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Situational Analysis of Reporting and Recording of Maternal Deaths in Gandhinagar District, Gujarat State

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Abstract

Background: India accounts for 22% (117,000) of all maternal deaths in the world and 62% of all maternal deaths in South Asia. Death registration in India is patchy, and the number of maternal deaths is under-reported in the country. To know the correct estimates of maternal mortality, it is important to understand the current maternal death-registration system and why and how the current systems under-report maternal deaths.

Objective: Undertake a situational analysis of recording and reporting maternal deaths in Gandhinagar district, Gujarat, India and to suggest improvements in the system for reporting and recording maternal deaths based on the findings

Methodology: This qualitative study was conducted during June-August 2008 and analyzed maternal deaths occurred during April 2007–March 2008. To understand the current reporting system of maternal deaths, semi-structured interviews were conducted with all the concerned officials and offices. Forms and formats relating to death registration and registers containing information on deaths in the villages and towns were studied. Deaths of women in reproductive age group (15-49), reported by the district for the same year were also analyzed. Analysis of 15 verbal autopsy forms filled by the Medical Officers and Block Health Officers was also carried out using Epi Info software. Verbal autopsy method was used for in-depth understanding the circumstances and issues relating to 2 maternal deaths occurred during the study period and its reporting. A group meeting was conducted with Anganwadi workers to understand the reporting of maternal deaths through ICDS.

Results: The District Health Office reported 31,741 live births and 15 maternal deaths for 2007-2008. It was estimated that a minimum of 82 maternal deaths would have occurred during the same period in the district based on corrected estimate of MMR for Gujarat state by SRS 2003. Five maternal deaths were not reported by the district but were reported by the block health office, showing the lack of coordination between two components of the same system. The District Health Office had no readily-available list of maternal deaths. No one was appointed as a nodal person to collect and analyze data on maternal deaths. Only one death

was reported from an urban area having 13,702 live births for the same year meaning MMR of 7.3 per 100,000 live births for urban areas. This shows the amount of under-reporting from the urban area. One maternal death from one urban area was reported by the civil registration system but was not reported by the district health department, showing lack of coordination between the two systems. Private doctors contacted were not aware of their responsibility to report maternal deaths as per the Birth and Death registration Act of India. Discussion with Anganwadi workers revealed pressure from higher officials for not reporting maternal deaths. This is because the officer-in-charge of health centre reporting relatively a large number of maternal deaths faces inquiry and reprimand from the higher authorities. District reported 231 deaths of women in reproductive age group. Expected deaths of women of reproductive age group as per age specific death rates estimated to be 665. This indicated gross underreporting of female deaths by the district.

Conclusion: The results indicate that there is an urgent need to have a nodal person, preferably a qualified demographer at the district level for documenting and reporting maternal mortality. This will improve enumeration and reporting of maternal deaths. There is also an urgent need for creating awareness for registration of maternal deaths in the community and private doctors. Health centres should be encouraged to report correct numbers of maternal deaths.

Key words: Death registration; Maternal morality; Situational analysis; India

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SITUATIONAL ANALYSIS OF REPORTING AND RECORDING OF MATERNAL DEATH IN GANDHINAGAR DISTRICT, GUJARAT STATE

“The data we have are not the data we want. The data we want are not the data we need. The data we need are not available.” Finagel’s Laws¹

A. Introduction

Improving maternal health is the fifth goal among the eight Millennium Development Goals (MDG) adopted following the Millennium Summit. International community committed itself to reducing the maternal mortality ratio (MMR), and set a target of a decline of 75% between 1990 and 2015, within the MDG monitoring framework. . This makes the MMR, a key indicator for monitoring progress towards the achievement of MDG5².

Out of estimated total of 536,000 maternal deaths worldwide, developing countries account for 99% (533,000) of the deaths in 2005. About 50% of the global maternal deaths (270,000) occur in the sub-Saharan Africa region, followed by 35% of maternal deaths (188,000) occur in the region of South Asia².

It is difficult to assess the extent of progress made to achieve MDG5 target, as reliable data on maternal mortality is not available from many countries; developing countries in particular, where maternal mortality is high². In developing countries the system of recording deaths are not working properly, which leads to missing out the deaths occurred in the community. Even if the death is registered the cause of death is not filled properly. Maternal death registration is no exception in such a situation³.

India

India accounts for 22% (117,000) of all maternal deaths in the world and 62% of all maternal deaths in South Asia². Region wise large variation in the maternal mortality is obvious in the country of the size of India. These variations are attributed to variation in underlying access to emergency obstetrical care, percentage of institutional deliveries, prenatal care, anemia rates among women, education levels of women, and other factors. About two-thirds of maternal deaths occur in the Empowered Action Group (EAG) states of – Bihar, Jharkand, Madhya Pradesh, Chhattisgarh, Orissa, Uttar Pradesh, Uttaranchal, and Rajasthan, and also in Assam⁴.

As per estimates from several studies, maternal deaths are declining in India. However, two National Family Health Surveys I and II contradicted this decline. These two demographic surveys indicated that MMR had not changed significantly as the MMR of 424 (95% C.I: 324-524) in 1992-1993 NFHS- 1(National Family Health Survey-1) rose to 540 (95% C.I: 428-653) in 1998-1999 NFHS-2. The confidence intervals were large due to small numbers of maternal deaths included in these surveys. Moreover, these surveys were unable to generate estimates for states and districts⁴. Government of India decided no to attempt estimate MMR through NFHS –3, given such contradictory results from NFHS-I & II. Registrar General of India (RGI) published a report on MMRfor 1997-2003 shows decline in MMR, from 408 to 301 per 100,000 live births⁴.

Gujarat

Gujarat is one of the fastest developing states of India and has played a vital role in country's economic development. Gujarat accounts for only 6% of India's geographical area and 5 % of the population, 21% of Indian exports and 6.4% of GDP are contributed by Gujarat. The economy of Gujarat indicates that it is one of the most prosperous states of the country, having a per-capita GDP 2.47 times India's average GDP⁵.

Table-1: Comparative estimates for MMR per 100,000 live births for India and Gujarat

Year	Gujarat (95% confidence interval)	India (95% confidence interval)	Source
1982-86	373	580	Bhat (2002)
1987-96	596	479	Bhat (2002)
1992-93	378	482	Ranjan (2004)
1992-93	----	424	NFHS-I (1992-93)
1997-1998	46 (19-74)	408	Government of India (SRS-1997-98)
1998-99	----	540	NFHS-II (1998-99)
1998-99	393	466	IIFHW based on NFHS II data
1999	296	396	Ranjan (2004)
1999-2001	202 (141-262)	327 (311-343)	GOI,SRS (2006)
2001-2003	172 (116-228)	301 (285-317)	GOI, SRS (2006)

Despite the economic growth, Gujarat ranks sixth for Human Development Index (HDI) in 2001. Gujarat also lags behind in many health indicators e.g. MMR and ranks well behind

states like Kerala, Tamilnadu, Maharashtra and Haryana for the same as per the Sample Registration System (SRS) report on Maternal Mortality in 2003⁴.

Till date various studies had been conducted for the estimation of maternal mortality in India. A comparative data for India and Gujarat is given in Table 1. Different studies reported different estimates; giving different figures, for example the three studies conducted during the year 1999 put MMR of India at 540, 466, and 396. In which the studies conducted by NFHS and IIFHW use the same data still there is a variation in the estimation of MMR.

Gujarat (as in India) has following systems for recording maternal deaths and compilation of vital statistics.

- A1) Civil Registration System
- A2) Health department MIS
- A3) Sample Registration System (SRS)
- A4) Integrated Child Development Scheme (ICDS)

Here we describe each system in brief.

