

Quality in neonatal mortality audits: Results of pilot study from district of Dhule, Maharashtra

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ABSTRACT

Introduction: As per WHO guidelines, it is important to have quality among mortality audit documents to improve outcome in health services. **Objective:** To assess quality of facility-based neonatal mortality audits implementation. **Methodology:** Mixed-method descriptive analysis was conducted. Totally, 96 death review documents were reviewed. The 25 healthcare workers were interviewed in depth. Observation analysis done for audit meetings using WHO modified checklist for quality in audit toolkit. **Results:** The observation of audit meetings highlighted that almost half of the members were not communicated regarding vision of audit and framework of audit and review meetings. In quantitative analysis, it was found that secondary care hospitals were not having accuracy and consistency in audit documentation. **Conclusion:** The quality of neonatal death audit was poor due to challenges faced by the hospitals in creating an enabling atmosphere, which can be overcome by sharing the vision of audit with the whole staff of the hospital. A standard operating procedure for audit committee to be adopted to implement action plans. Commitment, investment, and intentional leadership from everyone, including all healthcare workers, can make these ambitious goals attainable.

Keywords: Action plans, audit, mixed-method study, quality, standard operating procedure

Introduction

Audit is one of the components in continuous quality improvement process.^[1-4] It requires the support of all staff.^[2] Mortality audit has been an important factor to assess the quality of health care services for the vulnerable population.^[3] The end point of audit cycle is implementation of resolutions to improve health services.^[4] To conduct an effective audit at all the levels of healthcare delivery system, an operational framework implementing a system with monitoring and evaluation is required. In 2016 World Health Organization

published guidelines to assist facilities in implementation of quality audits.^[5,6]

Primary healthcare providers and Doctors at primary care level are usually the one who are responsible for service delivery and implementation. They are at the same time are also responsible to find out the gaps in the system. Regular audit conduction and ensuring participation of primary care providers in the audit process not only create a sense of completeness while assessing the quality of services but also help to improve the process and outcome of service.

Aim and Objective

To assess the quality of the facility based neonatal death audit implementation in four hospitals of Dhule, Maharashtra, India, based on the WHO audit guidelines.

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Received: 24-01-2023

Revised: 08-06-2023

Accepted: 09-06-2023

Published: 30-09-2023

Access this article online

Quick Response Code:



Website:
<http://journals.lww.com/JFMPC>

DOI:
10.4103/jfmprc.jfmprc_178_23

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How to cite this article: Pande BS, Patel AR, Patil AJ, Patel S, Shaikh MU. Quality in neonatal mortality audits: Results of pilot study from district of Dhule, Maharashtra. J Family Med Prim Care 2023;12:2032-5.

Materials and Methods

After taking ethical approval from institutional ethics committee, this study was conducted.

Ethical approval—POA/12/10/2021 from ACPM Medical College, Dhule.

Study type—Mixed-method multicentric and multiphase descriptive study.

Study area—Two tertiary care hospitals (500 bed inpatient capacity) and two district hospitals (Sakri and Dhule) in the rural field practice areas of the above two tertiary care hospitals.

Study Duration—12 months—from October 24, 2021, to October 25, 2022.

Study population—Healthcare workers of pediatrics and neonatal wards and of NICU, Medical officers, persons concerned with neonatal care.

Sample size—25 participants.

Secondary data analysis of 96 death audit forms (neonatal death occurred during November 2021 to June 2022).

Sampling method—complete enumeration technique/ convenient sampling for in depth interviews of staff and death review secondary analysis.

Study tools—Modified validated tool from WHO toolkit for Audit meeting observation checklist Review of neonatal death audit documents and forms for reporting, action plans.

Data collection and analysis—After ethically approved informed consent data about frequency of death audit meetings, frequency of death audited and other variables were collected. The qualitative analysis was performed using theme and domain representations. The quantitative analysis was performed using descriptive statistics and Chi-square analysis.

Standard definitions—completeness—all parts of audit document filled.

Accuracy—entry of correct information.

Consistency—agreement of information within the form.

