

To Study ICD-10 MM Classification of Causes of Maternal Death in Tertiary Care Centre, South Gujarat Over a Period of 2 Years

Ritesh Sondawale¹, Jagruti Anavadia², Dhvani Desai³, Tulshi Kalathiya⁴, Ragini Verma⁵

Abstract

Introduction: Maternal Mortality Rate is a reflection of health care provided by a society to a women. Though, pregnancy being considered as a physiological state, it carries a risk of serious maternal morbidity and mortality. ICD-Maternal Mortality (ICD-MM) is based on 10th revision of ICD (ICD-10) and its coding rules. It is intended to facilitate the consistent collection, analysis and interpretation of information on maternal deaths. **Materials and Methods:** This is a retrospective study of maternal deaths using Facility Based Maternal Death Review forms supplied by Ministry of Health and Family Welfare Government of India filled by doctor on duty at that time as a baseline document. **Results:** This study shows that major cause of maternal mortality in tertiary care centre was hypertensive disorders of pregnancy however hypertensive disorder of pregnancy alone was not the only cause of maternal death, it was complicated with different other causes like ARDS, APH, HELLP syndrome, PPH, Sickle cell disease, ARF, DIC, severe Anaemia and many others. Hypertensive disorders of pregnancy contributed 33% of all deaths whereas infections not related to pregnancy (19%), obstetric haemorrhage (17%), respiratory condition (7%), pregnancy related infection (6%), pregnancy with abortive outcomes (6%), CNS condition (4%), cardiac disease (4%), other obstetric complication (2%),

endocrine condition (1%) and genitourinary condition (1%). **Conclusion:** Causes of Maternal Death varies from country to country and a women may die from a wide range of complications in pregnancy, childbirth or the postpartum period. Applying ICD-MM will decrease errors in coding and improve cause of maternal death attribution. This will enhance usability and comparability of maternal mortality statistics generated from ICD data.

Keywords: ICD-MM Group; Maternal Mortality; Hypertensive Disorders of Pregnancy.

Introduction

The standards of obstetric services in a country is assessed by its maternal and perinatal death rates. In developing countries like India such under registration is extremely common, but is also frequently occur in developed countries. An annotation on Death Certificate of women in the reproductive age group known to be pregnant at time of her death or known to be pregnant at any time within the previous 42 days, would go some way to correcting this.

To facilitate the identification of 'Maternal' Deaths under such circumstances, the ICD 10 has introduced a new category that of pregnancy related death which is defined as:

The death of women while pregnant or within 42 days of pregnancy, irrespective of the cause of death and is intended for use of countries that wish to identify death occurring in pregnancy, childbirth and up to 6 weeks after the end of pregnancy but where the cause of death can't be identified precisely.

A significant features of the new definition is that it is a time of death measure,

¹Resident

²Assistant Professor

³Associate Professor,

⁴Resident

⁵Professor and HOD,
Department of Obstetrics
& Gynecology, GMC,
Surat, Gujarat 395001,
India.

Corresponding Author:
Jagruti Anavadia,
Assistant Professor,
Department of Obstetrics
& Gynecology, GMC,
Surat, Gujarat 395001,
India.
E-mail:
drjagruti_1980@yahoo.co.in

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analogue to Infant Mortality which can, where such information is available, also be analysed by cause, i.e. direct and indirect, obstetric and fortuitous or external causes. The causes of maternal mortality are multiple, inter-related, complex and almost always preventable [1]. Delayed referral, poor transport facilities, underutilization of health facilities and poor socioeconomic status are all responsible for the high rate of maternal deaths [2]. The reason for death of a women in pregnancy and childbirth are many layered. Behind the medical causes are logistic causes, failure in the health care system, etc. and behind these are the social, cultural and political factors which together determine the status of women, their health, fertility and health seeking behavior [3]. In India the use of maternal health care services is directly or indirectly associated with women's socioeconomic status [4,5]. Poor families do not find themselves in a position to be able to bear the cost of delivery care service [6].