A.1 Civil Registration System of India

Civil Registration System has been implemented throughout the country as per the Registration of Births and Deaths Act – 1969⁶. Each state government appoints the Chief Registrar of Births and Deaths and is responsible for execution of Act and state Rules made under the act, through out the state. The Chief Registrar of Births and Deaths also compiles and prepares an annual statistical report based on registration data of their state.

Though it is mandatory to register births and deaths in India under the above mentioned law, registration data are yet incomplete in terms of the registration of all events even after 45 years of implementation of the act. This is due to lack of awareness among the people and officials regarding the importance of the registration of vital events, absence of monitoring by any powerful authority and lack of accountability.

Following persons are “duty bound” to notify births and deaths and to certify cause of death at which he or she attended or was present⁶:

- (1) the midwife or any other medical or health attendant at a birth or death;

- (2) the keeper or owner of a place set apart for the disposal of dead bodies or any person required by a local authority to be present at such place;
- (3) any other person whom the State Government may specify in this behalf by his designation

Formats for registration of deaths

There are separate forms for registration of Birth, Death and stillbirth. Death reporting form number 2 for home deaths has two questions which can capture maternal death. Question no 13 is “Name of Diseases or Actual cause of Death (for all deaths irrespective of whether medically certified or not)” which may capture pregnancy or child birth as cause of the death. Question 14 of the death reporting form number 2 is specifically aimed at capturing the maternal death, says that “In case this is a female death, did the death occur while pregnant, at the time of delivery or within 6 weeks after the end of pregnancy” (see copy of the form in Annexure-1-A). For the deaths occurring in the hospitals, separate forms are given to the family by the registration clerk for medical certification of cause of death. Form no 4 is for deaths occurring in the hospitals and form no 4a is for non-institutional deaths, which is returned to the Registrar with medical certification for cause of death dually filled and signed by the doctor (see copy of the forms in Annexure-1-B and 1-C).

BOX 1: Persons who are responsible for registration of vital events

According to “The Registration of Births and Deaths Act,1969⁶” following persons are responsible for registering the births and deaths:

- (1) the head of the house or nearest relative of the head present in the house or oldest adult male person present in the house, if birth or death takes place in a house;
- (2) the medical officer in-charge or any person authorized by him, if birth or death takes place in a hospital, health center, maternity or nursing home or other like institution;
- (3) the jailer in charge if birth or death takes place in a jail;
- (4) the person in charge of the place, if birth or death takes place in a choultry, chattram, hostel, dharmshala, boarding-house, tavern, barrack, toddy shop, or place of public resort;
- (5) the head-man or other corresponding officer of the village in the case of a village and the officer in charge of the local police station elsewhere, if any new-born child or dead body is found deserted in a public place; such person as may be prescribed, if birth and death takes place in any other place.

As per the Gujarat Registration of Births and Deaths Rules, 2004 section 6¹¹, “in respect of a birth or death in a moving vehicle, the person in-charge of the vehicle shall give or cause to be given the information under sub-section (1) of section 8 of the Act at the first place of halt”.

According to The Registration of Births and Deaths Act, 1969, “Chief Registrar shall publish for the information of the public a statistical report on the registered births and deaths during the year at such intervals and such forms as may be prescribed”

A.2 Health department’s information system

State health department has MIS for receiving data related to maternal health from various district. Basic unit for the MIS is sub-center of Primary Health Centers where FHW is responsible for collecting information related to maternal health from the field. FHWs collect the information related to reproductive health indicators through Form No 4, 5 and 6. This information includes number of live births, number of registered pregnant mothers, reports of Ante-natal check up, pregnancy outcome, place of delivery, immunization coverage for children and numbers of maternal and infant deaths. FHWs maintain registers for births and deaths occurring in their practice area. FHWs send the information through monthly report to the Primary Health Centers and PHC in turn send the information to the district health office. Link workers of the Urban Health centers in the towns and cities report information of RCH program for slum areas served by them. Majority of the urban population not living in slum areas are not represented in information system of health department. State and District Health office also prepares 42 indicators for the district and number of maternal deaths is one of the indicators calculated on the basis of reports from the form No 9 of Reproductive and Child Health Program (RCH) program of the PHCs. Reporting system in urban areas is weak compared to rural areas.

In the year 2006 Gujarat government implemented Verbal Autopsy for investigating maternal deaths in structured way⁸. Block health officers investigate the reported maternal deaths using verbal autopsy.

A.3 Sample Registration System (SRS)

Despite of having, a compulsory system of registering birth & death under the Registration of Births & Deaths Act, 1969, the level of registration continued to be far from satisfactory in several states and Union Territories. With a view to generate reliable and continuous data on these vital indicators, the Office of the Registrar General, India, initiated the scheme of sample registration of births and deaths in India popularly known as Sample Registration System (SRS) in 1964-65 on a pilot basis and on full scale from 1969 -70. Since then, SRS has been providing data on regular basis⁹.

The main objective of SRS is to provide reliable estimates of fertility, mortality and other advanced indicators for the rural and urban areas at the state and national level⁸. SRS produces Crude Birth Rate (CBR), Crude Death Rate (CDR), and Infant Mortality Rate (IMR) data by state, sex and place of residence (urban/rural) every year. From 1997 to 2003 SRS has conducted special surveys for estimating maternal mortality in the country⁴.

A.4 Integrated Child Development Scheme (ICDS)

Primary objective of ICDS is to improve nutritional status of children less than six years of age and mothers. Apart from routine data on under nutrition and supplementary nutrition, Anganwadi workers (AWW) also capture births, and deaths occurring in the area covered by the anganwadi. AWW reports all infant deaths, child deaths and maternal deaths occurring in their area. Often AWW share this information with FHW from the health department to prepare a common list of births and deaths. However, deaths data and especially maternal deaths data are not reported by ICDS as it is not a priority data for ICDS.

B. Methods

Objectives of the study:

- 1) Situational analysis of reporting and recording of maternal deaths in Gandhinagar district, Gujarat, India
- 2) To find out the amount and reasons of underreporting of maternal deaths in Gandhinagar district, Gujarat, India

Study design: Both qualitative and quantitative methods were used for the study.

Study period: Maternal deaths and deaths of women in reproductive age group (15-49 years) reported by health department during April 2007- March 2008 were analyzed.

Study Area: Gandhinagar district which also the capital city of the state is located in the central Gujarat and in western India. It is one of the smaller districts of Gujarat state covering total land area of 1625 sq km. The mid year population of the district for the year 2007 was 1.58 million, around 3% population of the Gujarat state for the same year¹⁰. It is administratively divided in to the four blocks namely Mansa, Kalol, Gandhinagar and Dehgam and it has four important towns namely Gandhinagar, Kalol, Mansa and Dehgam.

There are 312 villages in the district¹⁰. Box 1 given below gives the public health infrastructure of Gandhinagar district.

Box-2. Public Health facilities in Gandhinagar District¹⁰

Hospitals – 3
Sub divisional hospitals - 4
Community Health Centers (CHC) – 6
CHC upgraded as FRU – 3
Primary Health Centers (PHC) – 24
24 by 7 PHC – 7
Sub centers – 175.

Following officials and offices were contacted for the information on reporting and recording of maternal deaths in the Gandhinagar district.

- District Health Officer & Registrar of Birth and Death, Gandhinagar district
- Block Health Officers,
- Chief Officers of town offices of Kalol and Mansa',
- Medical officers of Primary Health centers of Gandhinagar district,
- Private Gynecologists of Kalol, Mansa, Dehgam and Gandhinagar cities,
- Female Health Workers and Anganwadi workers at village level,
- Talati for registration of Birth and death at village level,
- District Hospital, Gandhinagar,
- Community Health Centers at Mansa, Dehgam, Nardipur,
- Municipal Hospital, Kalol,
- Child development project officers (CDPO) of all blocks were contacted.

