

Maternal Death Surveillance and Response (MDSR) – outcomes of 2014

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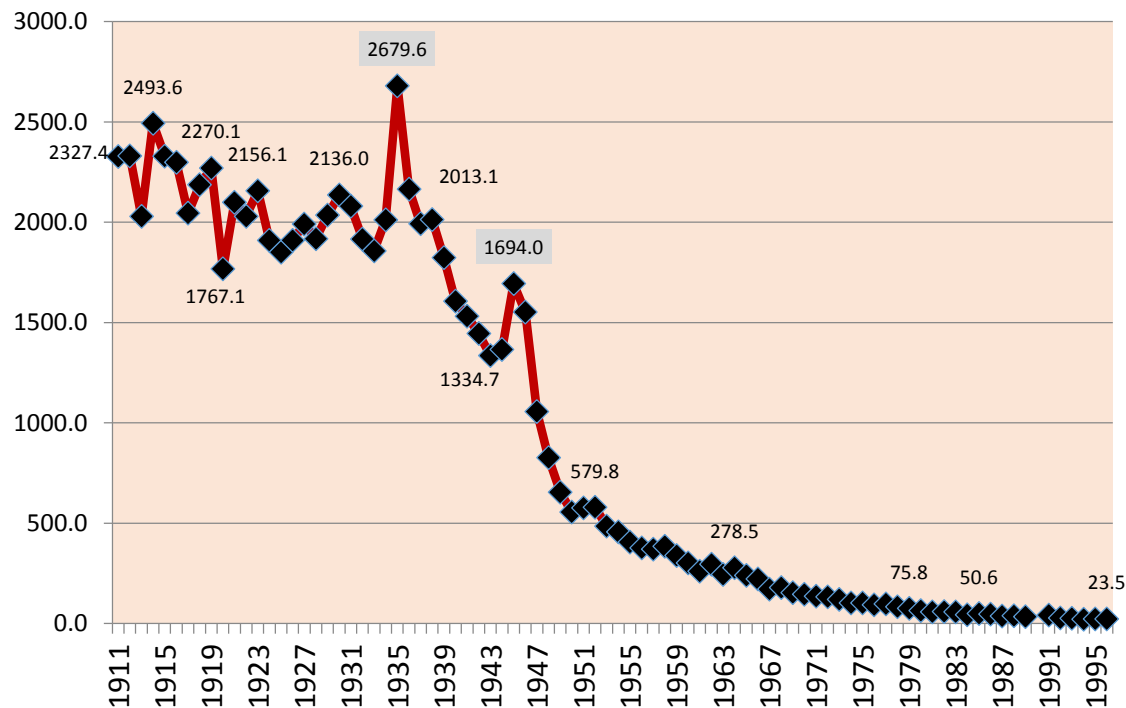
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Sri Lanka achieved remarkable success in reducing maternal mortality over the years. When the country gained independence in 1948, nearly 1700 women per 100,000 live births died due to a cause related to pregnancy. Various interventions, both health and non-health, have reduced this number to 32.03 per 100,000 live births in 2014. Factors such as socio-economic development, free education and related high literacy rate of population, free health services, better transport, control of communicable diseases, well organized primary health care systems etc have been attributed to this success. Currently, Sri Lanka is on par with high-income countries with low levels of maternal deaths and the contribution made by the National FHP in this regard is substantial.

Following graphs demonstrate the gradual reduction of maternal mortality ratio (MMR) over the years, based on data from Registrar General's Department (1911-1995), when there was no organized surveillance system- (Figure 1) and from Family Health Bureau data (1995—2014) after the systematic maternal death surveillance system was established (Figure 2). The national MMR for the year is 32.03 per 100,000 live births. The denominator is the live births reported from the Registrar General's Department.

