Original Article

Quality Assessment of Stillbirth Review: A Pilot Study in Ten High-Priority Districts in Odisha

Snigdha Singh, Manas Kumar Nayak[1], Prashanta Kumar Routray[2], Sushree Samiksha Naik[3], Nirmal Kumar Mohakud[1]

Departments of Community Medicine and [1]Pediatrics, KIMS, KIIT Deemed University, [2]Social Department, Kalinga Institute of Social Sciences, Kalinga Institute of Social Sciences University, [3]Department of Obstetrics and Gynecology, Capital Hospital, Bhubaneswar, Odisha, India

Abstract

Background: Stillbirth rate has shown less or no improvement in developing countries. India was estimated to have the largest number of stillbirths globally in 2015. Systematic review of stillbirths is a strategy that helps in identifying gaps in the care of a pregnant mother, and is a useful and comprehensive indicator of the quality of maternity care. **Objectives:** The objective of this study was to assess the quality of maternal care, and factors causing stillbirth, and to provide some doable plans to reduce its incidence in the Odisha state. **Materials and Methods:** The stillbirth review was undertaken over 4-month timeline (August to November 2014) in ten high-priority districts (HPDs) of Odisha. It included development of tools, desk reviews, training of staffs, and data handling. The deaths were estimated from Annual Health Survey. It was compared to the estimated stillbirth of each district to get the underreporting/overreporting districts. A report was generated on stillbirth process indicators, and program indicators after completion of assessment. **Results:** In the selected HPDs of Odisha, 4689 stillbirths were observed during the study period. However, the labor room register stated the reason of death in only 408 cases (8.7%). Further, at the time of admission, a provisional diagnosis could be made for only 3038 (64.7%) cases, of which 11% diagnosed as safe delivery resulted in stillbirth. **Conclusions:** The present study could contribute to a larger extent to address some of the gaps in the stillbirth review process in Odisha.

Keywords: Community-based maternal death review, india newborn action plan, odisha, perinatal mortality, stillbirth, strengths, weaknesses, opportunities, and threats analysis

Introduction

A major public health challenge in most of the low- and middle-income countries is the contemporary "perinatal mortality," which refers to fetal death occurring after 28 weeks of gestational age and before the 7th day of life.[1] Perinatal mortality rate is taken as one of the indicators of the health status of a given society. Much of the focus in Indian policy and research associated with women of reproductive age has been devoted to the prevention and management of risks associated with preterm birth, low birth weight, and to some extent to reduce incidence of stillbirth.[2] Stillbirth is a dead fetus of 1000 g or more at birth, or after 28 completed weeks of gestation, or attainment of at least 35 cm crown-heel length. The deaths occurring during the first 7 days of life are termed as an "early neonatal death."[3] India is battling with one of the perinatal deaths, highest in the world.

In 2015, globally, 2.6 million third-trimester stillbirths occurred, and most were reported from the low- and middle-income countries.[4] In India, stillbirth has still not achieved full control with 590,000 stillbirths reported in the year 2015 with more than 0.7 million neonatal deaths.[5,6] Most mortality can be still averted if the following factors could be sorted out-delay in or not seeking obstetric care (antenatal checkup [ANC] and regular follow-up), woman's age during pregnancy, maternal chronic medical condition, correction of anemia, or delay in reaching and receiving treatment in the health facility.

India Newborn Action Plan aligned with the Global Every Newborn Action Plan launched in June 2014 with the goal to achieve single-digit stillbirth rate by 2030 in the country

Access this article online

Quick Response Code:

Website: www.ijcm.org.in

DOI: 10.4103/ijcm.IJCM_547_20

Address for correspondence: Dr. Nirmal Kumar Mohakud, Department of Pediatrics, KIMS, KIIT Deemed University, Bhubaneswar - 751 024, Odisha, India.
E-mail: nirmal.mahakud@kims.ac.in

How to cite this article: Singh S, Nayak MK, Routray PK, Naik SS, Mohakud NK. Quality assessment of stillbirth review: A pilot study in ten high-priority Districts in Odisha. Indian J Community Med 2021;46:430-3.