So we decided to analyse Maternal Deaths in accordance with ICD-MM grouping in Tertiary Care Centre, South Gujarat.

Material and Methods

Tertiary Care Centre, South Gujarat initiated filling of FBMDR forms introduced by Ministry of Health and Family Welfare GOI in 2011.

In this study we have analysed the data of the FBMDR forms filled by doctor on duty between May 2015 to April 2017.

During this period we have contributed to the national/state level data of MDR. This study has analysed the data filled in these forms using open EPI software. The ICD-MM classification for causes of maternal death includes three levels of classification- type (direct, indirect and unspecified maternal death), group and specific underlying cause.

Underlying cause is the disease entity that initiated the events resulting in the death of women. Underlying cause can only be one for which ICD 10 code can be allocated. Maternal deaths in tertiary care centre Gujarat is classified according to ICD-MM Grouping.

Table 1: ICD-MM Grouping

Type	Group name	Examples of Potential Causes of Death
Maternal death: direct	Pregnancies with abortive outcome	Abortion, miscarriage, ectopic pregnancy, and other condition leading to maternal death and a pregnancy with abortive outcome.
Maternal death: direct	Hypertensive disorders in pregnancy, childbirth and the puerperium	Oedema, proteinuria and hypertensive disorder of pregnancy, childbirth and puerperium.
Maternal death: direct	Obstetrics haemorrhage	Obstetric disease or condition directly associated with haemorrhage
Maternal death: direct	Pregnancy related infection	Pregnancy related infection based disease or condition
Maternal death: direct	Other obstetric complication	All other direct obstetric condition not included in group to 1-4
Maternal death: direct	Unanticipated complication of management	Sever adverse effect and other unanticipated complication of medical and surgical care during pregnancy, childbirth or puerperium.
Maternal death indirect	Non obstetric complication	<p>Non obstetric condition</p> <ul style="list-style-type: none"> • Cardiac disease • Endocrine condition • Gastrointestinal tract condition • Central nervous system complication • Respiratory condition • Genitourinary condition • Autoimmune disorder • Skeletal diseases • Psychiatric disease • Neoplasm • Infections that are not a direct result of pregnancy
Death during pregnancy, childbirth and puerperium	Coincidental cause	Death during pregnancy, childbirth and puerperium due to external cause
Death during pregnancy, childbirth and puerperium	Unknown / undetermined	Death during pregnancy childbirth and puerperium where the underlying cause is unknown or was not determined

Results

Table 2 shows total number of maternal death in tertiary care centre, south Gujarat was 83 out of which 53 were direct causes and 30 were indirect causes of death.

Out of 53 direct causes of death 27 deaths were caused by hypertensive disorders of pregnancy and its complication, which was a major contributor of direct causes of death and measures 51% of all direct causes of deaths. Other direct causes of maternal death were obstetric haemorrhage (27%), pregnancy related infection (9%), pregnancy with abortive outcome (5%), other obstetric complication (4%).