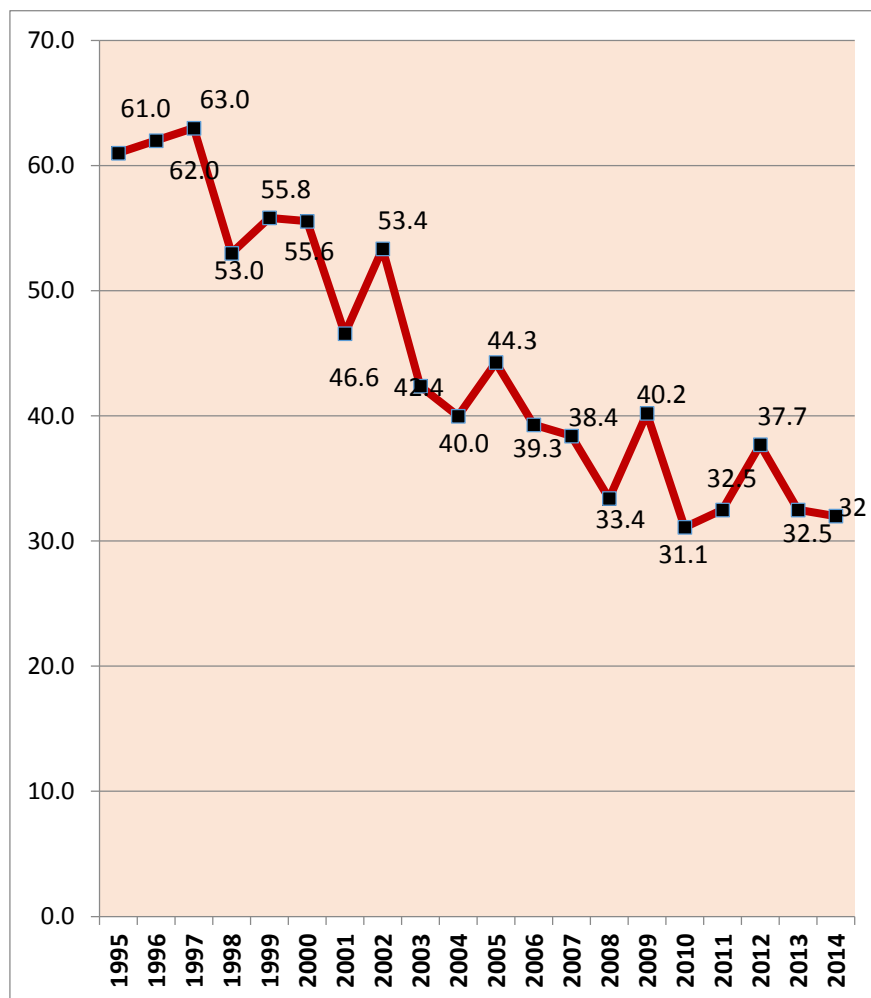
Figure 1 : Maternal Mortality Ratios 1911 —1995



Source: Registrar General's Department

Maternal deaths were reported directly to the FHB since 1985, and by 1995 a methodical process was established to capture all maternal deaths in the country. FHB has been recognized as the official source of maternal mortality statistics thereafter.