Received: 30-06-20, **Accepted:** 22-04-21, **Published:** 13-10-21

by using evidence-based high-impact interventions. In 2019, stillbirth rate (SBR) is reported to be 19.84 per 1000 births in India.[7,8] The burden of stillbirth has been 4.8 in 2012–2013, and 5 during 2013–2014 in Odisha. Death review is a strategy that helps in identifying gaps in the care (medical and social) of a pregnant woman and the current disparities in risk of stillbirth that needs to be addressed to make the service provision or utilization much better. Our objective was to assess the quality of stillbirth review, causes of stillbirth, and finding corrective action in ten high-priority districts (HPDs) of Odisha.

Materials and Methods

Study design

This was a qualitative study of stillbirth process. The details have been described in the methodology section below.

Study setting

This study was conducted in ten HPDs of Odisha state. Odisha is an eastern Indian state bounded by West Bengal, Jharkhand, Chhattisgarh, Andhra Pradesh, and the Bay of Bengal. Odisha has a population of 4.19 crore. There are 30 districts, 314 blocks, and 51,349 villages. The stillbirth in the state during 2010–2012 census was 8 (against 5 of national average) per 1000 total births.

Routine stillbirth reporting process in Odisha

The health workers record and notify the deaths routinely to the Medical Officer of Primary Health Centre (MO PHC) within 24 h. MO PHC then informs the Senior Public Health Officer (SPHO) within the next 24 h. A line list of deaths are maintained by SPHO and then submitted to district authorities every month. In addition, SPHO within 3 weeks of a death conducts verbal autopsy, as per the standard procedure laid down by the Government of India. Data are then compiled and investigated by District Nodal Officer (DNO) for review by a committee. The committee includes obstetricians, pediatricians, nursing professionals, health administrators, NGOs, and ambulance services. The committee reviews and recommends interventions, and then submits it to the state review committee. Training for the SPHOs and DNOs was conducted by a team from the Odisha Government. The state review committee also provides feedback and conducts training of SPHOs and DNOs.

Methodology

In 2011, Odisha initiated stillbirth reporting. As the program was not getting implemented properly, the Government of Odisha along with UNICEF sought support from a team at Kalinga Institute of Medical Sciences (KIMS), Bhubaneswar, which included the guideline development, technical assistance in study operation, and analysis of findings in ten HPDs. The HPDs included are Bolangir, Boudh, Gajapati, Kalahandi, Kandhamal, Koraput, Malkangiri, Nabarangpur, Nuapada, and Rayagada. These districts had moderate-to-high stillbirth prevalence and comprise a large tribal population of the state. The total population in these districts was around 98 lakh (23.3% of total Odisha population).

For the present study, the technical audit team constituted by the Odisha Government, and UNICEF consisted of six experts (medical/public health), and seven assistants. During 4-month (August 2014 to November 2014) study timeline, development of tools (data entry application using software – Epi Info version 7 and Microsoft Excel 2007), desk reviews (state-level desk research and analysis of available MDR data), training of staffs, and data handling (starting from data collection at facility level to data sharing with the Government of Odisha and UNICEF, Odisha) were done. A report was generated on stillbirth review process indicators and program indicators after complete assessment of the ten HPDs. Training of the DNOs and SPHOs was conducted by the State Government.

Role of technical audit team

The team from KIMS, Bhubaneswar, helped in operationalization and stillbirth review process assessment in the following two steps.

1. Step 1: In-depth analysis (Strengths, Weaknesses, Opportunities, and Threats analysis) was done [Table 1]. The gaps were rectified after meeting with the concerned officials. A framework for monitoring data collection, reporting, quality monitoring, and record keeping was developed
2. Step 2: Helped DNOs in analysis and interpreting data. Review meetings were attended with documentation of proceedings that helped in making recommendations as well as monitoring of the plans.

