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Original Research Article

A study on maternal near miss cases in Government Medical College Shivpuri, India

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ABSTRACT

Background: Obstetrics near miss is an important indicator that reflects the quality of obstetrics care in a health facility. It assesses and monitors the activities aimed for prevention of maternal mortality. The aim and objective of this study was to find out the incidence, the prevalence and causes of maternal near miss due to severe obstetric complications and to identify the gapes and contextualize corrective measures to be taken in our facility.
Methods: This is a retrospective study done in department of Obstetrics and Gynecology in GMC associated with DHS Shivpuri MP. The study was done during a period from 1st January 2018 to 30 April 2019.
Results: In this study the hospital maternal near miss incidence ratio was 14.34%. In our study we found the most common morbidity was (30.18%) hypertensive disorder of pregnancy. These 159 near miss diagnoses were comprised of (30.18 %) cases of Hypertensive disorder of pregnancy, (27.67%) cases of major obstetric hemorrhage, (6.91) Severe systemic infection or sepsis, (4.40%) Labour related disorders. In Medical disorders very Severe Anemia, (1.88%) was most common cause of near miss. The most common cause of death was post-partum hemorrhage 37.5% and most of the patients referred from periphery in very critical condition. The median time taken to get clinical intervention among cases was 20-40 minutes after admission.
Conclusions: Hemorrhage and hypertension disorders are the leading causes of MNM. Prompt diagnosis and adequate management of near miss cases can reduce mortality rates.

Keywords: Hypertensive disorders, Maternal mortality**,** Obstetric hemorrhage, Severe acute maternal morbidity

INTRODUCTION

Maternal mortality is a critical indicator to assess the quality of services provided by a health care system. Women who experienced and survived a severe health condition during pregnancy, childbirth or postpartum are considered as near miss or severe acute maternal morbidity cases.[1]

The major reasons and causes are the same for both MNM and MDR, so review of MNM cases is likely to yield valuable information regarding severe morbidity which could lead to death of mother, if not intervened properly and in time. According to WHO "a woman who survives life threatening conditions during pregnancy, abortion and childbirth or within 42 days of pregnancy termination, irrespective of receiving emergency medical/surgical interventions, is called maternal near miss".[2]

By reviewing near miss cases, we can learn about the processes and their deficiencies that are in place for the

care of pregnant women. This would result in identifying the pattern of severe maternal morbidity and mortality, strengths and weakness in the referral system and the clinical interventions available and the ways in which improvements can be made.[3]

In order to improve obstetric care and reduce delay, critical incident audit and feedback have been recommended by the world health organization (WHO) and other institutions.

When MNMR is used in conjunction with MDR- (i) Aids in recognizing patterns and trends of maternal morbidity and mortality (ii) Helps in identifying contributory factors of maternal deaths so that actions can be taken at various levels. (iii) Assists in evaluation of quality of health care at facility and to monitor it.(iv) Facilitates detection of lacunae in existing system.(v) Helps in setting up a database to capture all locations and facility details to identify where an MNM case comes from; this assists in focusing interventions in a particular location. (vi)

Beneficial in assessing and analyzing requirement of health care facility in terms of interventional facilities, in terms of infrastructure, human resource and interventional facilities, besides comparing the existing health care and optimal health care of a facility. (vii) Identification of delays at various levels can be done. Which lead to maternal morbidity and mortality. (viii) Identify modifiable socio-demographic factors responsible for maternal morbidity and mortality. (xi) It assists in international comparisons in imparting optimal health care.[4]

The objective of this study to find out the socio demographic factors associated with maternal near miss cases, to determine the prevalence of maternal near miss due to severe obstetric complications and to identify the gapes and contextualize corrective measures to be taken in this facility.

METHODS

This is a retrospective study done in department of Obstetrics and Gynecology in GMC associated with DHS Shivpuri MP. The study was done during a period from 1st January 2018 to 30 April 2019. GMC associated with DHS Shivpuri is a 350 bedded hospital. This is a referral hospital. It provides 24 Hour emergency obstetric service for both low and high risk pregnant women. Data were collected from the medical records and Data of computer operator of Maternity wing.