Figure 2: Maternal Mortality Ratio 1995 - 2014

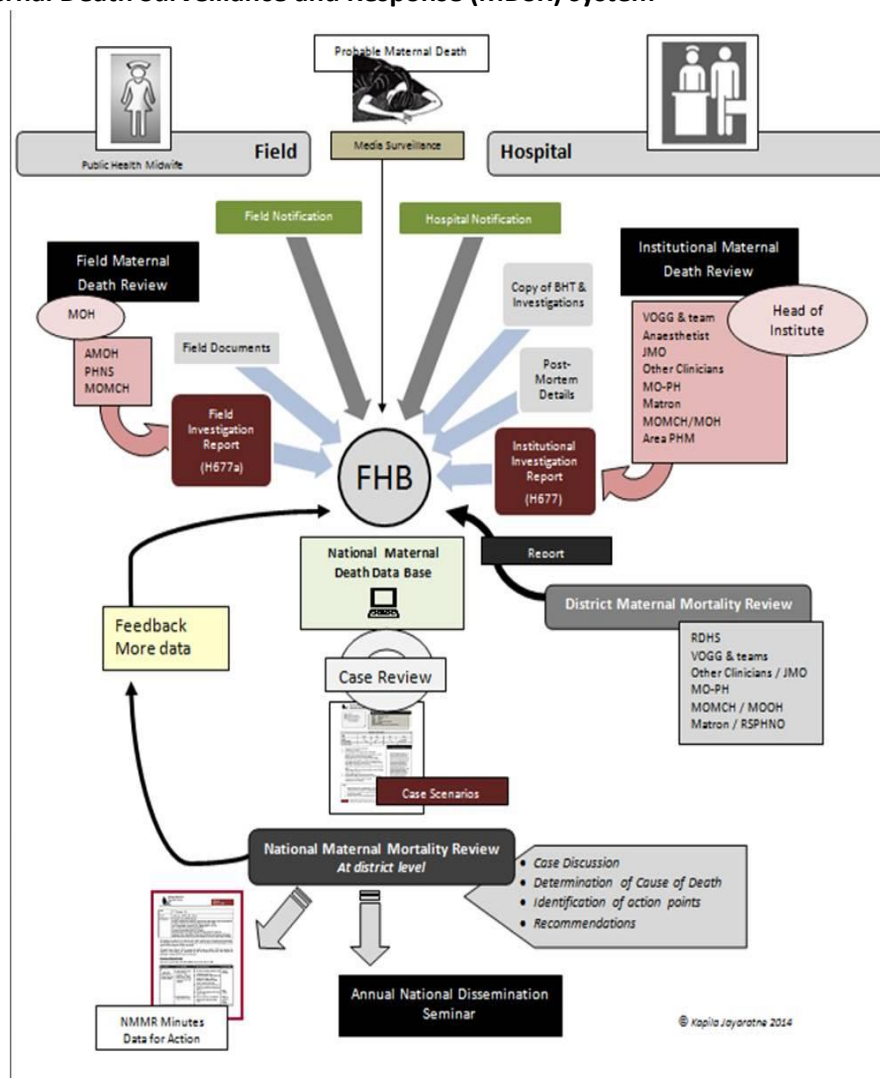


Maternal Death Surveillance and Response (MDSR) system of FHB

The present surveillance system identifies almost all maternal deaths in the country. Each and every probable maternal death occurring throughout the country is notified to the Family Health Bureau within 24 hrs of occurrence which is reviewed at field, institutional, district and national levels subsequently. At the National Maternal Mortality Reviews conducted at district level by Family Health Bureau in collaboration with technical experts from the Sri Lanka College of Obstetricians and Gynaecologists and other relevant professional bodies, the cause of death is confirmed and the associated factors that may have contributed to the death are discussed to prevent such death in the future. This provides a platform to learn lessons from the mistakes and translate the findings into action both at national and sub-national levels.

The system is continuously reshaped to maintain the timeliness, data quality and coverage. FHB received 99% of field (H 677a) and institutional (H 677) maternal death investigation reports in 2014. Data quality of reports improved gradually with the introduction of a mechanism to obtain data gaps in a structured format