The study team also visited the households of the stillborn babies randomly, and interviewed the mothers (in some cases, husband and mother-in-law also participated) in their local language. Each mother was asked to describe the pregnancy events, and stillborn child. Interviews were conducted in a uniform manner for minimizing information bias. No mother refused her interview with the study team, and each interview lasted for around 30 min.

Ethical approval

Ethical approval was provided by the Ethics Committee of KIMS, Bhubaneswar. Before verbal autopsy, informed and written consent was obtained. Confidentiality of data was maintained as per the policy.

Results

A total of 4689 cases of stillbirths were reviewed (5.1% of total births during the study period). The detailed characteristics are mentioned below.

Maternal characteristics

The mean (standard deviation [SD]) age of the mothers was 22.9 (±4.2) years. Majority (67.8%) had completed primary education, and 20.3% completed secondary education or above. In 52.3% of cases, socioeconomic status was not clear, and 38.7% were below poverty line. Around 43.5% were primiparous. Around 53.6% had a term stillbirth, 38.8% reported a preterm delivery, and 7.6% a postterm.

Regarding anemia, 1.4% had severe, 14.8% had moderate, and 4.4% had mild anemia. Around 96.6% were of Hindu religion.

Pregnancy and delivery characteristics

Around 72.7% attended ANC at least once during the current pregnancy, and 449 (35.2%) attended four or more times. Skilled health-care provider (doctor, nurse, or midwife/medical assistant) was found to provide care in almost 58.8%. Almost 49.3% had delivered the stillborn at home or that of a traditional birth attendant. Majority had a normal vaginal delivery (87.4%), followed by cesarean section (10.2%) and assisted delivery (forceps or vacuum) (2.6%). Skilled health-care providers assisted 40.2% of the deliveries.

Complications during pregnancy and delivery

Almost 68.2% reported at least one type of complication during pregnancy (antepartum), and 59.7% reported the same at the time of birth. Around 10% had not reported or recognized either of the two, both during antepartum and intrapartum periods.

Care seeking for antepartum complications

Among those experiencing an antepartum complication, 68.5% had sought care. Of them, 60.1% availed care at one of the health facilities (being secondary or tertiary level care in 43.7% of cases). Of 68.5% who sought care, 49.3% received it from a trained physician to do so.

Characteristics of stillbirths

The sex was known in 70.1% of cases (58.8% being male). Almost 65.7% were fresh, and 33.1% were macerated at birth. Majority belonged to low birth weight category.

Likely cause of stillbirth

Nearly 37% were due to eclampsia, 17% to antepartum hemorrhage, 12% to prolonged labor, 11% to umbilical cord issues, 9% to ruptured uterus, 8% to congenital anomaly, and 6% to retained placenta.

Discussion

Globally, nearly 2.6 million babies were reported as stillborn in the year 2015.[9] The present study shows that the stillbirth burden is 5.1, whereas in the year 2014, the SRS estimated SBR to be 7 in rural and 5 in urban Odisha. This is contrary to SBR of 20/1,000 births that was reported from household survey in the year 2014 in Bihar.[10] Progress in reducing SBR is slower than that required to meet goals set to end preventable stillbirths, and considerably slower than for maternal mortality reduction. Despite this large burden, stillbirths remain barely visible on the global policy agenda. The present study reported the stillbirth incidence to be more among low birth weight category similar to previous studies.[11-14] With the current level of average annual rate of reduction of SBR, India is expected to reach 19 per 1000 live births by 2030.[15]

In the present study, 58.8% of the stillborn babies were reported to be males similar to the findings of other studies.[2,10] A meta-analysis based on >30 million birth outcomes also reported a 10% higher risk of stillbirth in males as compared to females.[16]

In a previous study, the authors reported an advanced maternal age (24–28 years) to be associated with a higher incidence of stillbirths (44.7%), with the majority being illiterate.[2] However, in the present study, stillbirths were reported to be more in the younger (mean [SD]: 22.9 (4.2) years) age group as well as in literate mothers (67.8%). Education stands as an important factor as the mother has to actively deal with the pregnancy, its outcome, the related complications, and is the main caregiver to her newborn. Some studies report factors such as domestic violence, first birth, lack of maternal education, poor socioeconomic status, and anemia to be associated with a higher stillbirth incidence.[17,18]