For each case Booking, literacy, socio- economic status, gestational age, parity, referred or self-referred, mode of delivery, disease responsible for critical illness, nature of obstetric complications, presence of organ and/or system dysfunction, duration of hospital stays, and source of referral, requirement of Blood, surgical intervention to save the life of mother and other relevant information were collected from the medical records and Data of computer operator of Maternity wing.

Different causes of maternal near miss were indentified according to maternal near miss review operational guideline - India Dec 2014. (Table 1). All the data was analyzed using IBM SPSS ver 20.

Software Frequency distribution and cross tabulation was used to prepare tables, data is expressed as percentage. According to our infrastructure and setting I choose some disease specific criteria and included pregnant and recently delivered women up to 6 weeks postpartum with one or more of the following entities:

- Severe hypertension and hypertensive emergency are identified according to maternal near miss review operation guideline Dec 2014.
- Hemorrhage leading to shock; emergency hysterectomy; coagulation defects and / or blood transfusion of ≥ 2 liters in our setting.
- Uterine rupture, defined as the occurrence of clinical symptoms pain, fetal distress, acute loss of contractions, hemorrhage or intrauterine fetal death, that led to laparotomy, at which the diagnosis was confirmed, or laparotomy for uterine rupture after vaginal birth.
- Severe sepsis according to maternal near miss review operation guideline Dec 2014.
- Very severe anemia- I take very severe anemia cases of Hb <6 gm/dl in my study who require ≥3 units of blood or PRBCs and multiple dose of injectable iron.

Table 1: Criteria for Identification of MNM Cases (Maternal near miss review operational guideline-India Dec 2014).[5]

For diagnosis of near Miss, the patient should meet minimum 3 criteria: one each from 1) clinical findings (either symptoms or signs, 2) investigations and 3) interventions done or any single criteria which signifies cardiorespiratory collapse			
Haemorrhage			
Abortion, Ruptured ectopic,	Any bleeding from or into the genital	Altered conscious state Tachycardia > 120 / min	Acute fall Hb < 5 gm % or 30 % fall in haematocrit