to MOOH and hospital heads. Conducting post-mortems on maternal deaths was made mandatory with the issue the circular by Secretary—Ministry of Justice and Law Reforms to all coroners in 2009. The process was further streamlined in the health sector by instructions given by Director (Maternal and Child Health) in 2010. The dissemination of the above circular to all relevant personnel and close follow up by FHB, improved the coverage of conducting of post-mortems on maternal deaths from 94% (2011) to 95% in the year 2014. The national maternal mortality review meetings were restructured with presentation of case scenarios by FHB to initiate the discussion on the index maternal death leading to more in-depth discussion. A maternal death case scenario is a comprehensive account on maternal death developed for each and every notified death based on field (H 677a) and institutional (H 677) maternal death investigation reports, bed head tickets, other clinical records, pregnancy records, family planning and other field records and post-mortem reports. Guidelines and MDSR formats are available at FHB website (<http://fhb.health.gov.lk/>). The figure 3 outlines the present MDSR system of Sri Lanka.

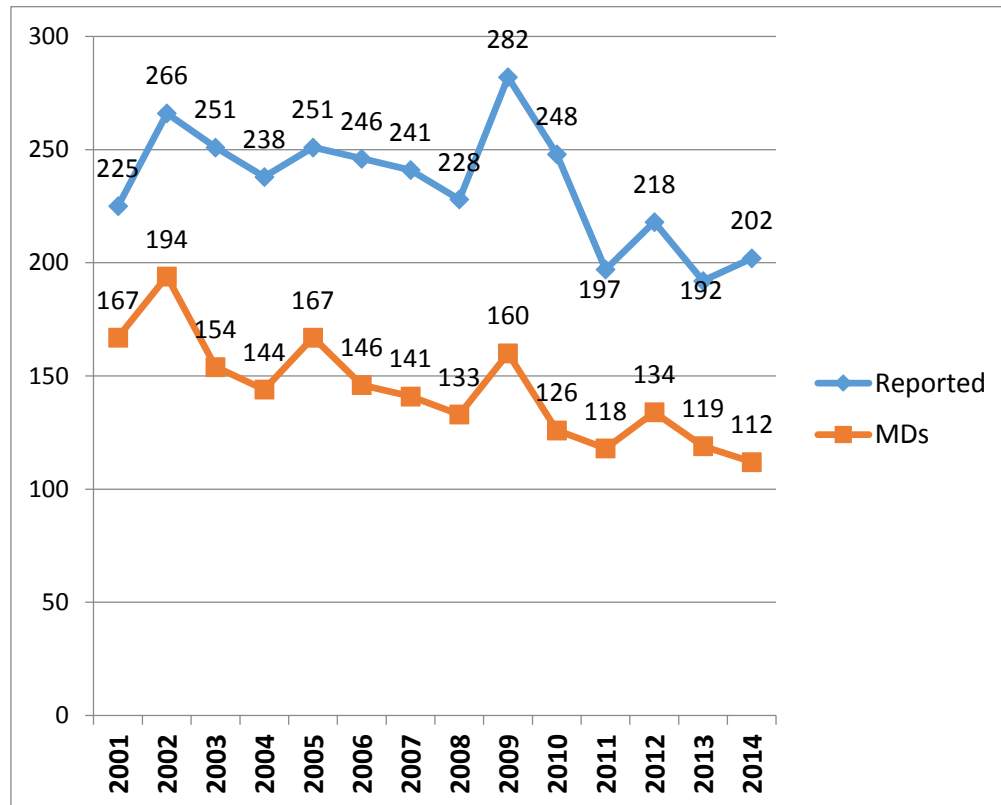
Figure 3: Maternal Death Surveillance and Response (MDSR) system