Adequate antenatal care is an essential intervention so as to prevent and timely identify the high-risk maternal group. A study reported in spite of ANC visits and a majority of them receiving iron folic acid (IFA) tablets only 59.3% of the women delivered in a health care facility.[10] However, in the present study, 72.7% of pregnant women had at least 1 ANC and were taking IFA tablets. In the present study, 68.5% of the women in the HPDs of Odisha had institutional delivery, a proportion similar to that reported in a survey in the Bihar state from the year 2011 to 2014.[10] While a study in Delhi reported that of 20580 deliveries in the hospital, 600 (2.9%) were stillborn.[2] Other studies do indicate the importance of institutional delivery and health-care personnel's assistance for a safe delivery under aseptic condition.[10,15]

Like a previous study, the majority of the stillbirths were delivered by vaginal mode.[2] The stillbirths in the present study were mostly due to eclampsia followed by antepartum hemorrhage (APH), which is in agreement with a study from Bangladesh,[19] while another study reported preterm labor, pregnancy with twins or triplets, and placenta abruption as the major causes.[11] Our findings on fetal causes of stillbirth like congenital anomaly are in accordance with a previous study, where 9.3% of cases of stillbirth were due to fetal birth defects.[2]

Conclusions

The factors that contributed to most stillbirths in the present study were pregnancy at an early age, eclampsia, APH, low birth weight, and delivery without an episiotomy. The myriads of adverse pregnancy outcomes resulting from the lack of awareness and negligence could be effectively prevented by better access to health-care system and personnel. The absence of any improvement in stillbirth statistics could be due to the lack of interaction with and unavailability of health personnel (doctors, Anganwadi workers, and accredited social health activists), referral bias, or strong traditional beliefs.

Acknowledgment

The authors are grateful to the Government of Odisha, Health and Family Welfare Department, for providing financial assistance toward this SB audit. The authors are also thankful to the SB audit team for their hard work together with the information and our heartfelt thanks to Dr. A.K. Sen, UNICEF, for coordinating all the work with the Government of Odisha.

Table 1: Strengths, Weaknesses, Opportunities, and Threats analysis at baseline

Strengths
The Odisha state administration is committed for proper review on prevalence of stillbirth with provision to extend and support intersectoral collaboration
The Government of India guidelines have been implemented in the state and are followed
The electronic and print media in Odisha state have been actively reporting the cases of stillbirth, thereby keeping the issue in limelight and thus creating pressure on the government to undertake appropriate steps to reduce the case incidence
Posting of doctors in rural areas of the state has been made mandatory
Weaknesses
Monitoring of stillbirths in the state is not successful due to some lacunae case reporting
No strict and regular surveillance to assure the quality of service being provided in the health-care facilities including that from the private facilities of the state as well
There is no provision of technical guidance to districts (deficient to report and monitor stillbirth case, health staffs not sensitized regarding their roles, and poor record keeping) and no improvement in HMIS
Unfortunate inability of the health-care staffs to interfere in the traditional belief of the community (lack in BCC)
Lack in antenatal registration with the health-care institutes is a drawback
Opportunities
Greater opportunity in the area of perinatal death surveillance
There is opportunity to regulate health sector service quality and workforce for reducing burden of stillbirth
Threats
There is a nonconfidential existence of stillbirth reviewing process at district level due to various reasons
The laxity of media (print and electronic) to hype and blame hospitals and dramatize its incidence, creates fear among the staff to report such cases

HMIS: Health Management Information System, BCC: Behavior change communication

Financial support and sponsorship

This study was supported by the Government of Odisha, Health and Family Welfare Department. However, the funder has no role in the study design, conduction, and publication process.

Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organization. Neonatal and Perinatal Mortality: Country, Regional and Global Estimates. World Health Organization; 2006. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.111.5782&rep=rep1&type=pdf. [Last accessed on 2020 Apr 04].
2. Singh A, Kumar M. An analysis of cause of stillbirth in a tertiary care hospital of Delhi: A contribution to the WHO SEARO Project. J Obstet Gynaecol India 2019;69:155-60.
3. Tavares Da Silva F, Gonik B, McMillan M, Keech C, Dellicour S, Bhange S, *et al*. Stillbirth: Case definition and guidelines for data collection, analysis, and presentation of maternal immunization safety data. Vaccine 2016;34:6057-68.
4. Lawn JE, Blencowe H, Waiswa P, Amouzou A, Mathers C, Hogan D, *et al*. Stillbirths: Rates, risk factors, and acceleration towards 2030. Lancet 2016;387:587-603.
5. Black RE, Cousens S, Johnson HL, Lawn JE, Rudan I, Bassani DG, *et al*. Global, regional, and national causes of child mortality in 2008: A systematic analysis. Lancet 2008;375:1969-87.
6. Singh SK, Kaur R, Prabhakar PK, Gupta M, Kumar R. Improving perinatal health: Are Indian health policies progressing in the right direction? Indian J Community Med 2017;42:116-9.
7. Yewale VN. Indian Academy of Pediatrics, integral part of India newborn action plan. Indian Pediatr 2014;51:861.
8. Kalter HD, Salgado R, Babille M, Koffi AK, Black RE. Social autopsy for maternal and child deaths: A comprehensive literature review to examine the concept and the development of the method. Popul Health Metr 2011;9:45.
9. Kuruvilla S, Bustreo F, Kuo T, Mishra CK, Taylor K, Fogstad H, *et al*. The Global strategy for women's, children's and adolescents' health (2016–2030): A roadmap based on evidence and country experience. Bull World Health Organ 2016;94:398.
10. Dandona R, Kumar GA, Kumar A, Singh P, George S, Akbar M, *et al*. Identification of factors associated with stillbirth in the Indian state of Bihar using verbal autopsy: A population-based study. PLoS Med 2017;14:e1002363.
11. Stillbirth Collaborative Research Network Writing Group. Causes of death among stillbirths. JAMA 2011;306:2459-68.
12. Gardosi J, Mul T, Mongelli M, Fagan D. Analysis of birthweight and gestational age in antepartum stillbirths. Br J Obstet Gynaecol 1998;105:524-30.
13. Lawn JE, Blencowe H, Oza S, You D, Lee AC, Waiswa P, *et al*. Every Newborn: Progress, priorities, and potential beyond survival. Lancet 2014;384:189-205.
14. Chou D, Daelmans B, Jolivet RR, Kinney M, Say L; Every Newborn Action Plan (ENAP) and Ending Preventable Maternal Mortality (EPMM) working groups. Ending preventable maternal and newborn mortality and stillbirths. BMJ 2015;351:h4255.
15. Ministry of Health and Family Welfare, Government of India. INAP: India Newborn Action Plan-24; September 2014. Available from: https://www.newbornwhocc.org/INAP_Final.pdf. [Last accessed on 2020 Apr 04].
16. Mondal D, Galloway TS, Bailey TC, Mathews F. Elevated risk of stillbirth in males: Systematic review and meta-analysis of more than 30 million births. BMC Med 2014;12:220.
17. Ahmed S, Koenig MA, Stephenson R. Effects of domestic violence on perinatal and early-childhood mortality: Evidence from north India. Am J Public Health 2006;96:1423-8.
18. Bari W, Chowdhury RI, Islam MA, Chakraborty N, Akhter HA. The differentials and determinants of perinatal mortality in rural Bangladesh. Eur J Contracept Reprod Health Care 2002;7:216-22.
19. Halim A, Aminu M, Dewez JE, Biswas A, Rahman AK, van den Broek N. Stillbirth surveillance and review in rural districts in Bangladesh. BMC Pregnancy Childbirth 2018;18:224.