Validity—representing what it aims to measure.

Results

Totally, 32 in-depth interviews were analyzed and results divided into two domains: the domain of leadership, and domain of action and implementation.

The first domain included themes viz support from superior, financial support, trust, blame game. The majority of participants stated that with no proper support from district health authority both in terms of manpower and finances, it was difficult to arrange regular meetings and conduct field or facility-based audit.

The second domain of action and implementation highlighted a common theme on unawareness and poor knowledge to conduct death audits. This domain also included absence of protocol or manual at their place to conduct any audit.

Following were the observations of neonatal death audit meetings [Tables 1-3]:

1. Frequency—with monthly meetings in hospital 1 and 2, it was a regular activity. In hospital, 3 and 4 marked variation was seen with no fixed pattern as there was no support from DHS to conduct it properly.
2. Audit Organization—a total of 32 neonatal death audit meetings were observed. Each of the hospitals had a dedicated person to organize it.
3. Perception of healthcare workers towards audit process. Overall, two thirds of the staff were nurses and trainee doctors. Remaining were medical officers. Only 3 participants were from administration.

Discussion

A study performed by Arvidsson E, *et al.*^[7] stated that audit committee members had barriers of adequate knowledge of subject and mechanism of operational team while conducting audit. The fear of blame limits actions at all the levels. This finding is similar to our study; in our study, we found that limited initiative of actions among medical officers. Fowkes FG. conducted a review of medical audit process and they found that the infant and perinatal mortality is most commonly conducted audit in low- and middle-income countries with limited resources to analyze the quality of healthcare delivery.^[8] In our study, we found that majority of participants were acknowledging the fact that audit will result in the improvement of healthcare service delivery. A qualitative study conducted by Gondwe MJ *et al.*^[9] in the year 2022, titled as Quality of stillbirth and neonatal death audit in Malawi: A descriptive observational study had findings that higher levels of shared vision among departmental staff for audit quality than our study. In our study, majority of participants were untrained for audit. This unshared vision and untrained staff can be the reason for poor scores in audit meetings in our study. A study performed in 2015 by Stratulat P *et al.*^[10] published as The experience of the implementation of perinatal audit in Moldova showed that barriers in death audit was incompleteness and overburden on the existing system of health which is similar to our study. In our study, death audit documents were incomplete and during in depth interview it was due to excessive workload on the staff and unavailability of dedicated and trained manpower for it. Krug A *et al.*^[11] conducted a study on audit of under-five children death in Africa and they found that a screwed auditor to population ratio results into poor quality of audit. In the year 2015, Biswas A *et al.*^[12] conducted a facility death review

Table 1: Death audit documents review

Components	Hospital 1	Hospital 2	Hospital 3	Hospital 4
Availability of data collection form as per SBNMR guidelines of India*	Yes	Yes	Yes	Yes
Availability of reporting template of verbal autopsy form by health care worker	Yes	Yes	No	No
Follow-up records of action plans or forms detailing of proposed solution was implemented	Yes	Yes	No	No
National audit guidelines	No	No	No	No
Total neonatal death (96)	42	38	8	8
Utilization of ICD coding on death audit (any 10 or 11 revision) (62)	30	32	0	0
Total Neonatal death reviewed in meeting	18	29	8	8
Total number death audit meetings during study period	8	8	8	8
Total no of deaths with modifiable factors to propose action plans	4/18=22.22%	4/29=13.7	2/8=25%	2/8=25%

*SBNMR: Still birth and neonatal mortality rate; ICD: International classification of diseases

Table 2: Quality of completed audit forms (n=30)