Information was collected from forms and formats related to death registration, and registers having information of deaths in the villages and towns. Unstructured interviews of all the officials mentioned above were conducted to understand the current system of reporting of maternal deaths. Investigators conducted verbal autopsy for the two maternal deaths occurred during study period and were analyzed to understand the circumstances and issues related to maternal death and its reporting. Investigators also attended the monthly meeting of Anganwadi workers to understand the reporting of maternal deaths at village level. Deaths of women of reproductive age group reported by Female Health Workers (FHW) for the rural area of the district during study period were also analyzed for estimating maternal deaths.

Teams also visited registration offices of town, notified city area, burial places and funeral grounds.

C. Observations

C.1 Reporting and recording of maternal deaths

C1.1 Civil Registration System

As per Annual statistical report of Government of Gujarat, 2006 only 76% of total deaths occurring in the state are registered⁷. Out of these reported deaths 38% of total reported deaths are of women. Table 2 and Table 3 shows the year wise total deaths and maternal deaths respectively for Gujarat from the year 2002-2006.

Table-2: Year wise registered deaths and Death Rate, Gujarat, 2002 to 2006⁷

Year	Number of deaths			Death Rate per 1000 population		
	Rural	Urban	Total	Rural	Urban	Total
2002	132632	100329	232961	4.11	5.17	4.51
2003	146501	111013	257514	4.48	5.58	4.90
2004	158076	116484	274560	4.74	5.68	5.10
2005	129880	120377	250257	3.80	5.70	4.50
2006	152811	143995	296806	4.50	6.70	5.40

Table-3 Year wise registered maternal deaths and MMR, Gujarat, 2002 to 2006⁷

Year	Number of Maternal deaths			MMR per 100,000 live births		
	Rural	Urban	Total	Rural	Urban	Total
2002	541	505	1046	93	98	96
2003	400	372	772	69	72	70
2004	514	163	677	80	27	54
2005	652	681	1333	120	112	116
2006	148	1552	1700	26	231	136

The maternal deaths registered in the rural areas are comparatively less against the deaths registered in urban areas due to the fact that most maternal deaths occur at city hospitals (Table-3). Another reason behind this may be lack of registration of the maternal deaths in rural areas. Most of these deaths might have occurred in homes which is why it is not registered with the system.

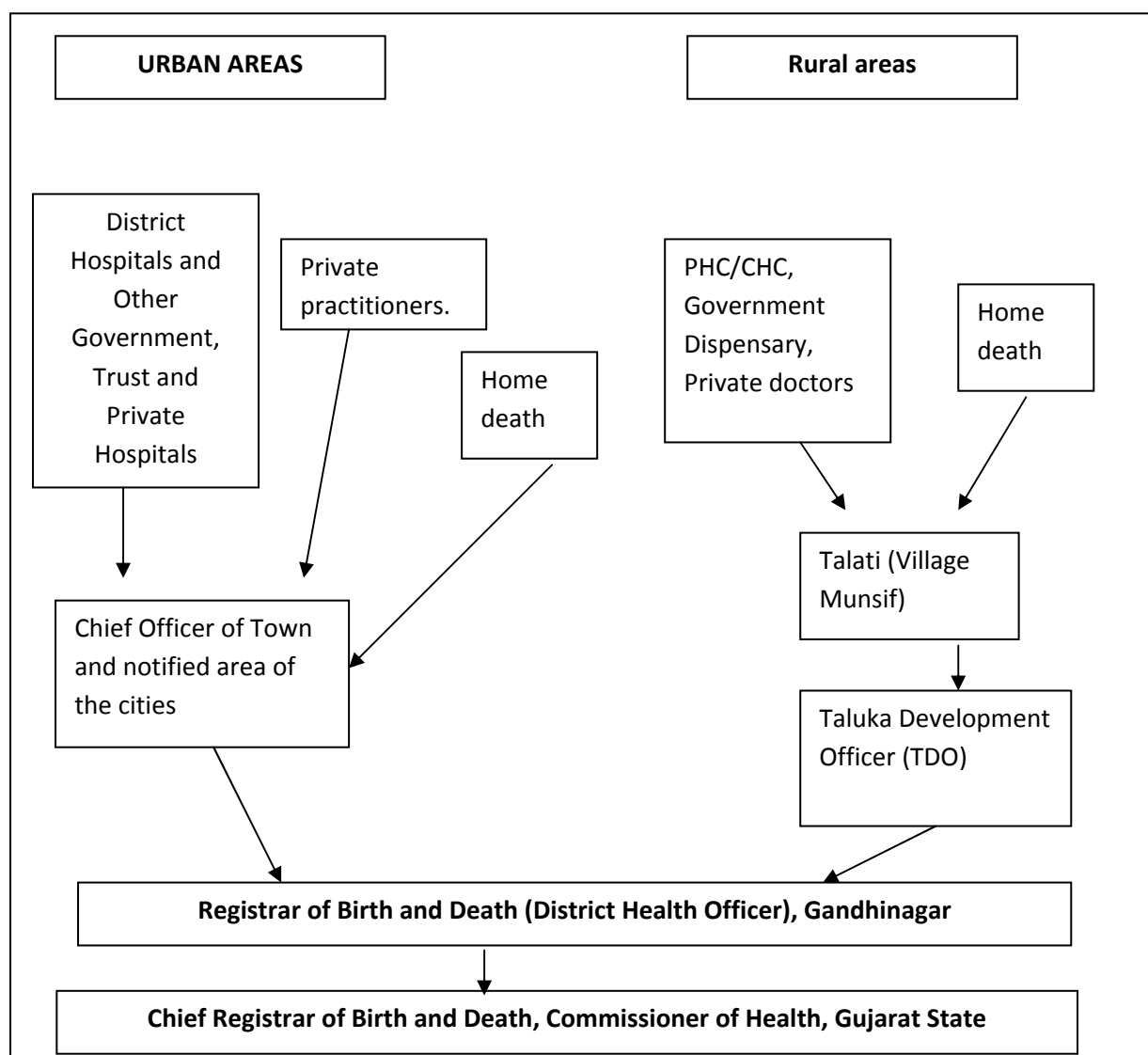
Although it is mandatory to register birth and death in India under “The Registration of Births and Deaths Act, 1969”, there is no provision of any kind of punishment under the act for not registering a birth or death by above mentioned individuals. Burial or funeral grounds at villages or at the towns of Gandhinagar districts do not send any notification to the registrar as done by the funeral and burial grounds of the Municipal Corporations of the state.

Death forms for deaths occurring at home are usually filled by the family members, including the question for pregnancy status and cause of death. These persons who fill up the form do not know the exact cause of death or pregnancy status and it may not be correctly captured even if it is known as no one cross check the filled forms for cause of death and pregnancy status.

One registration clerk mentioned that “deaths are only registered if there are some observed advantages like inheritance of property, Insurance claim etc. Usually when a pregnant woman dies, that is not the case. They do not have any insurance or property on their name, so such deaths go unregistered. Same is true for the deaths of children”. Same was the observation of the Female Health Worker of a village. One clerk at the registrar office of a town also noted that nobody is interested in registering the maternal death, neither the doctor nor family members.

Figure-1 shows the flow of information in case of births and deaths from household level to the state level.