For diagnosis of near Miss, the patient should meet minimum 3 criteria: one each from 1) clinical findings (either symptoms or signs, 2) investigations and 3) interventions done or any single criteria which signifies cardiorespiratory collapse			
APH Placent previa Placent abruption Rupture uterus Surgical injury, III stage compli., inversion of uterus, retained placent, cervical tear, PPH	tract leading to -Air hunger -Sycopal attacks	Low volume pulse Bradycardia < 40/ min Tachypnea > 40/ min Bradypnea < 6 / min Blood pressure, Systolic < 90 mmHg, Diastolic < 60 mmHg Absent peripheral relexes Oliguria with output ,30ml/ hour	(fall in hemoglobin so as to affect oxygen saturation), Fall in oxygen saturation below 90% PaO2: FiO2 < 200, PaCO2 > 50mmHg Platelet < 20000 (Acute Decline in platelet count more significant Clot observation time > 7 min or any other test done which proves deranged coagulation profile Serum cratinine > 3.5 mg/dl ECG -Ischemic changes, ST inversion elevation
Hypertension			
SEVERE (PIH) Preeclampsia, Eclampsia, HELLP Syndrome	Convulsions, diminution/ Blurring of viosion, severe epigastric pain, severe headache non responsive to pain killers, difficulty in breathing, palpitations	Altered conscious state, BP ≥ 160/110 mmHg, Deep Jaundice, Oliguria/ anuria/ haematuria, Coma, Coagulation failure, Pulmonary edema, Evidence of circulatory collapse	Proteinuria >1 gm/dl, S.Creatinine >3.5 mg/dL,, Elevated S Bilirubin (>6 mg/dl), ALT, AST (>100 UL/L), Thrombocytopenia < 20000, Haemolysis on peripheral smear, clot observation time > 7 min. or any other test done which shows deranged coagulation profile, Hypertensive retinopathy > GRADE II, Abnormal ECG (ST inversion , elevation/ arrhythmias, Cerebral hemorrhage on CT scan
Infections			
Severe systemic infection or sepsis, and others	Cases of puerperal sepsis, and post abortion sepsis Other severe infections	High grade fever (with/ without chills and rigor) Altered behavior Breathlessness Abdominal distension Unconscious state	Altered conscious state Persistent rise in Temp > 39.2^0 C, not responding to routine treatment Hypothermia Temp < 37^0 C Pulse Rate > 120 /min, Tachypnea >20 /min Coma, Bleeding from various sites
Postpartum collapse			
Amniotic fluid Embolism Uterine Inversion	Acute Collapse of patient after delivery	Pulse not recordable BP not recordable Cardiorespiratory arrest	Acute fall Hb <5 gm % (fall in hemoglobin so as to affect oxygen saturating) Fall in oxygen saturation below 90% PaO_2 FiO_2< <200 $PaCO_2$ > 50 mm Hg Platelet < 20,000 (Acute decline in platelet count more significant) Clot observation time >7 min. done which proves deranged coagulation profile ECG-Ischemic changes, ST inversion, Elevation
Liver dysfunction / failure			
Acute fatty liver of pregnancy And others	Convulsions Altered behavior Bleeding from various sites (nose, gums, IV access ports, varices)	Unconsciousness Deep jaundice Hepatic flaps, tremors Abnormal bleeding sites - Haematuria, hematemesis, haemoptesis, bleeding gums etc.	Elevated serum Bilirubin (> 6mg/DL) Abnormal liver enzymes ALT, AST >100 IU/L) Abnormal ECG Coagulation profile deranged USG showing Showing changes of Acute fatty liver Fibro scan showing changes of acute fatty liver
Cardiac dysfunction/ failure			
RHD, CHD, Cardiomyopathy and others	Breathlessness specially at night Palpitations Chest pain	tachycardia pulse > 120bpm dyspnoea Organic Murmurs	Abnormal ECG Abnormal echocardiography X ray chest (with shielding of abdomen) showing gross

