinical history, story of the occasions paving the way to the lady's death, subtleties for the current pregnancy, significant subtleties for death in antenatal or postnatal period or intrapartal death, her privileges infringement – in the family and versus the wellbeing framework.

References

- https://www.nhm.gov.in/images/pdf/programmes/maternal-health/guidelines/Guideline_for_MDSR.pdf
- http://origin.who.int/woman_child_accountability/resources/Day2_Session4_India_MDR.pdf
- http://164.100.117.80/sites/default/files/Maternal%20Death%20Review%20-%20A%20tool%20for%20System%20Strengthening%20in%20Gujarat.pdf
- http://rchiips.org/NFHS/FCTS/GJ/GJ_FactSheet_486_Vadodara.pdf
- https://spipa.gujarat.gov.in/downloads/n_b_dholkia.pdf
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2761782/

Bibliography

[1] National Health Mission, “Guideline for Maternal Death Surveillance and Response,” 31 March 2017. [Online]. Available: https://www.nhm.gov.in/images/pdf/programmes/maternal-health/guidelines/Guideline_for_MDSR.pdf. [Accessed 30 May 2020].

[2] N. B. Dholakia, S. N &, &. G. Ravindra, &. R. Narayan and A. , “Maternal Death Review- A tool for system Strengthening,” 2013.

Annexures

VA of chetana ben pravinbhai bariya.pdf

VA of MD of Daxaben Miteshbhai \

VA of Jasoda ben.pdf

Maternal Death Autopsy_Urmilaben Vi

VA of sangeetaben Pravin Nayaka.pdf

VA of MD of Ushaben Hiteshbhai R

VA of vanitaben Udesingh Nayaka.pdf