Figure-1 shows the flow of birth and death data in the Gandhinagar district



In rural area births and deaths are registered by the Talati and in urban area births and deaths are registered by the authorized clerk at the office of Chief Officer of the town. Talati and authorized clerk at the town compile the information in to the monthly reporting form no 14 to send at the block level office. Block level office send records of births and deaths to the office of the district registrar for data entry. One designated clerk does the data entry for all (approximately more than 8000 per year) registered deaths in the Gandhinagar district. Lack of technical training for the task leads to potential errors in the computerized records. Gradually the data entry will start at the block and then at the reporting unit level, decentralizing the current data entry system. Districts enter the records in software which can

only be accessed by the authorized persons in the each district. The software generates several predefined tables. Table numbers D-15 to D-18 are forms for the pregnancy related deaths. All districts in turn send reports to the office of the Chief Registrar of Births and Deaths of the state. District Health Officer is the designated Registrar of Birth and Death of the district and Commissioner of Health and Family Welfare Department is designated as the Chief Registrar of Birth and Death in Gujarat. States have to send the reports to the Registrar of Births and Deaths, Ministry of Home Affairs, Government of India before October of the next year meaning the information for the year 2007 reaches to the National Registrar by October 2008.

C.1.2 MIS at Health Department for maternal deaths

FHW keeps register for all deaths and births occurring in their area and population. They also register cause of death as reported by family or as understood by them. She also reports maternal deaths occurring in her area. It was observed that FHWs do not report death of daughters, who came to their parent's home to deliver as per custom. These deaths of daughters are reported by FHW of their in-law's village. This leaves possibility of missing a maternal death. It was also observed that deaths of women of reproductive age group are not recorded separately.

Gandhinagar district health department reported 15 maternal deaths for the year 2007-08 and verbal autopsy forms were also filled for the reported 15 deaths. It was also observed that they do not analyze the verbal autopsy forms. Health department is also not utilizing the information for the improvement of the services for maternal health. All four block health offices were also contacted and requested to provide reported maternal deaths for the same year. All the blocks except Kalol block reported excess maternal deaths than reported by the district office as shown in the table. This put figure at 20 maternal deaths for the district as shown in the table-4.

Table-4: Disparity of reporting of maternal deaths from blocks and district 2007-08

Block	Reported by the District	Reported by Block
Dehgam	5	6
Gandhinagar	5	7
Kalol	2	2
Mansa	3	5
Total	15	20

Disparity was also observed in the reporting of live births as two different reports from the District Health Office suggest figures of 32073 and 31741. For the calculation of MMR, investigators concluded to consider 31741 as it was consistent with the total from the live births reported from the blocks.

District reported 31741 live births and 15 maternal deaths for the same year; therefore Maternal Mortality Ratio (MMR) was 47 per 100,000 live births for the year 2007-08. However, MMR will change to 63 per 100,000 live births from 47 per 100,000 live births, considering 20 maternal deaths. Both these MMR estimates are grossly underreported. Table-5 shows the MMR for all blocks and district as per reported maternal deaths and reported live births. Table-5 indicates that there is gross under reporting from the Kalol block as it reported only two maternal deaths for reported 31741 live births.

Table-5 Reported live births, maternal deaths and MMR for the year 2007-08

Blocks	Reported live births	Reported maternal deaths	MMR per 100,000 live births as per reported maternal deaths and live births
Dehgam	6472	6	93
Gandhinagar	12105	7	58
Kalol	7862	2	25
Mansa	5302	5	94
Total	31741	20	63

Another surprising finding was, the number of maternal deaths reported from the urban areas. Only one maternal death out of total 15 reported maternal deaths was from urban area. At the

same time 13,702 births were reported from urban area in the same year. 35% of district population lives in urban area as per the district health department in 2007¹⁰. It clearly shows the amount of gross underreporting from urban area. The reason could be that only slums in any urban area have link- workers for reporting vital events for the district health department. This is why large number of people living in urban area does not have any representation in any health statistics of the district. There is no mechanism except Civil Registration System to capture such deaths. Therefore team contacted all CRS offices in the urban areas.

One maternal death not reported by the district authorities was registered with the one of the town civil registration office. This shows lack of co-ordination and reconciling of data between CRS and health department offices at city level. However, in rural area, female health workers now regularly meet Talati (village level registrar of birth and death) and discuss all deaths occurred in the village and together they try to improve the registration of deaths.

According to Government of India's SRS the MMR for Gujarat state for the year 2001-03 was 172 per 100,000 live births. Kenneth Hill et al suggested that correction factor of 1.5 should be applied to arrive at the point estimate for MMR for India and many similar countries¹². Thus the MMR for the Gujarat will be 258 per 100,000 live births. At MMR of 258 per 100,000 live births, it is safe to say that district might have the estimated 82 maternal deaths for 31741 reported live births for the year 2007-08. At MMR of 172 per 100,000 live births, the district would have 55 maternal deaths. Comparing estimated 82 maternal deaths with the reported 15 maternal deaths by the district health office suggests 82% of under reporting of maternal deaths by the district. Table-6 shows the underreporting by blocks and district for 20 maternal deaths. Underreporting percentage is estimated to be 90% for the Kalol block.

Table-6 percentage of underreporting by the district health department

Block (a)	Live births reported by district (b)	Reported maternal deaths by blocks (c)	Expected maternal deaths as per 258/100,000 live births (d)	Under reporting by district as per column (d) (f) (%)
Dehgam	6472	6	17	11 (64)
Gandhinagar	12105	7	31	24 (78)
Kalol	7862	2	20	18(90)
Mansa	5302	5	14	9(63)
Total	31741	20	82	62 (76)

There was no coordination between Female Health Workers and Local RBD in the villages. However, it was observed that some FHWs do share the list of births and deaths noticed by her in the area with the Talati for improving the registration of births and deaths. District Health Officer is the head of the Health department and also heads the RBD department, but there is no coordination between two units even for sharing of data at the district level.

It was observed that FHWs do enter information of all pregnant women in the forms but hardly track pregnancies up to the postpartum period, even though they have to follow roughly 125 pregnancies in any given year for the population of 5000 with Crude Birth Rate of 25 per 1000 population. Births and deaths registration remains patchy in spite of presence of all these functionaries (Box-4).

Box-4 Potential staff / volunteers who can register births and deaths for 5000 rural population

Expected vital events

Pregnancies- 143

Live births – 125 (CBR of 25 per 1000 population)

Total Deaths- 40 (CDR of 8 per 1000 population)

FULL TIME GOVERNMENT WORKERS	PART TIME VOLUNTEERS
Talatis/ Munsifs 1 per village	Anganwadi workers- per 1000 population
Female Health Worker- 1 per 5000 population	Gram mitra (Health) -1 per village
Male Health Worker-1 per 5000 population	Traditional Birth Attendants-1 to 3 per village

C.1.3 Hospital records for maternal deaths:

Another important source of information for the maternal deaths is hospitals records as many maternal deaths occur in the hospitals. Team visited District hospitals, Community Health Centers, Municipal Hospital and few private hospitals to find out the recording and reporting of the maternal deaths in these institutes.

District hospital now has the Hospital Information Management System (HIMS) for recording OPD cases, indoor admissions and deaths occurring in the hospital. However, it is still in beginning phase. Hospital death records are kept in a separate hard paper file as per the financial years (April to March). However, Hospital record department had no separate register for these deaths. They send information of all deaths to the local city registrar of birth and death after filling the respective forms. No separate register or system was there for recording of maternal and infant and child deaths. The Postpartum unit of the hospital reports the maternal deaths to the Block Health Office separately.