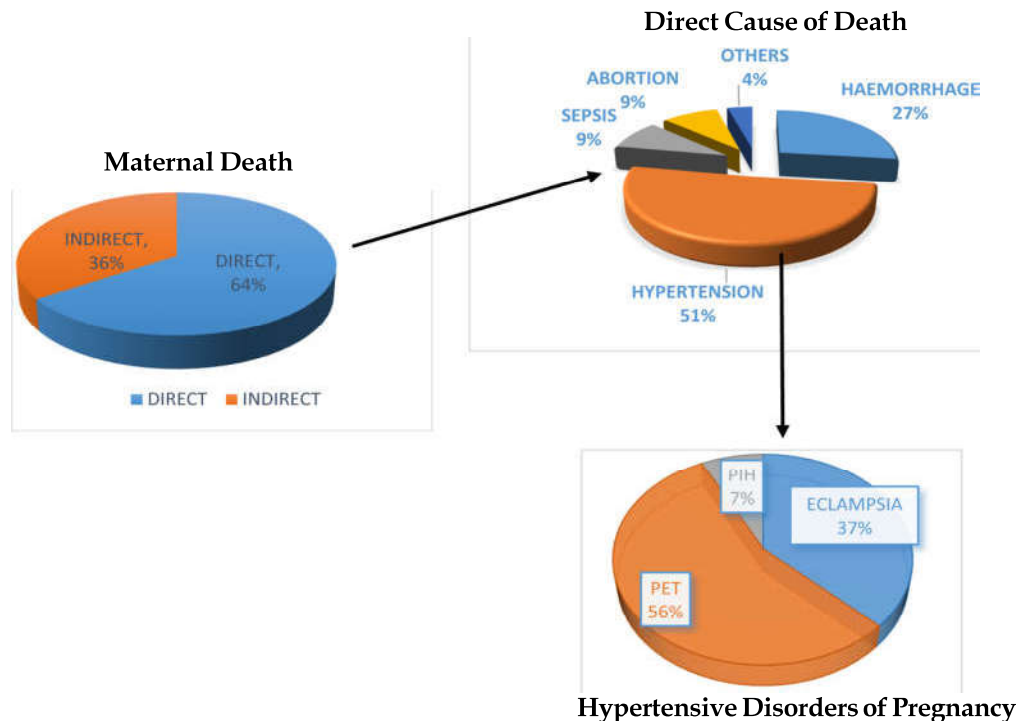
Out of 30 indirect causes of death 16 (54%) were caused by infections not related to pregnancy which was a major indirect cause of death. Other causes were respiratory

condition 6 (20%), cardiac disease 3 (10%), CNS condition 3 (10%), endocrine condition 1 (3%) and genitourinary condition 1 (3%).

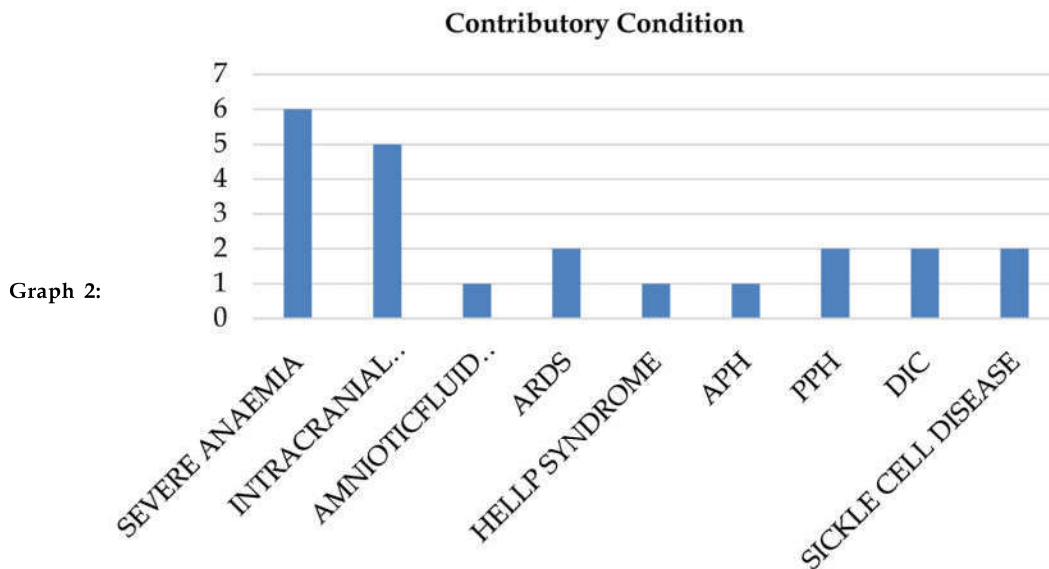
Further we analyse direct causes of maternal deaths in detail. Out of 27 patients of hypertensive disorder of pregnancy 15 patients had PET, 10 patients had Eclampsia and 2 patients had PIH. Hypertensive disorder of pregnancy was not the only cause of maternal death in this subjects, they were complicated by other contributory conditions. Six subjects were complicated by severe anaemia, 5 subjects had intracranial haemorrhage, 2 subjects had ARDS, 2 subjects had PPH, 2 subjects had DIC, 2 subjects had sickle cell disease, 1 subjects had amniotic fluid embolism, 1 subject had HELLP syndrome and 1 subject had APH.