For diagnosis of near Miss, the patient should meet minimum 3 criteria: one each from 1) clinical findings (either symptoms or signs, 2) investigations and 3) interventions done or any single criteria which signifies cardiorespiratory collapse			
	orthopnea	Cardimegaly Signs of CCF/ LVF	cardiomegaly) Acid Base values PH < 7.35 or >7.45, PCO_2 >50 or < 30 mmHg, PO_2 arterial <80 mmHg
Severe anemia			
	Dyspnea Palpitations Syncopoal Attack Altered conscious state Features of Sickle cell crisis such as bone pains, joint pains, acute abdominal pain etc. Swelling over body	Severe Pallor Jaundice Tachycardias pulse rate >120/ min Tachypnea > 20 / min Tender, inflamed joints, Sternal, tenderness, Spleenomegaly Anasarca, Ascites Signs of congestive cardiac failure Bleeding tendencies	Hemoglobin below 5mg/dl Hemoglobin status not able to maintain O_2 Saturation of 90% Platelet <20000 Clot observation time > 7 min. or any other test done which proves deranged coagulation profile Elevated S Bilirubin (>6 mg/dl)
Respiratory dysfunction			
Asthma Tuberculosis Pneumonia	Breathlessness / Air hunger High/ low grade fever Chronic weight loss	Tachycardia – pulse rate > 120/ min Tachypnea > 20/ min Orthopnea abnormal chest signs (ronchi, /Crepts, absent breath sounds) Signs or cardiorespiratory failure, Cynosis, flaps	Various lesions on chest X ray (with shielding of abdomen) specific to disease Abnormal acid base values PH < 7.35 or > 7.45 PCO_2 >50 or < 30 mm/hg PO_2 arterial < 80 mmHg PO_2 venous < 40 mmHg
Cardiac Dysfunction			
	Breathlessness/ Air hunger Orthopnea Palpitaitons Paroxysmal nocturnal dyspnea Chest pain	Tachycardia pulse rate >120 min Bradycardia > 40 / min Irregular pulse Tachypnea > 40 / min Bradypnoea < 6/ min Organic murmurs Cardiomegaly Tender hepatomegaly Signs of CCF / LVF, pitting edema, raised JVP, basal crepts etc.	Abnormal ECG Abnormal Echocardiography Abnormal acid base values PH < 7.35 or >7.45 mmHg PCO_2 >50 or <30 mmHg PO_2 artial < 80 mmHg, PO_2 venous < 40mmhg
Hepatic Dysfunction			
Cirrhosis of liver Portal hypertension Acute liver failure	Yellowness of urine / eyes other body parts Convulsions Altered behavior bleeding from various sites (nose, gums, IV access ports, varices)	Deep jaundice Hepatic flaps/ tremors Abnormal bleeding sites - heamaturia, haematemesis, haemoptysis, bleeding gums etc. Abnormal bleeding from nose, gums, I/V sites, varices Hepatomegaly Ascites	Elevated Serum Bilirubin (> 6mg/ dl) Abnormal lover enzymes ALT, AST (> 100 IU/L) Abnormal ECG Clot observation time > 7 min/ or any other test done which proves deranged coagulation profile Imaging modalities showing hepatomegaly, splenomegaly and other abnormalities
Endocrinal disorders Ketacidosis			
	Altered conscious state Breathlessness / air hunger	Features of circulatory collapse Neurological deficit like muscular weakness,	Ketoacidosis pH < 7.35 RBS > 200 g/dl Abnormal ECG Electrolyte, Imbalance (Sr Na < 129 K <3.2 – >5.5

For diagnosis of near Miss, the patient should meet minimum 3 criteria: one each from 1) clinical findings (either symptoms or signs, 2) investigations and 3) interventions done or any single criteria which signifies cardiorespiratory collapse			
	Palpitations, Convulsions	paresis, plegia Altered consciousness, coma	
Thyroid Crisis Thyrotoxicosis Thyroid storm	Palpitations Convulsions Bladder / Bowel dysfunction	Altered Consciousness Coma Tachycardia pulse > 120 bpm	Sr. T_4 Elevated (>200 IU) Low TSH (<0.2 IU) Ischaemic changes on ECG Elevated Vinyl mandilic acid
Incidental/ Accidental Disorders E.g. Surgical including iatrogenic, Trauma, Violence, Anesthetic complications etc. are also included			

Note: Any Intervention: ICU admission requiring resuscitative (CAB) or cardio respiratory support and or Endotracheal intubation ,Use of blood & blood pro ducts transfusion > 90ml\kg body weight / > 5 units of blood), Use of cardiotonics/ Vaso pressors (Mephentine / Dobutamine/ dopamine etc), Cirulatory collapse requiring emergency surgery, Dialysis- use of Adrenaline Renal Dialysis pertonela/ hemo Dialysis, Use of fourth generation Anti Biotic and others.

RESULTS

This is a retrospective study done in department of Obstetrics and Gynecology in GMC associated with DHS Shivpuri MP. The study was done during a period from 1st January 2018 to 30 April 2019. During this period 13849 ANC cases were admitted in hospital, of which 11348 patients were delivered, 2342 patients required lower segment caesarean section (LSCS), giving a LSCS rate of 20.63 %. 11087 live birth were there. 159 cases were diagnosed as near miss.

I calculated intra Hospital maternal near miss incidence ratio (number of maternal near miss cases per 1000 live birth) (MNM IR = MNM/ LB). In my study the hospital maternal near miss incidence ratio was 14.34% per 1000 live birth. Table 2 shows the demographic details of these 159 women. In this study most women (55.34%) were of age of less than 25 years, (40.88%) were primipara, (55.97 %) were unbooked and were admitted in emergency.