C.1.4 Private Sector

Team visited one or two Gynecologist from each major town of the district. It was observed that no doctor was aware that they have to report all deaths occurring in their hospitals to the

local registrar of births and deaths. Private Doctors do report all live and still births occurring in their institute to the local registrar of birth and death as birth certificate is a legal proof of age. As per the Birth and Death registration Act, 1969⁶, it is the responsibility of the head of the institution to register the birth or death occurring in the institution. Same is true for the maternal deaths occurring in any health care institution. It was observed during the visit to the private clinics at Gandhinagar, Kalol and Mansa towns that Private Practitioners do not send the report of maternal deaths to the local registrar. They said that it is the responsibility of family members to register the death. If family members ask for registration, then only doctors fill up the form 4a.

One private Gynecologist also noted that “Usually there are no deaths in any private facilities as it is a stigma for the doctor because death occurring in the private facility is considered as failure of treating physician by people. So we simply send serious cases to the government hospitals.” Thus Private sector hospital deaths do not seem to be recorded in Civil registration system regularly.

C.1.5 Anganwadi Workers (AWW)

Team also attended the monthly meeting of Anganwadi workers at the one of the block of the district. The meeting was attended by all Anganwadi workers of the block thus representing all villages and slum areas of the town within the block. Investigators explained the maternal death reporting scenario to them and asked them to give their feedback and also the information regarding how they report maternal deaths. The first reaction in the meeting was of silence. Then many of them said that officers and staff members of the health department do not allow them to report all maternal deaths. Team also requested them to give information on maternal death occurred in their area after explaining the definition of maternal death to them. Workers were very resistant to give any information out of fear of punitive action from the authorities. On request of the investigation team, workers gave information on the maternal deaths occurred during 2007-08 in their area. They gave information regarding eight maternal deaths.

Team prepared the list and compared it with official list reported by the block health office for the year 2007-08. Block health office reported six maternal deaths and the workers reported eight maternal deaths. Name of the two deceased mothers were common in both the above mentioned lists. The list provided by the workers cannot be considered as complete as some might not have reported it out of fear. All the maternal deaths reported by the workers should be verified in the field before considering it as final maternal deaths. But it does give the idea about the underreporting and probable reason for the same.

C.2 Deaths of women in reproductive age group (15-49 years of age)

Gandhinagar district has registered 7985 total deaths for the year 2007 with the Crude Death Rate of 5.04 per 1000 population. The maternal mortality in developing regions typically contributes 20 to 30% of all female deaths in reproductive ages¹³. Investigators provided forms for collecting information on deaths in reproductive ages in women from the registers of sub-centers. Three blocks have given the detailed information as per the format given to them, while one block submitted brief report. It was observed that FHWs are not registering deaths of WRA separately. They are also not very serious about the reporting such deaths.

Information provided was also patchy as sub-centers with vacant post of FHW were not properly represented. Such centers forms were blank or in-charge worker took information from Talati. Table-7 gives the detail of the reported deaths and expected maternal mortality.

District health department reported 231 deaths of women in reproductive age group (15-49 years) for the year 2007-08. Table- 7 shows the age wise distribution of reported deaths of WRA. Table-5 indicates the reported cause of death for all 231 deaths of WRA. Only 4.8% of deaths out of total reported deaths were maternal deaths. Assuming 20%¹³ of total deaths in WRA as maternal deaths, it is safe to estimate the number of maternal deaths at 46. Only 11 out of total reported 20 maternal deaths were reported in the list of deaths of WRA.

Box-5 How cause of death get misinterpreted

One of the form submitted by FHW mentioned “kuretan” as a cause of death, which means induced abortion and the meaning was also confirmed by the Health Supervisor as FHW was in the field. On investigating it further it was revealed to be the death due to electric current and she wrongly reported it in Gujarati language as “kuretan” instead of “current”. Information provided was also patchy as sub-centers with vacant post of FHW were not properly represented.

C.2.1 Cause of Death analysis for the reported deaths of WRA

Table-7 shows the distribution of WRA deaths as per age groups. Most deaths were in 35-49 years of age group.

Table-7: Age wise distribution of WRA died during the year 2007-08

Age-group	Frequency	Percent
15-19	11	4.8%
20-24	19	8.3%
25-29	29	12.6%
30-34	36	15.7%
35-39	46	20.0%
40-44	41	17.8%
45-49	49	20.9%
Total	231	100%

Causes of deaths analysis revealed that Illness or “*Bimari*” is written as the cause of death for 23.4% deaths reported by FHWs as shown in Table-8. This indicates lack of knowledge and training of FHWs and their supervisors for assigning cause of death. Post Partum Hemorrhage (PPH) was the only cause of death for all reported 11 (4.8%) maternal deaths in the list of deaths of WRA. Severe anemia was reported as contributory factor in one maternal death. Diseases of the circulatory system was the most common cause, comprised of Myocardial Infarction (Heart Attack), Brain Hemorrhage, Congenital Heart Diseases and Hypertension. Accidents the next most common cause contributed for 12.4% of total deaths.

Table-8: Reported causes of death of WRA died during the year 2007-08

Cause of death as per International Classification of Diseases	Frequency	Percentage
Illness (Reported as “ <i>Bimari</i> ” and <i>lamba samay ni Bimari</i> ”)	54	23.4
Diseases of the circulatory system Myocardial Infarction	33 (19)	14.3
Road Traffic Accident	29	12.6
Diseases of the respiratory system	20	8.7
Neoplasm	20	8.7
Infectious diseases Tuberculosis	12 (11)	5.2
Pregnancy, Child Birth and Puerperium (All due to PPH)	11	4.8
Intentional self-harm (Suicide)	9	3.9
Events of undetermined intent (Suicide / Homicide / Accidental)	7	3.0
Burns	7	3.0
Mental and Behavioral disorders	4	1.7
Diabetes Mellitus	2	0.9
Others	9	3.9
Natural	3	1.3
"Accidental" (Reported as “ <i>Aksmik Mrityu</i> ”)	4	1.7
Not Known	7	3.0
Total	231	100.0

Table-9 shows the expected numbers of deaths as per Age specific Death Rates (ASDR) reported by SRS for the rural area of the Gujarat state for the year 2005¹⁴. District reported only 231 deaths while estimated deaths could be as high as 665 as per Age Specific Death Rates (ASDR). Reported death rate by district health department for the WRA is only 0.9 per 1000 WRA population, while SRS reported 2.3 per 1000 WRA population for the Gujarat state rural area. The estimated under reporting of deaths in WRA is 65% (range was 41% to 83%). Taking 20% of expected 665 expected deaths estimated maternal deaths would be as high as 133 against reported 15 maternal deaths by the district¹³.

Table-10 shows the block wise reported and expected deaths of WRA. Highest number of underreporting is from Kalol block, which is higher than district average.