Components	Hospital 1	Hospital 2	Hospital 3	Hospital 4
Audit forms	42	38	8	8
Completeness				
Excellent	87%	88%	56%	60%
Good	9%	9%	33%	29%
Unsatisfactory	4%	3%	17%	17%
Mean score and SD	82.4 (6)	84 (7)	84.6 (14)	84 (14.5)
Accuracy				
Excellent	94%	96%	66%	73%
Good	4%	2%	22%	22%
Unsatisfactory	2%	2%	12%	15%
Mean score and SD	89.4 (6)	89 (4)	88 (14)	87 (12)
Consistency				
Excellent	80%	83%	50%	53%
Good	16%	14%	32%	27%
Unsatisfactory	4%	3%	18%	20%
Mean score and SD	88.7 (4)	86 (4.6)	88 (13)	87 (11)
Validity				
Excellent	87%	88%	65%	65%
Good	9%	10%	17%	18%
Unsatisfactory	4%	2%	18%	17%
Mean score and SD	84.3 (7)	81.7 (7)	83 (14)	85 (11)

The following scoring system was used, Score of excellent 100% was assigned to complete accurate consistent and valid forms. Score of 75% or good was assigned if <5 items are missing the above description. Score of 50% or unsatisfactory was assigned if >5 items are missing the above description

Table 3: Quality of neonatal death audit meetings

	Hospital 1	Hospital 2	Hospital 3	Hospital 4
Circular and notice for meeting	Yes	Yes	Yes	Yes
Enabling atmosphere	Yes	Yes	No	No
Staff and representative attendance	Partial	Partial	Partial	Partial
Review of previous meeting	Partial	Partial	No	No
Review of action plans	No	No	No	No

of neonatal deaths in Bangladesh. They found that the shame and blame game atmosphere are derogatory and leads to low reporting and incomplete audit at secondary and primary levels of health care. An enabling atmosphere ensured that the quality of care improves as an outcome of audit. In our study, staff was co-operative and supportive to each other, but due to lack of training there was

gap of responsibility towards audit and this has resulted in hostile environment. Pattinson R *et al.*^[13] published a study called Perinatal mortality audit: counting, accountability, and overcoming challenges in scaling up in low- and middle-income countries in the year 2009 and found that the regular audit process with modifiable factors to prevent mortality led to formation of an action plan. Implementation and review of action plan at various meetings leads to improved care to society. In absence of enabling atmosphere and instruments to conduct audit, it created lack of review in next meeting. We also found that the summary of proposed action and review during meeting for action plan was not present due to unawareness among the participants about its importance. Bhutta ZA, *et al.*^[14] in the year 2014 in their published article “Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost?” stated that the cost of audit for continuous quality improvement is negligible when considering the cost involved with curative components of children death. This finding was similar to our study where all participants unanimously agreed that to prevent death of neonates if adequate interventions are placed timely then it is economically better for society. Akseer N, *et al.*^[15] in their study called “Ending preventable newborn deaths in a generation.” in 2015 supported that assigning a review meeting and action plan implementation is key to bring radicle change in case of mortality and morbidity audits. In our study, participants agreed that the audit committee need to ensure the follow up at all levels of audit.

As it was observed in the study that at every level active participation has to be ensured while conducting audit of health care service delivery. It was observed that in the healthcare delivery chain, primary care doctors need to have good knowledge of international classification of disease and coding to guide the other health workforce. Audit report acts as gap analysis report for administrative purpose, whereas the qualitative approach in it helps to identify the challenges faced by primary care providers when actual implementation is carried out. This study shows that majority of participants for audit meetings were medical officers and they are unaware of the steps and importance of audit to improve the service delivery.

Conclusion

The quality of neonatal death audit was poor due to challenges faced by the hospitals in creating an enabling atmosphere.

An enabling atmosphere can be created by sharing vision of audit with all the staff of the hospital. Training sessions on data collection for audit should be organized regularly by audit committee. To meet the targets of ten or fewer neonatal deaths and ten or fewer stillbirths per 1000 births in every country by 2035 will demand fast-tracked scale-up of the most effective care targeting major causes of newborn deaths.

Adherence to national and WHO guidelines will bring more quality in audit cycle will help to place a uniform system of audit. A standard operating procedure for audit committee to be adopted to implement action plans. A follow up responsible person of authority not only helps to streamline the work of audit but also helps to ensure continuous quality healthcare services.

An active participation from primary care providers and primary care doctors in the audit committee indicates the involvement and commitment towards the national goal. The process of audit helps to gain insight of gaps in the system and helps service delivery.