Literacy level was low and majority (64.15%) were from low socio-economic group. Majority of the patients (50.94%) were in third trimester. (44.02%) cases were referred in cases and most of them (61.00%) were rural.

Table 3 shows summarizes the causes of near miss in my study group. In this study we found the most common morbidity was (30.18%) hypertensive disorder of pregnancy.

Figure 1: In this study very severe anemia (13.20%) was the commonest medical disorder found in near miss cases these women presented commonly with generalized edema weakness dyspnoea and unable to perform routine work.

Author could not find first delay (delay before seeking health care) and second delay (delay in reaching to health facility) because it was a retrospective study, but we tried to find third delay (delay in receiving care).

The median time taken to get clinical intervention among cases was 20-40 minutes after admission. Reduced time of intervention was due to preparedness and promptness of health staff after various training under LaQshya Programme. There was delay in receiving adequate and appropriate treatment (delay 3) in only in 17 (10.69%) women. Figure 2: During this period there was 8 maternal deaths were happened there. The most common cause of death was post-partum haemorrhage (37.5%).

Table 2: Socio- demographic variables, parity and gestational age of participants.

Variables	Number	Percentage
Age of mother (years)		
15-20	07	4.40
21-25	88	55.34
26-35	47	29.55
>35	17	10.69
Parity		
0	65	40.88
1	60	37.73
2	21	13.20
>2	13	8.17
Gestational age		
<12 weeks	15	9.43

Variables	Number	Percentage
13-28 wks	07	4.40
29-36 wks	40	25.15
37-40 wks	81	50.94
>40 wks	09	5.66
Postpartum	07	4.40
Booking status		
Booked	70	44.025
Unbooked	89	55.97
Literacy		
Illiterate	80	50.31
Literate	79	49.68
Socioeconomic status		
Low	102	64.15
Middle	52	32.70
High	5	3.144
Residence		
Urban	62	38.99
Rural	97	61.00
Referral status		
Self	89	55.97
Referred from a health facility	70	44.02

Table 3: Causes of near miss cases n=159.

Diagnosis		N	%
Hypertensive disorders in pregnancy	Chronic hypertension. severe PIH, severe preeclampsia with signs of organ dysfunction / eclampsia with organ dysfunction, HELP syndrome	48	30.18
Severe hemorrhage	Hemorrhage due to RPOC and inevitable abortion	44	27.67
	Ruptured ectopic pregnancy with severe anemia and shock		
	Placenta praevia		
	Placental abruption		
	intra operative hemorrhage		
	Rupture uterus		
	Severe post-partum hemorrhage		
	Hemorrhage due to retained placenta		
	Genital tract injuries and large hematomas		
Severe systemic infection or sepsis	Septic abortion	11	6.91
	Chorio amnionitis		
	Puerperal sepsis		
	Postsurgical procedure severe infection (E.g. Cesarean section, laprotomy, evacuation, manual removal of placenta and others.		
Labour related disorders	Prolonged and obstructed labour with complications, Rupture uterus and others.	7	4.40
Postpartum collapse	Amniotic fluid embolism, inversion of uterus	3	1.88
Medical disorders			24.47
Very aevere anemia	(>3 blood transfusion / PRBCs and multiple doses of iron sucrose)	21	13.20
Cardiovascular dysfunction	Valvular disease, arrhythmia, cardio myopathy, infarction,	3	1.88
Respiratory dysfunction	ARDS Pulmonary edema Post-operative pneumonia and others Severe tuberculosis with respiratory failure.	7	4.40
Renal dysfunction	Oliguria needed multiple doses of diuretics/ dialysis acute renal failure	4	2.51
Coagulation dysfunction	DIC	1	0.62