Table-9: Comparison of reported and expected deaths as per age group

Age group	Estimated Female Population#	Age Specific Death Rate per 1000 population*	Expected deaths as per ASDR	Reported deaths by the health department	Reported death rate	Numbers of Under reported deaths	Under reporting %
15-19	53922	1.2	65	11	0.2	54	83.0
20-24	51226	2.0	102	19	0.4	83	81.5
25-29	45295	2.4	109	29	0.6	80	73.3
30-34	43677	2.4	105	36	0.8	69	65.7
35-39	38285	2.5	96	46	1.2	50	51.9
40-44	31814	3.3	105	41	1.3	64	60.9
45-49	25343	3.3	84	49	1.9	35	41.4
Total	289563	2.3	665	231	0.8	434	65.3

Source: # Census 2001

*SRS-2005 Age Specific Death Rates for Gujarat by sex and residence available from Gender Resource Center, Gujarat¹⁴

Table-10: Block wise reported and estimated deaths of WRA

Name of the Blocks	Rural Population (2007)	Estimated Numbers of WRA for the block for 2007-08	Reported deaths of the Women 15-49 years of age group for the year	Expected deaths of the Women 15-49 years of age group as per Age specific death rates ¹³	Numbers of under reported deaths of WRA (%)
Dehgam	237180	61201	57	140	83(59)
Gandhinagar	440695	114845	94	264	170 (69)
Kalol	246079	63498	23	146	123 (84)
Mansa	193838	50018	57	115	58 (50)
Total	1122166	289563	231	665	434 (65)

C.3 Analysis of Verbal autopsy

District health office had 15 forms of verbal autopsy for maternal deaths for the year 2007-08, filled by the Medical officers or Block Health Officer. Although, forms were filled and submitted to the districts, there were no efforts by the district health office to analyze it and using the information to avoid future maternal deaths. It seems that VA forms are filled just as an administrative requirement. We analyzed the 15 forms of verbal autopsy using Epi Info software. No form out of total 15 forms was complete. Narrative portion of form was not

filled for many questions. Treatment details were also not given in majority of the forms. Understanding of cause of death and underlying cause of death was observed to be very low. Many forms were filled at the in-law's home, even if the death occurred at deceased parent's home. Eight forms were filled by the Medical Officers of PHC, while seven forms were filled by the BHO. This reflects on the competency, interest and sincerity of MOs and BHOs.

Six mothers were illiterate and 5 were just literate out of total 15 reported maternal deaths. Another important finding was respondents for the information of maternal deaths. 13 out of 15 respondents were male and 4 out these 13 males were father in-law of the deceased. Ideally, person who was with the mother at the time death should be interviewed. Traditionally in Indian societies, father in-laws are hardly involved in the any process of pregnancy or child birth. So reliability of recorded information is a question.

Table-11: Places of the reported maternal deaths

Place of maternal deaths	Frequency
District Hospital	8
Private Hospital	1
Way to hospital	1
Way to home	3
Home	2
Total	15

Table-12: Timing of the reported maternal death

Timing of maternal deaths	Frequency
Ante-partum	4
Intra-partum	1
Post- Partum	10
Total	15

Table-13: Causes of maternal deaths

Causes of maternal deaths	Frequency
Post-partum Hemorrhage (PPH)	6
Eclampsia	2
Sepsis	1
Ante-partum Hemorrhage (APH)	1
Other causes	5
Total	15

Table-14: Types of delays

Delays	Frequency
Decision delay	7
Transport delay	1
Treatment delay	4
Not reported	3
Total	15

Two maternal deaths were investigated in detail by visiting their homes. Here we present their narrative stories as case study which raises important questions about quality of care for mothers.

Box-6 Verbal Autopsy for maternal death- case study-1

'*Kantaben*', 19-year-old female, was a resident of Parbatpura village of Mansa block, Gandhinagar district. She was registered for her pregnancy on 6/11/2006 by ANM of that area. She also received her dosage of TT injections and some tablets in a trust hospital operational in the area. It is widely practiced custom in several parts of Gujarat, where women go to their parent's place for their first delivery. It was *Kantaben*'s first delivery and in the seventh month of pregnancy she went to her parents place, in Chaluva village of Mehsana district. It was told that she continued taking her medicines regularly as prescribed by the doctor.

On the day of delivery (2/4/2007), around 9'o clock in the morning she walked about a kilometre till the main road, to travel a distance of 10 km to Kherva PHC which is supposed to be 24/7 PHC in Mehsana district. As reported by her in-laws, when '*Kantaben*' reached, there was no doctor present. Hence "two small girl like nurses" conducted the delivery. Women who accompanied '*Kantaben*' to Kherva told the nurses present "if need be we are ready to take her to Mehsana District Hospital", however on nurses insistence they agreed to get the delivery done at the PHC.

The delivery resulted in still birth, after which she was given injections and medicines and discharged in an hour from 24/7 PHC. According to women who accompanied her she was profusely bleeding after delivery ('bucket full of blood'), so that she was made to change her clothing several times due to heavy bleeding. It was reported that after delivery she was made to have tea and biscuits by the relatives present there, and discharged in an hour's time. On her way to her home, she lost consciousness. She reached her parent's place in chaluva village around 2 PM and within two hours before they decide her to take somewhere else she passed away.

Question remains for us to justify the death of this mother who died, probably because of untapped risk factors, lack of training of medical staff, proper availability of quality care, travel time, mode of transport, or lack of awareness. Question remains whether this death was preventable or an unfortunate unpreventable death. The verbal autopsy conducted by the BHO mentions it as negligence on the part of nurses to identify PPH as the major reason behind the death of this mother.

Note: Name changed to maintain confidentiality.

Box-7 Verbal Autopsy for maternal death- case study-2

'*Sakuben*', 20-year-old female, was a resident of Nagdevnagar, a small slum near Kalol city of Gandhinagar district. Couple was illiterate and was employed at brick kiln as laborers. They lived in one room semi pakka house. After one year of her marriage she became pregnant. Family celebrated the news as her husband was the only survived son of her widow mother. One day Sakuben developed breathing problem and tiredness. She was diagnosed to be suffering from heart disease (Primary Pulmonary Hypertension) at Super specialty Cardiology hospital in Ahmedabad. Doctors advised her for abortion and also said no for future pregnancies. It was a big shock for her and her family. They decided to continue pregnancy with medicines for the heart disease. Her pregnancy ended in spontaneous abortion in three months.

After one year she became pregnant but ended in spontaneous abortion after two months. Her mother-in-law became desperate for extension of family. Family also had to spend Rs. 70,000 to 80,000 for her treatment for heart disease. They stopped all treatment due to economical pressure. Again she became pregnant after six months. Family decided not to go for any treatment at this time. So she received no ANC.

She spent five months of pregnancy without any treatment for heart disease or ANC. She continued to work as laborer also. She developed labor pain at beginning of six months. She consulted private Gynecologist. He said that baby has come down and he has to take stitch to prevent further descent of baby. He also referred them to Cardiologist for heart disease. When they went to Cardiologist, after echocardiography, he talked with Gynecologist on phone. He advised her to come after one week for treatment. Family went to work again. On 10th February 2008, she again had labor pain and delivered a baby at brick kiln, who died after few minutes. Her husband and mother in law immediately contacted one private doctor. He said "what I can do if delivery is over". But on their insistence he came and found out that her placenta was not delivered. It was retained placenta and she was bleeding. He admitted her at her nursing home and gave her some treatment. No records were available with the family about the treatment given to her. On second day they brought her back home. She was not allowed to eat much as per her mother in law's instruction. On 15th February 2008 she took her last breath and died.

Her husband did register her death with local registrar. Health department of the area had no clue of this death and they have never reported this maternal death. Research team was able to find the name from local registrar office with incomplete address. Research team was able to locate her house and interviewed her mother in law. Her husband is still searching new bride for him. It is costly affair as they have to give some gold to that lady. Her mother in law told us that no one will give their daughter to a person who does not have a proper house. She added that government has lot of schemes, but people like us are not benefited with the schemes.

Note: Name of the mother changed maintain confidentiality.

Here we present summary of our numerical analysis of registration of maternal deaths and shows the level of underreporting. Table-15 provides the summary statistics for the maternal deaths reporting and recording at Gandhinagar district.