Analysis of maternal deaths — 2014

All deaths (irrespective of cause) of women in reproductive age group during the pregnancy period and until one year after termination of pregnancy should be notified to FHB. Out of 202 probable maternal deaths reported to FHB during 2014, 112 were confirmed as maternal deaths after a consensus reaching process among experts. The figure 4 shows the progression of reported and confirmed deaths over the years.

Figure 4: Probable and confirmed maternal deaths 2001 - 2014



A large majority of the women died due to a pregnancy-related cause in 2014 were either from rural (65%) or estate (10%) sectors. The following figures (5 - 7) show the maternal deaths by direct / indirect causes, antenatal / intranatal / postnatal period, and marital status.

Figure 5: Category of Maternal deaths

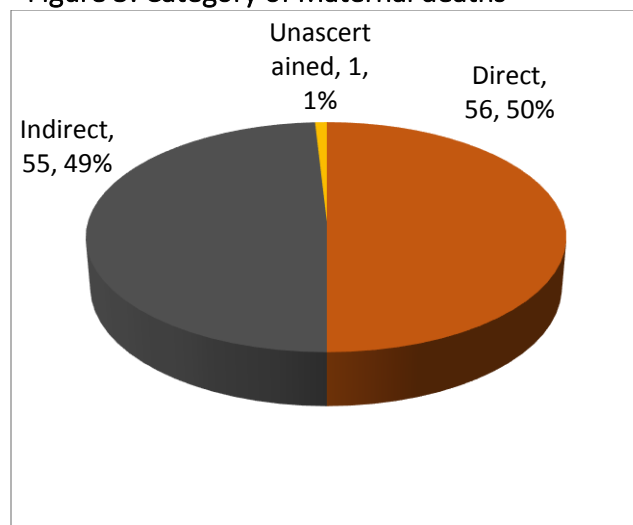


Figure 6: Timing of Maternal deaths

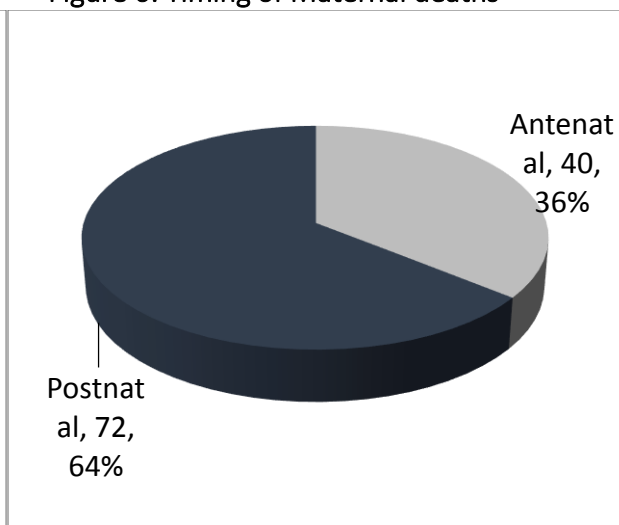


Figure 7: Maternal deaths by marital status

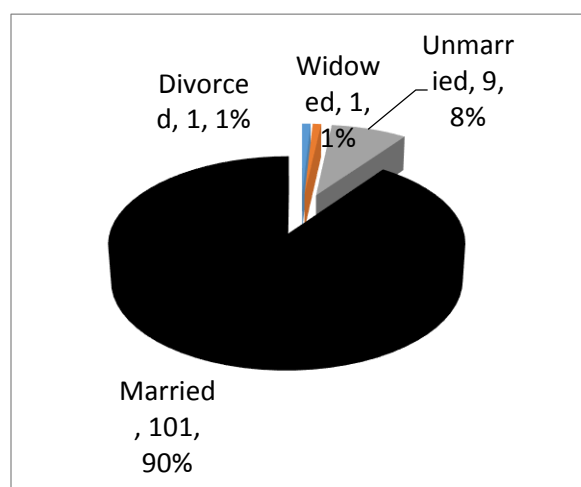
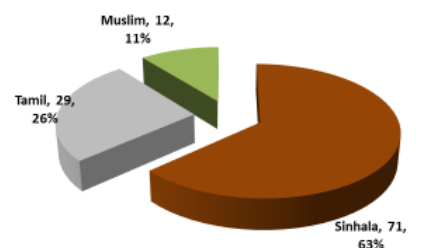


Figure 8: Ethnicity



Ethnicity	Est. Live Births*	Maternal Deaths	MMR
Sinhala	245743	71	28.9
Tamil	60386	29	48.0
Muslim	42216	12	28.4

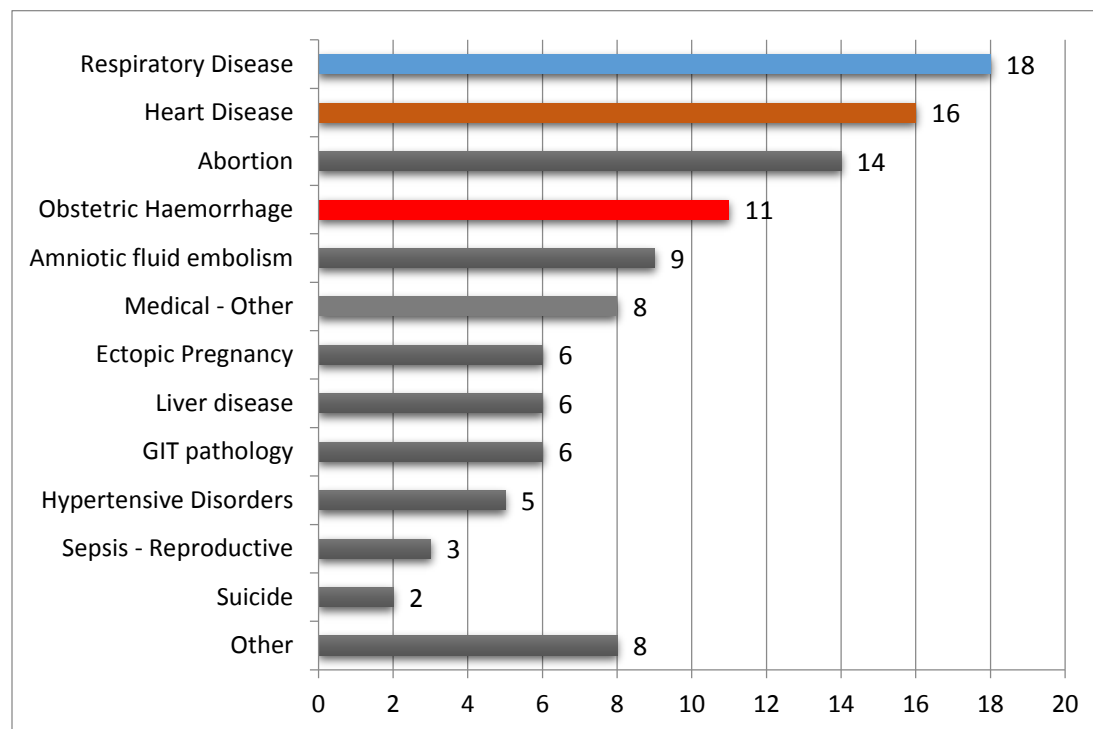
* Estimated Live Births –based on 2010 data

There is no significant difference in direct (50%) and indirect (49%) categories of maternal deaths (Figure 5). Many of the maternal deaths occurred during postpartum period (64%), highlighting the need of focusing on postpartum interventions to prevent such deaths (Figure 6).

It is also noticeable that a significant number of 'single' females (10%) contributes to maternal deaths. There were many socially-stigmatized pregnancies ended up as maternal deaths in 2014.

