

View Point

Classifying Stillbirths In India: Do We Need A Separate Classification System?

Running Title: Classifying Stillbirth

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Abstract

There are number of classification system available to classify the stillbirths and the primary goal of all is to provide information on the cause of still birth to allow targeting of interventions at both the individual and public health level to reduce still birth and improve the quality of health care. Still we lack a global system of classification as every region has different challenges to adapt any particular system. Recently WHO introduced another classification system for Perinatal deaths.

Key Words : Stillbirth, CODAC, ICD PM, Perinatal mortality

Background

Globally approximately 2.6 million stillbirths occur in a year and 98% of this burden is from low & middle-income countries [1]. India is at top of the list among ten countries of the world with highest number of stillbirths with estimated stillbirth rate of 23 per 1000 total births as reported in Lancet 2015 [1]. To plan any preventive strategy we need to have the real burden of stillbirths, causes, risk factors attributing to stillbirths. In India there is marked improvement in institutional deliveries but facility based data suggest that 80-

90% of the women admitted with absent fetal heart, i.e. fetal death have occurred before reaching the health care facility [2]. There are number of classification systems available to classify stillbirths but to adapt any system we need to have some basic information. According to national family health survey 4, only 21 % of mothers receive full antenatal care i.e. at least four antenatal visits, one tetanus toxoid injection and iron / folic acid tablets taken for 100 days or more in India [3].

Challenges to obtain the basic information:

- **How to find out the exact timing of stillbirths:** Antepartum or Intrapartum? It is very crucial to know the time of fetal death. Antepartum death indicates the quality of care provided during pregnancy whereas intrapartum stillbirth signifies the care provided at the time of delivery. In various studies in literature external skin appearance of the fetus at the time of birth is used as proxy marker to assess the time of death i.e. macerated as antepartum and fresh as intrapartum. But it has been seen that in- utero maceration of fetus starts within 6-8 hours of death and if a woman in obstructed labour reaches health care facility late would diagnose to have antepartum stillbirth instead of intrapartum loss [4].
- **It is difficult to confirm the status of fetal cardiac activity** especially woman who had no contact with health care provider (no documentation of fetal heart) and in cases where mothers keep on perceiving fetal movements in spite of fetal death.
- **How to confirm the period of gestation** where woman did not have any antenatal checkup or do not remember the Last menstrual period date.
- **Birth weight of stillbirth** is an important indicator especially where gestation age is not reliable or unknown. It is usually being done at facility level but population based studies from LMIC have shown that even in well designed studies stillbirths were not weighed. [5, 6] Weighing a baby at birth does not require any resources or training, still it is not being done.

Stillbirths were first notified in Scotland in 1940 and the first classification was

developed by Sir Dugald Baird et. al. in 1954 for audit and surveillance [7]. Since this time, clinicians, researchers and epidemiologists have developed a large number of classification systems to understand the still birth etiology and cause of death in various contexts. However, until very recently no single classification system has been developed specifically with the aim to be able to be applied to both High income countries (HIC) and Lower middle income countries (LMIC) settings [8]. In India CODAC (Cause of death-associated conditions) system of classification system was adopted as it possesses 09 out of 17 characteristics suggested in a recent Delphi survey [9]. CODAC system has been found useful where minimal set of information is available, even can be applied with information collected through verbal autopsy especially for LMIC [10,11]. However CODAC system of classification captures the stillbirths attributed to intrapartum complications but do not emphasize on the time of death i.e. Antepartum or Intrapartum.

In 2016 WHO introduced a global system of classification i.e. The WHO application of ICD-10 to deaths during the Perinatal period: ICD-PM during pregnancy, child birth and puerperium- the ICD PM (International Classification of Disease-Perinatal Mortality) classification, seeking to create the first guidance on a global system for classifying still births [12,13]. The ICD PM classification is a multilayered approach to identify the single cause of death and it actually captures the time of perinatal death i.e. Ante partum, Intrapartum & Neonatal period. It also links the perinatal deaths with maternal condition [14].

Table 1: ICD-PM system of classification

Antepartum Stillbirth Fetal death before the onset of labour	Intrapartum Stillbirth Fetal death after the onset of labour, during labour	Maternal condition Main maternal condition at the time fetal death
A1 congenital malformation A2 Infections A3 Antepartum hypoxia A4 Other specified antepartum disorders A5 Disorder related to fetal growth A6 Unspecified	I1 Congenital malformations, I2 Birth trauma I3 Acute Intrapartum event I4 Infection I5 Other specific Intrapartum disorder I6 Disorder related to fetal growth I7 Unspecified cause	M1 Complications of Placenta , cord & membranes M2 Complications of Pregnancy M3 Other complications of labour and delivery M4 Maternal Medical and surgical conditions M5 No Maternal condition (Healthy mother)

In resource poor countries the timing of death is the most important information which can be used to make international comparison and also planning intervention for prevention [15]. Whilst relying on skin appearance as a proxy for timing of stillbirth is necessary in resource constrains settings, but it has been shown to be a poor proxy for classifying intrapartum and ante partum stillbirth [16]. ICD-PM classification provided some further advantages when compared to the previous system, in terms of using the data routinely collected by the health care providers to capture the real timing of perinatal death rather than relying on the skin appearance as a proxy and capturing both maternal as well as fetal condition. For example a mother having hypertensive diseases of pregnancy (HDP) can have antepartum (A1-A5) or intrapartum (I1-I6) stillbirth so to plan preventive strategy we need to assign that particular cause. Antepartum stillbirth

attributed to fetal growth retardation denotes that it was missed

there is need to improve the quality of care being provided. Whereas intrapartum fetal death attributed to FGR highlights the quality fetal monitoring done during labor. So by adapting this classification we can plan cause specific preventive strategies to reduce the huge burden of stillbirths.

Conclusion

The application of ICD PM Classification seems to be more promising even in Low middle –income countries like India. The main advantage of this classification system is to have the complete information of the actual timing of still birth i.e. ante partum or intrapartum. As there are inherent challenges in assigning the actual cause of stillbirths so by capturing associated maternal condition would guide to plan preventive strategies. However , there are unique challenges like

delay in seeking care (due to illiteracy, ignorance, poor socioeconomic status) , delay in reaching health care facilities (non availability of transport facilities) and delay in receiving health care or suboptimal care due to system failure or availability of limited resources which are not covered by any classification system. So in LMIC to understand stillbirths completely, along with classifying stillbirths there is a need to review each death by open history or verbal autopsy to prevent all these preventable stillbirths.

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Competing interests

The authors declare no conflict of interest.

Ethics committee approval

Not applicable.

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