Table-15: Summary of findings for the study period (2007-08)

District Population	1.58 million ¹⁰
Rural population	1.12 million ¹⁰
Reported live births	31,741 ¹⁰
Crude Birth rate per 1000 population	20
Reported maternal deaths by district health office	15
Reported maternal deaths by block health offices	20
Reported MMR /100,000 live births for the district	63
Reported deaths of WRA by district health office	231
Expected maternal deaths considering MMR of 172 per 100,000 live births ⁴ based on RGI estimate for Gujarat	55
Expected maternal deaths considering MMR of 258 per 100,000 live births ^{4,12} (1.5 times RGI estimate)	82
Expected numbers of deaths of WRA as per SRS Age Specific Death Rates	665
Expected maternal deaths as per 20% of reported deaths of WRA ¹³	46

D. Discussion

Maternal Mortality is a litmus test for country's health system¹⁵. Majority of maternal deaths are avoidable. India contributes largest number of maternal deaths as a country in the world. But still maternal deaths are not systematically reported or analyzed in India.

There are several obstacles in the process of birth and death registration in India. Death certificate is necessary for insurance, inheritance and other legal procedures, in India. But usually women and children do not have any property in their name or life insurance. Such deaths are mostly not reported as there is no incentive of property transfer or insurance money claim for passing through the administrative procedure for the registration. In rural and remote areas, person who does the registration (Talati) of births and deaths is not so easily available or accessible. He has no incentive for registering births or deaths.

According to law it is the responsibility of head of the institution to report births and deaths occurring in their institutions. It was observed that none of the private doctors were aware about the legal reporting requirement of maternal deaths to the local registrar. They do report births and still births but not the deaths of the mothers or newborns. Government hospitals do report all deaths. But government hospitals do not keep a separate list of maternal deaths occurred in the hospital. There is no maternal death audit even in District Hospital in Gandhinagar which is the state capita and where state health department is also located. There is no provision for punishment for any head of the institute for not reporting deaths under the law.

District Health Office needs to play pro-active role. At present, there are no sincere efforts made to enumerate all maternal deaths in the district by district health office. Line listing of all maternal deaths occurred in the district is also not easily available. At present, there is no dedicated officer who looks after maternal deaths reported by district. There is lack of coordination between block health offices and district health office for reporting maternal deaths. Similarly, there is minimal coordination between civil registration system and district health office, particularly for the urban area. Due to this maternal deaths are getting lost between various health offices.

Urban area is not covered by health workers for reporting of maternal deaths, as there is no formal government health system in urban areas. Quality of verbal autopsies conducted for maternal deaths is also not up to the standard. Apart from errors in the format, there is lack of sincerity in filling up the forms as many parts of the form are left blank. Reporting of deaths of women in reproductive age group and maternal deaths along with cause of death by FHWs is also patchy and lacks dedicated efforts. This is due to absence of motivation, supervision and accountability for the same. Sincere efforts are needed for the reporting of all deaths of women of reproductive age group and their analysis by cause.

Another major issue is reporting of maternal deaths by the grass root workers (FHWs, AWWs and MPHWS) and the PHCs. Due to pressure from higher authorities, there is a tendency of not reporting each and every maternal death by the Primary Health Center. Officers make informal efforts and pressure to hide maternal deaths and prove it as non-maternal death fearing punishment from higher authority. There is a culture of fear of reporting events with negative outcome.

District authorities are also not analyzing and using information generated from the verbal autopsy of reported maternal deaths to improve system to prevent maternal deaths.

There is an urgent need for addressing these issues of reporting maternal deaths and enumerating all of them. Coordination between various departments (Health, ICDS, Panchayats etc.) and dedicated and sincere efforts from health departments is the need of time to improve the reporting of maternal deaths.

E. Conclusion & Recommendation:

For avoiding maternal deaths, first step is to report them completely and correctly. There is lack of sincere and dedicated efforts from health department of the district for enumerating and analyzing all maternal deaths.

For correct recording and reporting of all maternal deaths, we recommend following actions:

- 1) District Health department should appoint Public Health Nurse (PHN) or any other same level officer as District Maternal Health Manager (DMHM)
- 2) DMHM should coordinate all services in the district related to maternal health including recording of all maternal deaths with its analysis.
- 3) Anganwadi workers should identify and report all deaths of WRA (15-49 years) with cause directly to a DMHM
- 4) FHWs should also prepare a separate list of all deaths of WRA and report it to the DMHM
- 5) DMHM should also collect list of registered deaths of WRA from CRS and compile a master list of all deaths of WRA.
- 6) DMHM should collect list of deaths of WRA occurring in urban area with help of link workers
- 7) DMHM should develop liaison with all private maternity homes to collect data of maternal deaths
- 8) Private Obstetricians should be encouraged to report all maternal deaths occurring at their facility
- 9) Block Health Officer and Medical Officer of the PHC should verify all reported deaths of WRA from both the source and should find out maternal deaths
- 10) Block Health Officer should conduct verbal autopsy of all deaths of WRA and maternal deaths and analyze it with the help of Statistical Assistant

- 11) DMHM should prepare a report of maternal health indicators of district including the findings of verbal autopsy of maternal deaths and share it with all Medical Officers and Block Health Officers every quarter and every year
- 12) State Director for RCH must ask Reproductive and Child Health Office (RCHO) or Chief District Health Officer (CDHO) to present a written report on all maternal deaths and deaths of WRA every quarter and every year.
- 13) State Directors must ask all Chief District Medical Officers (CDMO) to conduct confidential inquiry for all maternal deaths occurring in the Government hospitals
- 14) Public inquiry of all maternal deaths should be done by District Development Officer (DDO) or Collector as the current practice in the Tamilnadu state
- 15) The analysis of verbal autopsies of maternal deaths should guide actions to improve maternal health in the district and state
- 16) State should publish annual report on maternal deaths

There is also need for changing the attitude of punishing staff for reporting correct numbers of maternal deaths by the district and the state level authorities. District Health Officers should be reoriented and motivated for correct reporting of maternal deaths. Form for verbal autopsy adopted by the state government also needs major changes.

Civil registration system should be more accessible to the people to encourage complete registration of births and deaths. There is also urgent need to modify civil registration act / rules by making field level health staff responsible for reporting death along with head of the family. Awareness program for registration of all deaths including maternal deaths for communities and for professionals is the need of the time.

F. References

1. Graham, W. J. (2002). Now or never: the case for measuring maternal mortality. *The Lancet* , 359; 701–04.
2. WHO. (2007). *Maternal mortality in 2005: estimates developed by WHO, UNICEF and UNFPA* . Retrieved July 14, 2008, from WHO website: http://www.who.int/reproductive-health/publications/maternal_mortality_2005/mme_2005.pdf
3. Graham, W., Ahmed, S., Stanton, C., Abou-Zahr, C., & Campbell, O. (2008). Measuring maternal mortality: an overview of opportunities and options for. *BMC Medicine* , 6; 12.
4. SRS. (2006). *Maternal Mortality in India: 1997-2003 Trends, Causes and risk Factors*. New Delhi: RegistrarGeneral of India.
5. Menon, S. V. (2008, January). Drivers of economic growth in Gujarat. *Munich Personal RePEc Archive online* , 4-5.
6. The Registration of Birth and Deaths Act, 1969. Government of India, 1993.
7. *Annual Statistical Report on registered births-deaths Gujarat*. 2006. Gandhinagar: Government of Gujarat.
8. Gujarat Government Circular for conducting verbal autopsy for maternal deaths
9. Sample Registration System. Registrar General of India, Ministry of Home Affairs, Government of India. Retrieved February 22, 2009 from <http://www.censusindia.net/>
10. Gandhinagar District Health Office. Form no-9 of Reproductive and Child Health Program-II for the Gandhinagar District, 2008
11. Health and Family Welfare Department notification. The Gujarat Government Gazette Extraordinary, 2004/MAGHA 2, 1925, Part IV-A dated 9th January 2004.
12. Hill K, Thomas K, AbouZahr C, Walker N, Say L, Inoue M, Suzuki E; Maternal Mortality Working Group. Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *Lancet* 2007Oct 13; 370 (9595) : 1315
13. Maine D. Safe Motherhood Programs: Options and Issues 1993, p. 9.
14. Age specific death rates by sex and residence, Gujarat state, SRS,2005. Retrieved online February 25, 2009 from <http://grcgujarat.org/excel/health/Age-specific%20death%20rate%20by%20sex%20and%20residence%20in%20Gujarat,%202005.pdf>
15. Progress for Children 2008. A report card on Maternal Mortality, UNICEF, p. 38. Retrieved February 22 2009 from <http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf>