In 2014, Primies accounted for 21% of deaths. A high proportion of maternal deaths occurred in second pregnancy (31%) while 48% occurred among mothers in parity 3 and above. Approximately one fourth (26%) of mothers died belongs to high risk age groups: more than 35 years ($n=25$) and less than 20 years of age ($n=4$). Ethnicity shows a disparity in maternal deaths with the majority (63%) of the diseased were Sinhalese followed by Tamils (26%) and Muslims (11%). This is reflected in estimated ethnicity specific MMRs per 100,000 live births (Sinhalese 28.9, Tamils 48.0 and Muslim 28.4) (Figure 8).

Figure 9: Number of maternal deaths from different causes – 2014

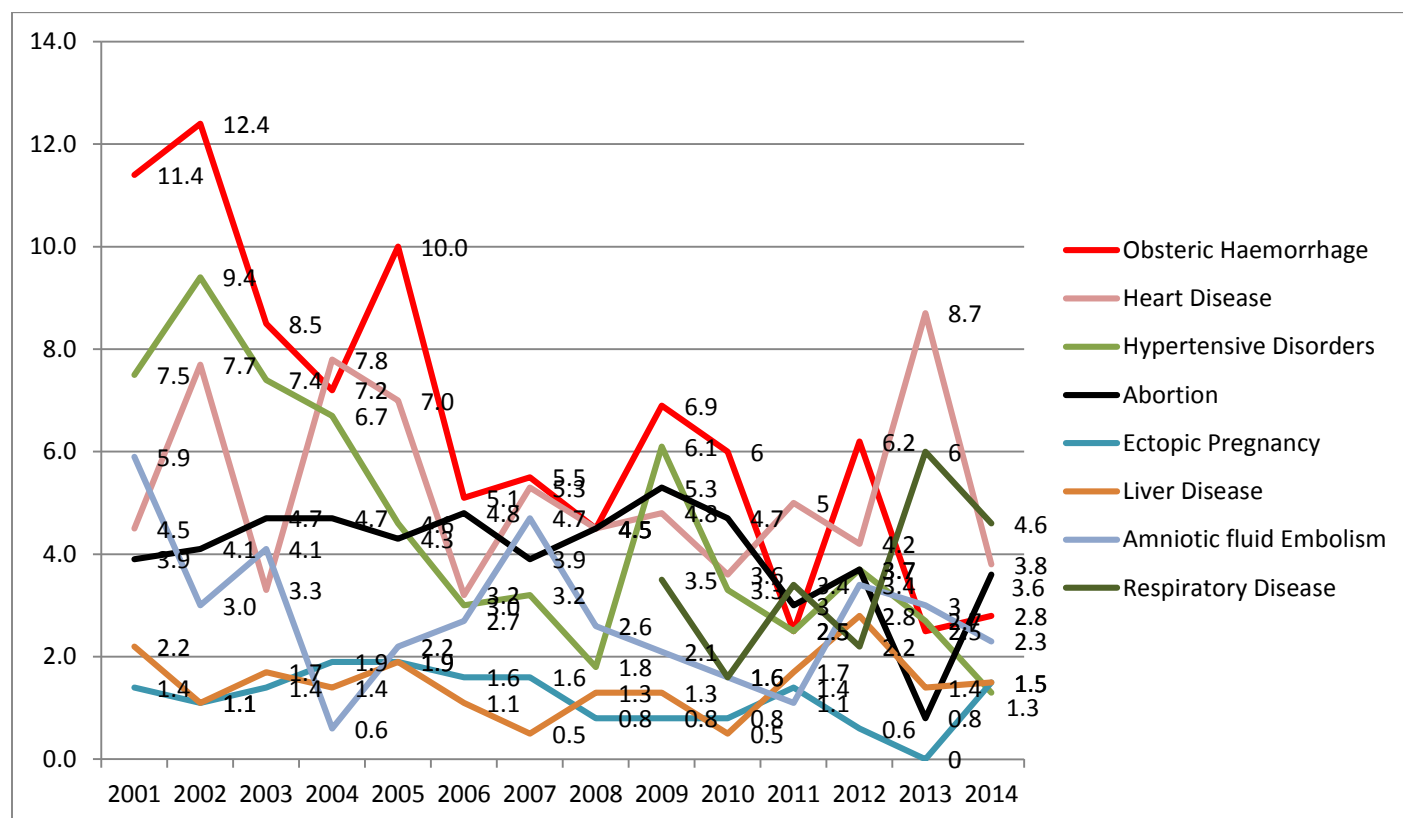


The leading causes of maternal deaths were respiratory disease, Heart disease complicating pregnancy, abortion and obstetric haemorrhage. It is apparent that medical disorders are emerging as significant causes of maternal deaths. Figure 9 and 10 draw the attention for need for cause-specific preventive strategies to reduce maternal deaths further in the country.

