RESEARCH PAPER

Documentation and Reporting of Perinatal Deaths in Two Districts of Karnataka, India: A Situational Analysis

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Objectives: In Karnataka state, perinatal mortality rate is almost equal to infant mortality rate. This preliminary study was conducted in two districts of Karnataka to study potential problems to start of perinatal death audit. **Methods**: Hospitals providing maternal and child health care services, which met study inclusion criteria, in Dakshina Kannada and Koppal Districts were included. Following variables were studied: (*i*) Documentation and reporting systems in these hospitals; (*ii*) Role of health care personnel in documentation and reporting (*iii*) Existing system of audit, if any. **Results**: Totally 94 hospitals met our criteria with Dakshina Kannda District having 63 (67.02%) and the rest in Koppal District. Documentation and reporting was poor in Koppal District and inadequate in Dakshina Kannada district. Health care personnel were apprehensive about perinatal death audit. **Conclusion**: Problems identified need to be addressed before starting perinatal death audit.

Keywords: *Death audit, Infant mortality, Perinatal mortality*.

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Karnataka has shown a reduction of infant mortality rate (IMR) from 71 in the year 1980 to 35 in the year 2011 [1]. The perinatal mortality rate (PMR) has also decreased from 40.2 in the year 1980 to 33.4 in the year 2011 [1]. But the contribution of PMR to IMR in Karnataka has varied from 60 to 70% during this period of time. For reasons that are not clear, the contribution of PMR to IMR in Karnataka has increased from 95 to almost 99% from the year 2011 to 2013 [1]. An audit of perinatal deaths could help in understanding and rectifying the causes for perinatal deaths. However, there is no perinatal death audit system in India. To start a perinatal death audit system, it is essential to carry out a preliminary study exploring the issues and problems that exist to start perinatal death audit. Thus, a preliminary study would help understand the problems that need to be addressed to start a perinatal death audit system.

The maternal and child health care facilities are not uniformly developed in Karnataka; the northern districts lag behind the southern districts [1]. The issues and challenges to starting a perinatal death audit in a relatively backward northern district of Karnataka may not be the same as compared with a better developed southern district. We conducted this study to enlist the problems, if any, in starting a perinatal death audit in two different districts of Karnataka.

METHODS

This descriptive study was a part of a three-year interventional project conducted in two districts of Karnataka in the year 2015. The initial pre-interventional survey was carried out over one year. Dakshina Kannada district located in southern Karnataka is well developed with much better facilities as compared with Koppal district from the northern part, which is considered as one of the five backward districts of Karnataka [2,3].The entire system involved in documentation and reporting perinatal care in both the districts of Karnataka were explored and documented. All government hospitals and those private hospitals which provided maternal and child health services with any one or more facilities for conducting: (*i*) normal delivery (*ii*) high-risk delivery, and (*iii*) normal and high-risk neonatal care were included for the study.

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The components of perinatal care documentation system included for the study were documentation and reporting systems (like documentation of the case related information, and reporting system); and the role of healthcare personnel involved in perinatal care in documenting and reporting of perinatal deaths. Details of the documentation and reporting systems considered for the study were as follows: Presence of registries for

documenting deaths, death certificates, person filling the death certificates, case sheets, person preparing the case sheets, registries for documenting data from field area covered by that government hospital, routine reporting (like weekly reports, monthly reports, nil reports), and maintenance of records in the hospitals.

Apart from the information available about the components mentioned above, some non-governmental organizations (NGOs) in both the districts were also contacted. These NGOs have a system of tracking infant deaths by gathering information from house-to-house visits. This helped to cross-verify the information about perinatal deaths from the government and private hospitals.

Semi-structured checklists were developed to record all the components of the documentation and reporting systems mentioned above. These semi-structured checklists were pre-tested in neighboring district of Udupi to know the feasibility and appropriateness for use. Some open-ended items were introduced so that any other relevant observation could be documented.

Permission was obtained from the Government of Karnataka to conduct the study. The district commissioners of the two districts were directed by the state government to provide the necessary administrative support for the study. Four qualified medical social workers who were trained to fill the checklists collected the data by visiting the health care facilities. They filled the semi-structured checklists by a combination of observation and interaction with the doctors and support staff present in the hospitals. The filled checklists were scrutinized by the investigators. In case of any queries, the healthcare facilities were approached more than once to collect the data.

The filled forms were studied, and discussions conducted by the investigators to arrive at solutions for improving the documentation and reporting of perinatal deaths. The qualitative data is presented in numbers and percentages.