Annexure- Forms for reporting deaths

Annexure-1-A Form number 2 for reporting deaths

1-B Form number 4 for reporting institutional deaths

1-c Form number 4 for reporting deaths occurring outside institutions



Annexure- 1 A Form number 2 for reporting deaths

Form No. 2 Death

DEATH REPORT

FORM NO. 2

Legal Information

Statistical Information

This part to be added to the Death registrar

This part to be detached and sent for statistical processing

<p>To be filled by the informant</p> <p>1. Date of Death: Enter the exact day, month and year the death took place e.g. 1-1-2000.</p> <p>2. a) Name of the Deceased: (Full Name as usually written)</p> <p>b) Name of Father or Mother or Husband's of Deceased</p> <p>3. Sex of the deceased: Enter "male" or female", do not used abbreviation)</p> <p>4. Age of the deceased: (If the deceased was over 1 year of age, give in completed years. If the deceased was below 1 year of ge, give age in month's and if below 1 month give age in complete number of days and if below one day, in hours)</p> <p>5. address of the deceased :</p> <p>6 Place of death: (Tick the appropriate entry 1, 2 or 3 below and give the name of the hospital/ Institution on or the house where the death took place, give location)</p> <p>1. Hospital/ Institution Name:</p> <p>2. House Address:</p>	<p>8. Town or village of residence of the deceased (Place where the deceased actually lived. This can be different from the place where the death occurred. The house address is not required to be entered).</p> <p>a) Name of Town/village:</p> <p>b) Town or village:..... (Tick the appropriate entry below)</p> <p>Town 2. Village:</p> <p>Name of District:.....</p> <p>Name of State:.....</p> <p>9. Religion : (tick the appropriate entry below)</p> <p>1. Hindu 2. Muslim 3. Christian Any other religion (Write the name of the religion)</p> <p>10. Occupation of the deceased: if no occupation write "Nil"</p> <p>11. Type of Medical attention received before death: (Tick the appropriate entry below)</p> <p>1. Institutional</p> <p>2. Medical attention other that institution</p> <p>3. No medical attention.</p>	<p>To be filled by the informant</p> <p>12. Was the causes of death medically certified? (Tick the appropriate entry below)</p> <p>1. Yes 2. No</p> <p>13. Name of diseases or actual cause of Death: (For all deaths irrespective of whether medically certified or not)</p> <p>14. In case this is a female death, did the death occur while pregnant, at the times of delivery or within 6 weeks after the end of pregnancy: (Tick the appropriate entry below)</p> <p>1. Yes 2. No</p> <p>15. If used to habitually smoke for how many years?</p> <p>16. If used to habitually chew tobacco in any form for how many years?</p> <p>17. If used to habitually chew arecanut in any form (including pan masala) for how many years?</p> <p>18. If used to habitually drink alcohol :- For how many years? (Columns to be filled are over. Now put signature at left).</p>
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<p>..... 3. Other Place: 7 Informant's Name: Address: (After completing all columns 1 to 18, informant will put date and signature here. DATE: Signature or left thumb mark of the informant</p> <hr/> <p style="text-align: center;">To be filled by the registrar</p> <hr/> <p>Registration No:..... Registration Date: Registration Unit:..... Town /Village: District: Remarks: (If Any):</p> <p>Name and Signature of the Registrar</p>	<p>Name Code No. District: Tehsil / Taluka: Town / Village: Registration Unit:</p>	<hr/> <p>Registration No..... Registration Date: Date of death: Sex: 1. Male 2. Female Age: Years/ Months/ Days/ Hours Place of death: 1. Hospital/ Institution 2. House 3.Other Place Name and Signature of the Registrar</p>
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Annexure 1-B Form number 4 for reporting institutional deaths

Form 4 (Sec rule 7) MEDICAL CERTIFICATION OF CAUSE OF DEATH (Hospital in - patients. Not to be used for still births) To be sent to Registrar along with Form No.2 (death Report)				
Name of Hospital _____ I here by certify that the				
NAME OF DECEASESD				For use of statistical Office
SEX	Age of Death			
	If 1 year or more, age in years	If less than 1 year age in months	if less than one month, age in Days	If less than one day age in hours
1. Male 2. Female				
CAUSE OF DEATH				Interval between on set & death approx....
I	immediate cause State the disease, injury or			(a) _____

<p>complication Due to (or as a consequence which caused death, not the mode of dying such as heart failure, asthenia,etc.</p> <p>Antecedent cause Morbid conditions ,if any, giving rise to Due to (or as a consequence 0 the above Cause, stating underlying conditions</p> <p>II Other significant conditions contributing to the death but not related to the disease or conditions causing it</p>	<p>(b).....</p> <p>(c).....</p>	
<p><u>Manner of Death</u> How did the injury occur?</p> <p>1. Natural 2.Accidental3. suicide 4. Homicide 5. Pending investigation</p>		
<p>If deceased was a female, was the death associated with pregnancy? 1. Yes 2. No If Yes, was there a delivery? 1. Yes 2. No</p>		
<p>Name and Signature of the Medical Attendant certifying the cause of death Date of verification _____</p> <p>SEE REVERSE FOR INSTRUCTIONS</p>		

(To be detached and handed over to the relative of the deceased)

Certified that shri/smt./Kum. _____ S/W/D
of Shri _____ R/O _____ was admitted to

Doctor _____
(Medical Superintendent & Name of Hospital)

Annexure 1-B Form number 4A for reporting institutional deaths

Form No. 4A
(Sec rule 7)

MEDICAL CERTIFICATION OF CAUSE OF DEATH
(For non-institutional deaths. Not to be used for still births)
To be sent to Registrar along with Form No.2 (Death Report)

I hereby certify that the deceased Shri/Smt./Km. _____ son of /wife of/

NAME OF DECEASESD				For use of statistical Office
SEX		Age of Death		
		If 1 year or more, age in years	If less than1 year age in months	If less than one month,age in Days
1. Male 2. Female				If less than one day
CAUSE OF DEATH				Interval between] on set & death approx....
<p>Immidiata cause State the disease, injury or complication Due to (or as a consequences of) which caused death,not the mode of dying such as heart failure,asthenia,etc.</p> <p>Antecedent cause</p>				(a)_____

Morbid conditions ,if any, giving rise to Due to (or as a consequence of) the above Cause,stating undertying conditions

II

Other significant conditions contributing to (c

).....

the death but not related to the disease

or.....

conditions causing it

(b).....

Manner of Death

How did the injury occur?

- 1. Natural 2.Accidental3. suicide 4. Homicide
- 5. Pending investigation

If deceased was a female,was the death associated with pregnancy? 1. Yes 2. No

If Yes, was there a delivery? 1. Yes 2. No

Name and Signature of the Medical Attendant certifying the cause of death

Date of

verification_____

SEE REVERSE FOR INSTRUCTIONS

(To be detached and handed over to the relative of the deceased)

Certified that shri/smt./Kum. _____ S/W/D

of Shri _____ R/O _____ was admitted to

this hopsital on _____ and expired on _____ at _____ A.M./ P.M.

Doctor _____

Signature and address of Medical
Prectitioner/

Medical attentent with Reg.No.