Cause-specific maternal mortality ratios (CSMMR) also reduced over the years to lower levels in 2014 especially in obstetric hemorrhage (2.8), hypertensive disorders (1.3) and Amniotic fluid embolism (2.3). However CSMMRs for septic abortion, heart disease, respiratory disease and liver disease remain more or less stagnant over the years.

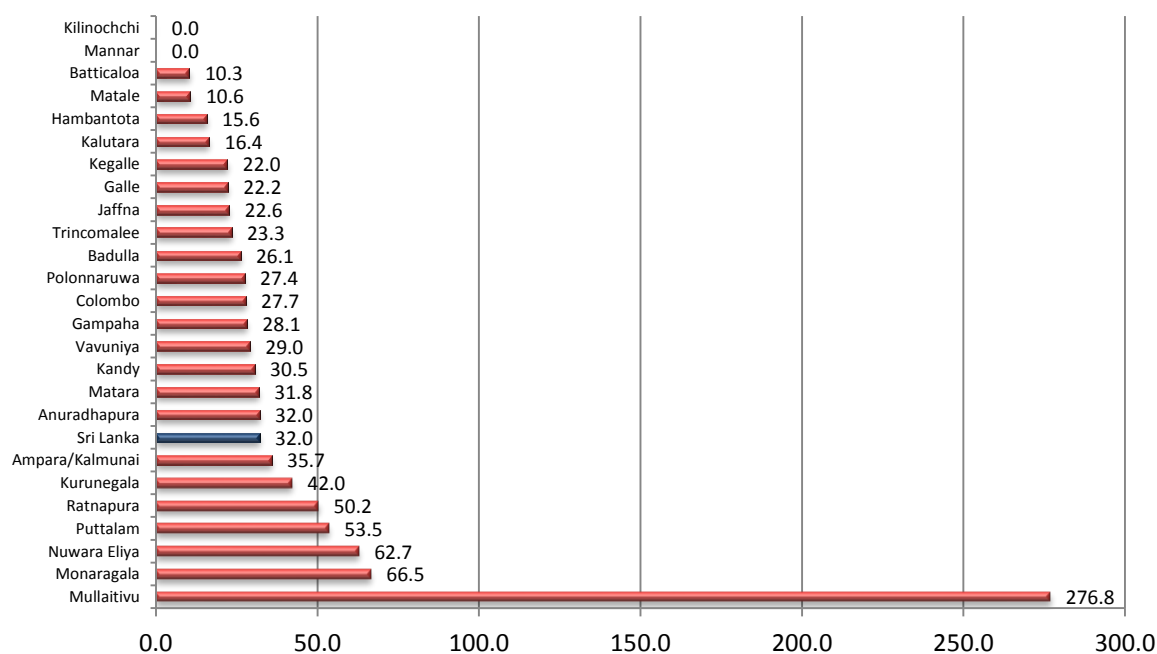
Figure 11 shows the district variations in MMR in 2014 highlighting the need for district specific preventive strategies.

Figure 10 : Cause Specific Maternal Mortality rates 2001- 2014



Source: Maternal & Child Morbidity & Mortality Surveillance Unit - Family Health Bureau

Figure 11: District Maternal Mortality Ratios —2014



The analysis of the maternal deaths in relation to the care received provides an opportunity to rectify deficiencies at different service delivery points.

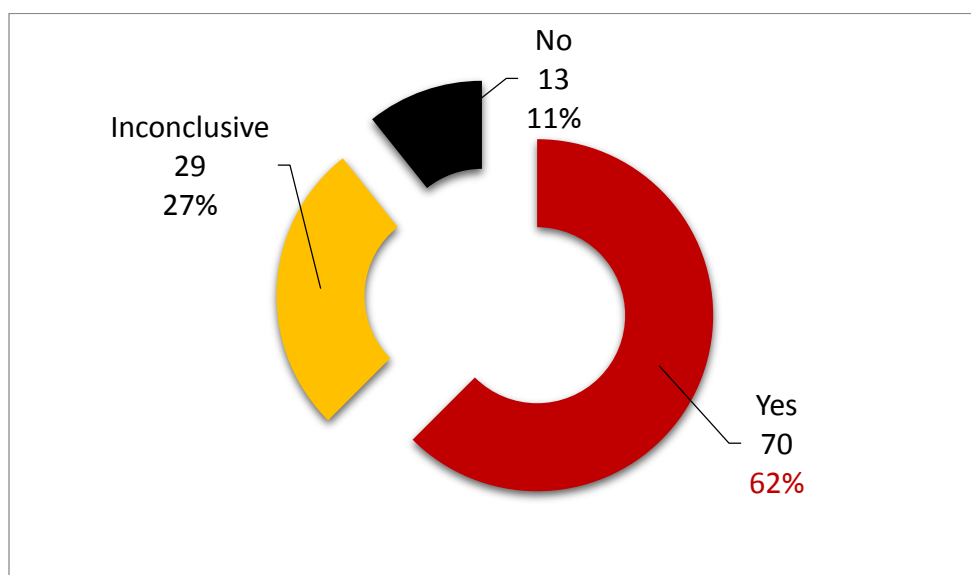
Almost 80% all women died in the year 2014 died in hospitals (Table 1) and of the women death took place at a hospital 98% died at a base, general or teaching hospital where specialized facilities are available . This indicates that there might have been an adequate opportunity for interventions.