Table I Details of the Government and Private Hospitals that Met the Study Criteria in Two Districts of Karnataka

Type of health-care facility	*Koppal district (n=63)*	*Dakshina Kannada district (n=31)*	*Total*
Government hospitals			
PHCs	4	7	11
CHCs	1	3	4
District hospital	1	1	2
Private hospitals	25	52	77

**PHCs: Primary health centres; CHCs: Community health centres.*

RESULTS

The details of the institutions that met the study criteria are presented in ***Table* I**. Most hospitals in Koppal (29, 93.5%) did not maintain case sheets. Most hospitals in Dakshina Kannada maintained case sheets (60, 95.2%), but in majority the records did not have clinical information necessary to carry out the audit. When present, the details in case sheets were not legible.

In Koppal district, the documentation was almost non-existent in private hospitals; most (21, 67.7%) did not document any perinatal deaths. Based on the information collected from the NGOs of that area, when the hospitals were asked about such deaths, they verbally confirmed it. But there were no written/documented details. As the hospitals did not document these, they did not report to the authorities. Government hospitals also did not have adequate information. They did not report all the neonatal deaths. Register for documenting first information report (FIR) of neonatal deaths in Koppal district hospital was not available. In Dakshina Kannada district, documentation was much better and the district hospital maintained death registry for documenting FIR of perinatal deaths.

Table II Functioning of Existing Neonatal Death Audit System in Both the Districts

Indicator of functioning of existing audit system	*Dakshina Kannada district*	*Koppal district*
Statistics and line listing of deaths at district level	Maintained	Maintained
Proceedings of death audit meetings, (if any)	Not available	Not available
Feedback sent after the audit, (if any)	Not available	Not available
Number of FBDR carried out in the hospitals	No data available	No data available
Reports received from private and public institutions and copies of the FBDR	No data available	No data available
Registries maintained in district health officer (DHO) office	Yes	No
Guidelines for FBDR received from Government of Karnataka maintained in the DHO office	Yes	No

FBDR: Facility based death reviews.

Most of the doctors in both the districts were not aware of the existence of a separate death certificate for documenting perinatal deaths. Medical officers in charge of government hospitals did not pay attention to weekly or monthly reporting of neonatal deaths, still births and perinatal deaths. Some of them had delegated the responsibility of filling the registries to the nursing staff.

At the time of start of this study, there was no perinatal death audit system in both the districts. However, neonatal deaths were audited as part of infant death review as per National Health Mission (NHM) guidelines. Verbal autopsies were done to some extent. There was no auditing of fetal deaths in antenatal period. However, the facility-based death review (FBDR) began much later after our study project was underway. FBDR was introduced by the government as a part of child death reporting. According to it following activities had to be undertaken: (*i*) the deaths are expected to be discussed at all the facilities, (*ii*) report sent to the district health office, and (*iii*) district health office collects verbal autopsy reports and sends the summary for line-listing of neonatal deaths to the state health department. These activities were not being done fully. The functioning of existing neonatal death audit system in both the districts is shown in ***Table* II**.

Box 1 Suggested Solutions for Starting Perinatal Death Audit

Improving documentation at the hospitals

- It should be made mandatory for the doctors to fill all the case sheets pertaining to maternal and neonatal care provided in the hospitals.
- Maintenance of separate file for keeping copies of all the case sheets pertaining to perinatal deaths
- To maintain a registry with contact details of the parents would help in cross-verification and clarification if needed.
- Prompt weekly / monthly reporting of all the perinatal deaths in hospitals to the District health officer (DHO) would be required.

Improving the role of health care personnel

- Doctors should be trained to fill the separate perinatal death certificates.
- Doctors should fill all the details in the case sheets.
- In private hospitals, nurses should be made in charge of maintaining registries and sending routine reports.
- In government hospitals clerks should be in charge of maintaining registries and routine reporting to the District health officer.
- About perinatal deaths occurring in the community, nurses in government hospitals who are in charge of covering the population in the field area (designated for that hospital) should prepare and provide a First information report (FIR) to the hospital of all the perinatal deaths that occurred in their field area.
- Information about perinatal deaths occurring in the community (outlined above) could be used to update the registries in the government hospitals.

Improving the reporting system in the district

- District health officer (DHO) (alternatively known as Civil surgeon) should make it mandatory for all the hospitals to report at least once in a fortnight including nil reporting.
- DHO should designate a Taluka medical officer (alternatively called Block Medical Officer) to scrutinize all the death certificates and case sheets. This should preferably be done by Medical officer in charge of implementing Reproductive child health programme in the district.
- This officer should also seek and obtain information from all the NGOs tracking infant deaths in the district. · A clerical staff member should be designated to update the registries and prepare monthly reports of all the reported perinatal deaths in the district.
- Proceedings of all the facility-based death reviews carried out every month should be documented and kept in a separate file. Copy of feedback, if any, sent to the hospitals (Government or private) should be kept in the DHO office.