Key message

A regular audit process can help to identify gap between service provisions and delivery at all levels of healthcare system.

Recommendation

Commitment, investment, and intentional leadership from all the community and institutional stakeholders and audit committee members can identify the gaps in service delivery through audit and can make the ambitious goal of ending preventable deaths of newborns and children under 5 years of age, attainable.

Limitation of the study

Results of this study are encouraging to conduct multicentric study all over Maharashtra.

Relevance of the study

To implement Kayakalp project in Maharashtra and to strengthen quality of health services this audit brings to notice gaps in the system.

Acknowledgement

We acknowledge the support of staff of hospital and institutions. We thank Head and professor of community medicine department.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organisation. Improving the quality of paediatric care: An operational guide for facility-based audit and review of paediatric mortality Geneva; 2018. Report No.: ISBN 978-92-4-151518-4. Available from: <https://www.who.int/publications/i/item/9789241515184>.
2. Making Every Baby Count: Audit and Review of Stillbirths and Neonatal Deaths. WHO Press; 2016. Available from: <https://www.who.int/publications/i/item/9789241511223>. [Last accessed on 2022 Dec 12].
3. SDG Target 3.2.2 End preventable deaths of newborns and children under 5 years of age. WHO Global health observatory. Available from: https://www.who.int/data/gho/data/themes/topics/sdg-target-3_2-newborn-and-child-mortality. [Last accessed on 2022 Dec 28].
4. Zhao M, Vaartjes I, Klipstein-Grobusch K, Kotseva K, Jennings C, Grobbee DE, *et al.* Quality assurance and the need to evaluate interventions and audit programme outcomes. *Eur J Prev Cardiol* 2017;24 (3 Suppl):123-8.
5. Meet the data quality dimensions: Measurements driving continuous improvement. UK government data quality hub. Published 24 June 2021. Data quality dimensions; [about 4 screens]. Available from: <https://www.gov.uk/government/news/meet-the-data-quality-dimensions>. [Last accessed on 2022 Dec 24].
6. Drife JO. Perinatal audit in low-and high-income countries. *Semin Fetal Neonatal Med* 2006;11:29-36.
7. Arvidsson E, Dahlin S, Anell A. Conditions and barriers for quality improvement work: A qualitative study of how professionals and health centre managers experience audit and feedback practices in Swedish primary care. *BMC Fam Pract* 2021;22:1-3.
8. Fowkes FG. Medical audit cycle: A review of methods and research in clinical practice. *Med Educ* 1982;16:227-38.
9. Gondwe M, Desmond N, Aminu M, Allen S. Quality of stillbirth and neonatal death audit in Malawi: A descriptive observational study. *J Clin Pediatr Neonatol* 2022;2:13-25.
10. Stratulat P, Curteanu A, Caraus T, Petrov V, Gardosi J. The experience of the implementation of perinatal audit in Moldova. *Bjog* 2014;121(Suppl 4):167-71.
11. Krug A, Pattinson RC, Power DJ. Saving children - An audit system to assess under-5 health care. *S Afr Med J* 2004;94:198-202.
12. Biswas A, Rahman F, Eriksson C, Halim A, Dalal K. Facility death review of maternal and neonatal deaths in Bangladesh. *PloS One* 2015;10:e0141902. doi: 10.1371/journal.pone.0141902.
13. Pattinson R, Kerber K, Waiswa P, Day LT, Mussell F, Asiruddin SK, *et al.* Perinatal mortality audit: Counting, accountability, and overcoming challenges in scaling up in low- and middle-income countries. *Int J Gynaecol Obstet* 2009;107(Suppl 1):S113-21, S21-2.
14. Bhutta ZA, Das JK, Bahl R, Lawn JE, Salam RA, Paul VK, *et al.* Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost? *Lancet* 2014;384:347-70.
15. Akseer N, Lawn JE, Keenan W, Konstantopoulos A, Cooper P, Ismail Z, *et al.* Ending preventable newborn deaths in a generation. *Int J Gynecol Obstet* 2015;131:S43-8.