Diagnosis		N	%
Hepatic dysfunction	Acute fatty liver of pregnancy and others	1	0.62
Neurological dysfunction	Intracranial hemorrhage, non-eclamptic seizures,	1	0.62
Endocrine disorders	Diabetic keto acidosis, Thyroid crisis	1	0.62
Anesthetic complications	Allergic reaction, total spinal and failed intubation	5	3.144
Incidental/ Accidental Disorders E.g. Surgical including latrogenic, Trauma, Violence, etc.		2	1.25
Total		159	100%

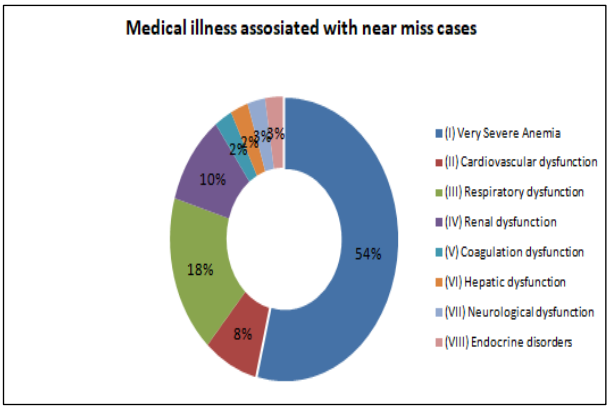

Figure 1: Medical disorders, as a cause of near miss cases.

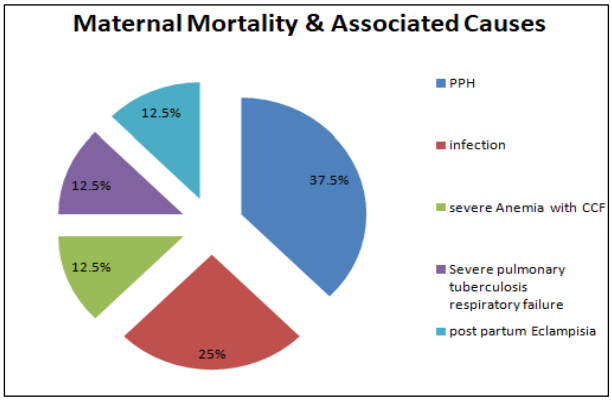

Figure 2: Two Causes of maternal mortality.

DISCUSSION

In this study- 55.34 % of women were in age group of 21-25, 55.97% were unbooked, 40.88 % were primipara, 50.94 % were term and 64.15 % were of low income group. My study was comparable with one another study, in which 53.3% of women with near miss in their hospital were in the age group of 21-25 year, 66.6% was primipara, 73.3% were term and 60% were from low income group.[6] In one another study most women 67.85% were age of <25 year, 64.28% were unbooked and were admitted in emergency, literacy rate was low and majority was from low social economic group.[7]

The MNM IR was 14.34% in this study which is comparable to study of Roopa PS et al, with maternal near miss incidence ratio was 17.8/1000 live birth.[8] The incidence of SAMM was 15 and 17.8 per 1000 live birth in study of Moraes et al, and Ps et al, respectively.[9,10] The incidence of severe maternal morbidity was 3.3/1000 deliveries in study by Chhabra P et al, and Waterstone et al, reported a severe obstetric morbidity rate of 12.0/1000 live births, which was lower than my study.[11,12] In this study he found the most common morbidity was (30.18%) hypertensive disorder of pregnancy, second one was (27.67%) of severe hemorrhage. Upadhyaya and Chaudhary, Moracs et al, and Huseyin et al, also reported the hypertensive disorder in pregnancy as leading cause of maternal illness.[13-15] Also, the Study by Souza JP et al, had incidence of severe preeclampsia in 36.3%, Eclampsia 9.7%, HELLP syndrome 5.6%. severe hemorrhage 10.5%, severe sepsis 6.4%.[16]

Author study was not comparable with study of While Taly et al, Roost et al, and Manandhar et al, they reported hemorrhage 60%, 48% and 41.66% as most common cause of SAMM (near miss) respectively.[17,18]

In this study severe anemia (13.20%) was the most common medical disorder found in near miss cases. The other studies form our country have also reported anemia as an important cause and contributor to maternal mortality and severe maternal morbidity.[19] Even after implementation of different programs for controlling iron deficiency anemia, the magnitude of this problem is still high.