Enhancing compliance with reporting system at the district level

- Training programme covering perinatal death auditing, writing death summaries, filling perinatal death certificates and reporting formats doctors.
- At the time of training, apprehensions about implications of auditing among health care personnel should be addressed. This will help remove fear and improve compliance.

WHAT THIS STUDY ADDS?

Improvements in documentation and reporting systems are required to initiate the perinatal death audit system in the Districts covered in this survey.

DISCUSSION

The documentation and reporting of perinatal deaths in Dakshina Kannada and Koppal districts was found to be sub-optimal in this study. A review of studies on under-reporting indicates that, while both live births and neonatal deaths may be underreported, fetal deaths are much more likely to go unreported [4,5]. Reports from developed countries show that incomplete reporting of vital events varied from 10-30% [6-8].

Based on the problems identified by this study, we identified four categories of solutions for starting perinatal death audit (***Box* 1**). Starting a perinatal death audit would help in knowing causes, identifying problems that need to be solved and help arrive at solutions. Such a system would help identify 'preventable' perinatal deaths. Targeting and reducing preventable perinatal deaths should be a priority. Though neonatal mortality declined from 31 in 2011 to 24 in 2017, it has reduced just one point per year [9], and we do not know what proportion of these were preventable perinatal deaths. A survey of maternal and neonatal care facilities in these two districts has revealed deficiencies in managing high risk cases [10]. Even though efforts are being made to improve health care infrastructure under National Health Mission (NHM), poor healthcare infra-structure and inefficiency in the healthcare delivery in rural areas has been reported [11]. Considering the fact that deficiencies exist for managing high-risk cases, it is certain that some perinatal deaths are preventable [10]. The prerequisites *i.e.*, documentation, record keeping, and reporting would help to start perinatal death audit and identify preventable perinatal deaths, apart from providing inputs for planning intervention strategies.

This study was limited to only two districts of Karnataka. As most of the hospitals in Koppal district did not document and report, further details like errors in filling up of case sheets and death records could not be identified. However, inclusion of one district from well-developed southern part and one from backward northern part of Karnataka shows that the problems identified are similar.

Our findings suggest that the healthcare personnel have to be trained for documentation and reporting, before introducing perinatal death audits.

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REFERENCES

1. Registrar General of India. Sample registration system (SRS) statistical report 2013, New Delhi.Available from: *http://www.censusindia.gov.in/vital_statistics/Compendium/Srs_data.html*.Accessed August 02, 2018.
2. Registrar General of India. Census of India 2011: District Census Handbook Dakshina Kannada. Directorate of Census Operations, Karnataka. Available from: *http://www.censusindia.gov.in/2011census/dchb/2921_PART_A_DCHB_DAKSHINA%20KANNADA.pdf*. Accessed August 02, 2018.
3. Registrar General of India. Census of India 2011: District Census Handbook Koppal. Directorate of Census Operations, Karnataka. Available from: *http://www.censusindia.gov.in/2011census/dchb/2906_PART_A_DCHB_KOPPAL.pdf*. Accessed August 02, 2018
4. Greb AE, Pauli RM, Kirby RS. Accuracy of foetal death reports: Comparison with data from an independent stillbirth assessment program. Am J Public Health. 1987; 77:1202-06.
5. Harter L, Starzyk P, Frost F.A comparative study of hospital foetal death records and Washington State fetal death certificates.Am J Public Health. 1986;76:1333-4.
6. Tafforeau J, Van Oyen H, Mme Drieskens S, Pirenne Y, Deroubaix J, Binon J, *et al.* Naissances, mortalitépérinatale et infantile, statistiques 1987 [Births and perinatal and infant mortality, statistics 1987]. Brussels, Centre de Recherche Opérationnelleen Santé Publique, Direction Générale de la Santé. 1993.
7. McCarthy B, Terry J, Rochat RW, Quave S, Tyler Jr CW, *et al*. The underregistration of neonatal deaths: Georgia 1974-77. Am J Public Health. 1980;70:977-82.
8. Kleinman JC. Underreporting of infant deaths: then and now. Am J Public Health. 1986;76:365-6.
9. Godinho M, Murthy S, Lakiang T, Puranik A, Nair S. Mapping neonatal mortality in India: A closer look. Indian J Community Med. 2017;42:234.
10. Kumar HNH, Baliga BS, Kushtagi P, Kamath N, Rao S. Exploratory study on maternal and child health care facilities in two districts of Karnataka state: A health systems research. Int J Med Public Health. 2018;8:152-57.
11. Upadhyay RP, Chinnakali P, Odukoya O, Yadav K, Sinha S, Rizwan SA, *et al.* High neonatalmortality rates in rural India: what options to explore? ISRN Pediatr. 2012: 968921.