Table 1 : Maternal deaths by place of Death

Place of death	N	%
Field	1	0.9
Home	3	2.7
On admission	14	12.5
Hospital	90	80.4
In transit between hospitals	4	3.6
Total	112	100.0

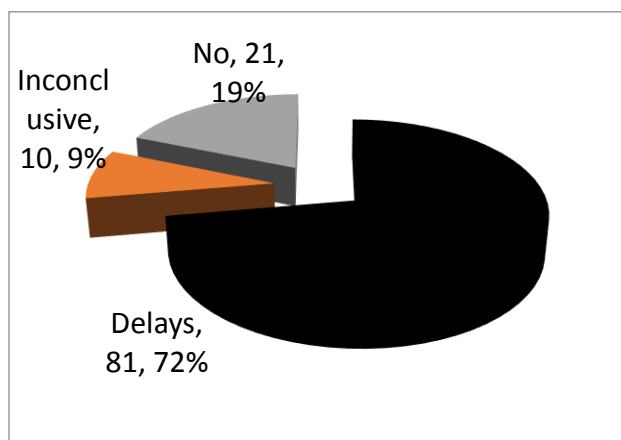
Provision of family planning services to needy women is a priority in preventing unwanted pregnancies. However, figure 10 shows that 35% of the maternal deaths in 2014 could have been prevented if unmet need for family planning had been addressed by relevant health care personnel.

Figure 12: Preventability of maternal deaths - 2014



At the national maternal mortality review, the experts assessed the preventability of the index maternal death. It is significant that 62% of the maternal deaths were preventable in the year 2014 (Figure 12). Further analysis of maternal deaths based on modified three delay model "The original 3-delay model conceptualized by Thaddeus and Maine (1994) modified for Sri Lankan contexts as Delay 1 -non-using of ANC / not practicing family planning services or Delay 3 Health system failures in preventive and curative services" (whether there is a deficiency in seeking (D1), reaching (D2) or treating (D3)) revealed that delays were present in 72% of deaths in the year 2014 (Figure 13). Further analysis revealed that 57.1% women did not seek care in time (D1) for their illnesses and also health care workers (both field and hospital) did not provide adequate care (D3) in 33.9% of the cases. This should alarm health care workers and administrators in both preventive and curative sectors since making women aware of health conditions which need timely care seeking is a fundamental in providing care for the reproductive age women and missed opportunities in receiving appropriate care once they accessed the health facility are of major concerns.

Figure 13: Maternal deaths by three delays



The unseen aspect of maternal death is that 188 Children lost their mother and 101 Husbands were left without the wife.

Response

Translating lessons learnt into policies, programs and practice is a fundamental aspect of maternal death surveillance and response. The utilization of the findings which are of national and sub-national concerns to relevant technical and administrative groups and providing feedback to the all who provide services to women for corrective actions. Minutes of the each national maternal mortality review of the relevant district is disseminated to a heterogeneous group of stakeholders. At present, several mechanisms are available to put the recommendations into action starting from the ground level (PHM level) up to national level (Secretary Health) through two advisory committees (Technical advisory Committee on Maternal Health and Family Planning and Newborn Care and Child Health) and National Committee on Family Health.

In the year 2014, several recommendations of the maternal death reviews were translated into action. Key action points were; improving competencies of several categories of healthcare workers (MOO, PHM),

introducing RED book to make visible highly vulnerable difficult cases, further expansion of rapid communication system, strengthening multidisciplinary care for critically-ill pregnant women, addressing human resource issues, regularizing 24/7 blood transfusion facilities, rapid response H1N1 pneumonia deaths etc.