During the study period 8 patients were died, out of which 3 (37.5%) patients were died due to PPH. It is comparable with study conducted by Mehta M et al, showed major cause of death in his study was hemorrhage.[20]

There was delay in receiving adequate and appropriate treatment (delay 3) only in 17 (10.69%) near miss cases, that was lower than one another study in which delay was in (21.8%) women.[21]

Globally, there has been a paradigm shift in the maternal care strategy since the 1990's. In India also there has been a policy change with promotion of institutional

births, births by skilled birth attendants and provision of Emergency obstetric Care.[22]

Reduction of maternal and neonatal morbidity and mortality is one of the key objectives of the National Health Mission. (NHM), so that India achieve the SDG target of MMR of less than 70 per Lakh live Births.

The Janani Suraksha Yojana (JSY) a cash incentive scheme has been initiated to promote institutional deliveries. A recent study on impact of JSY has shown an increase in institutional deliveries among the vulnerable and high risk cases such as pre-eclampsia, eclampsia, hemorrhage, severe anemia etc. Several other interventions and programmed aids such as MNH Toolkit, Standardizations guidelines for the labour Rooms, 'Dakshata', MDR and CDR guidelines, National Quality Assurance Standards, establishment of skill labs, PMSMA etc. to achieve substantial reduction in maternal morbidity, maternal motility and newborn morbidity.

Ministry of Health and Family Welfare has recently launched the program 'LaQshaya' aimed at further improving quality of care pregnant women in labour room, maternity operation Theatre and obstetrics intensive Care Units (ICUs) and High Dependency Units (HDUs).[23] The LaQshaya program is being implemented at all Medical College Hospitals, District Hospitals and First Referral Unit (FRU), and Community Health Center (CHCs) and will benefit every pregnant woman and new born delivering in public health institutions.

The program aimed at implementing 'fast track' interventions for achieving tangible results within 18 months. Under the initiative, a multi - pronged strategy has been adopted such as improving infrastructure up gradation, ensuring availability of essential equipment, providing adequate human resources, capacity building of health care workers and improving quality processes in the labour room. To strengthen critical care in Obstetrics, dedicated obstetric ICUs at Medical Colleges Hospitals level and Obstetric HDUs at District Hospitals are operationalized under LaQshya program. The quality of improvement in labour room and maternity OT will be assessed through NQAS (National Quality Assurance Standards).

The Objectives of LaQshya initiative

- To reduce maternal and newborn mortality and morbidity due to APH, PPH, retained placenta, preterm, preeclampsia and eclampsia, obstructed labour, puerperal sepsis, newborn asphyxia, and sepsis, etc.
- To improve Quality of care during the delivery and immediate post-partum care, stabilization of complications and ensure timely referrals, and enable and effective two-way follow-up system.
- To enhance satisfactions of beneficiaries visiting the health facilities and provide Respectful Maternity Care (RMC) to all pregnant women attending the public health facility.

Efforts geared towards improvements in the management of near-miss morbidities would definitely go a long way in reducing the present maternal mortality ratio.

CONCLUSION

According to author study hypertension and hemorrhagic disorders are the leading cause of maternal near miss. Efforts must be made to improve maternal care for hypertension and hemorrhagic disorders. Other life-threatening conditions like severe anemia, infection, and uterine rupture should also be taken care of. It is well known that complication during pregnancy and child birth can occur at any point of time, and it is important to ensure that readiness in terms of infrastructure, HR, equipment etc, for timely management of complications are available at all the basic and emergency obstetric care health facilities. A regular audit of near miss cases and reporting of these cases to higher authorities should be done so that appropriate action can be taken at all care levels. Proper data management must be done for quick and effective treatment. Prompt diagnosis, appropriate action and timely intervention will reduce maternal morbidity and mortality.

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