Table 2: Distribution of maternal deaths according to cause of death

Direct cause of maternal deaths N=53 (64%)		
Obstetric Haemorrhage	14	27%
Hypertensive disorder in pregnancy	27	51%
Pregnancy related infection	5	9%
Pregnancy with abortive outcome	5	9%
Other obstetric complication	2	4%
Indirect cause of maternal death N=30 (36%)		
Cardiac disease	3	10%
Endocrine condition	1	3%
CNS condition	3	10%
Respiratory condition	6	20%
Genitourinary condition	1	3%
Infections not related to pregnancy	16	54%



Graph 1:



Discussion

A hospital based retrospective study was carried out in the Obstetrics and Gynaecology department, Tertiary Care Centre, South Gujarat. An attempt was made to find out the Maternal Mortality Rates to analyse the various causes and predisposing factors responsible for Maternal Death. The study covered the total number of deliveries which occurred during the period i.e. May 2015 to April 2017.

This study was made of a retrospective study of Maternal Deaths where FBMDR forms of Maternal Death approved by Ministry of Health and Family Welfare filled by resident doctors on duty were used. We analysed the study using FBMDR format as a baseline document.

A teaching institution and referral centre, this institute had an average of 8598 deliveries per year. A total of 17196 deliveries occurred during the study period and 83 Maternal Deaths occurred. The Maternal Mortality Rate was 482.67 per 100000.

- The total number of deliveries of present study was 17196.
- The total number of Maternal Deaths in the study period was 83.
- The Maternal Mortality Rate of present study was 483 per 100000 live births.
- Direct causes of deaths were 53 i.e. 64% whereas indirect causes were 30 i.e. 36% of total causes of death.
- Hypertensive disorders of pregnancy constitute 33% of total causes of death.

- Infection not related to pregnancy constitute 19% of total causes of death.
- Obstetric haemorrhage constitute 17% of total causes of death.
- Respiratory condition constitute 7% of total causes of death.
- Pregnancy related infection constitute 6% of total causes of death.
- Pregnancy with abortive outcome constitute 6% of total causes of death.
- CNS condition constitute 4% of total causes of death.
- Cardiac disease constitute 4% of total causes of death.
- Other obstetric complication constitute 2% of total causes of death.
- Genitourinary condition constitute 1% of total causes of death.
- Endocrine condition constitute 1% of total causes of death.
- Of the direct causes of death,
 - Hypertensive Disorders of Pregnancy constitute 51% of direct causes of death.
 - Obstetric haemorrhage constitute 27% of direct causes of death.
 - Pregnancy related infection constitute 9% of direct causes of death.
 - Pregnancy with abortive outcome constitute 9% of direct causes of death.
 - Other obstetric complication constitute 4% of direct causes of death.

- Out of 27 patients of hypertensive disorder of pregnancy 15 patients had PET, 10 patients had Eclampsia and 2 patients had PIH.
- Of the indirect causes of death,
 - Infection not related to pregnancy constitute 54% of indirect causes of death.
 - Respiratory condition constitute 20% of indirect causes of death.
 - Cardiac disease constitute 10% of indirect causes of death.
 - CNS condition constitute 10% of indirect causes of death.
 - Endocrine condition constitute 3% of indirect causes of death.
 - Genitourinary condition constitute 3% of indirect causes of death.

Conclusion

WHO recommend new ICD maternal death classification system so that reliable comparisons can be made within and between countries and region. Applying this classification should help to identify the health system shortfalls that countries need to address in order to reduce the fatal outcomes of pregnancy and childbirth.

In this study we have found that hypertensive disorders of pregnancy is the major cause of maternal mortality. So the focus should be early detection of hypertension at all levels of ANC, appropriate management of the same including termination of pregnancy for maternal indication if the need arises.

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