Presidential Address

Maternal mortality reduction in Sri Lanka (an overview)

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Sri Lanka has been quoted world-wide as a model among developing countries for its achievements in the area of health, considering its low-income level (per capita GNP of US$ 935 in 2002).

Table 1- Key demographic and maternal care indicators for the year 2002 in Sri Lanka

Key Demographic indicators	Key Maternal care indicators
Crude birth rate of 19.1 / 1000 live births	Contraceptive prevalence 70.8%
Crude death rate of 5.8 / 1000 Population	Pregnant mothers registered by PHM at home 93%
Total Fertility Rate of 1.9	Skilled assistance at delivery 98% (Govt. inst. 94%, Private inst. 4%)
Infant mortality rate of 15.9 per 1000 live births	Postnatal care by PHM 72% (average 2.7% postnatal visits within first 10 days)
Neonatal mortality rate of 12.9 per 1000 live births	Immunization of pregnant mothers with Tetanus Toxoid 100%
Maternal Mortality Rate of 53.6 100,000 live births	Average home visits per pregnant mother by PHM- 5
Life expectancy at birth being 71 years (Males) 75 years (Females)	

This cannot be attributed to the health services alone, but was influenced by many social determinants of health such as free education, free health services, social services and subsides.

Definition of a maternal death

A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from an accidental or incidental cause.

Direct obstetric deaths are those resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium) from investigations, omissions, incorrect treatment or from a chain of events resulting from any of the above. e.g. deaths due to ante/post partum haemorrhage. Indirect obstetric deaths are those resulting from previous existing disease or diseases that developed during pregnancy which were not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy. e.g. anaemia complicating pregnancy, heart disease-rheumatic or congenital.

A late maternal death is a death of a woman from direct or indirect obstetric causes more than 42

Table 2 - Trends in Maternal Mortality in Sri Lanka (1992-2002)

Year	Rate per 100,000 LB
1992	27.0
1993	58.0
1994	32.0
1995	61.0
1996	63.0
1997	63.0
1998	53.0
1999	55.8
2000	55.5
2001	46.8
2002	53.0

Source-Family Health Bureau, Ministry of Health

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days but less than one year after termination of pregnancy e.g. death of the mother after eclampsia leading to renal failure on 90th day.

A pregnancy related death is a death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death. (includes all maternal deaths and the deaths due to accidental or incidental causes).

Sources of Maternal Mortality Data

It was observed that the maternal mortality rate for Sri Lanka based on the Registrar General's Report was low. One of the implications of this low rate was that many donors considered that there was no great need for assistance where Sri Lanka was concerned. This is not a very satisfactory situation because the rates obtained through the routine MCH reporting system and the Maternal Death Investigation System were much higher. Therefore, the current practice is to accept the higher figure reported by the Family Health Bureau which is more realistic.

On analysing the reasons for maternal deaths, it can be broadly categorised into delay at three different stages, also referred to as the *Three Delay Model*

1. Delay in deciding to seek medical care
2. Delay in reaching a medical facility with adequate care
3. Delay in receiving quality care at the facility - lack of emergency obstetric care within the facilities

Table 3 - Percentage of Maternal Deaths by Cause in Sri Lanka (1997-2002)

cause	1997	1998	1999	2001	2002
Haemorrhage	23	25	20	24.5	18.5
PIH and complications	103	10.4	12.5	16.2	17.5
AF & Pulmonary embolism		5.82	7.6	12.57	5.2
Septic abortion	2.5	6.9	8.7	8.4	7.7
Heart disease	12.8	12.2	10.9	9.58	13.4
Liver disease	3.4	5.81	7.1	4.79	2.1
Postpartum septicaemia	15.2	9.88	4.9	4.9	7.2

Table 4 - Distribution of Maternal deaths in Sri Lanka by age (2002)

Age	No (%)
19-34 years	134 (69.0%)
Over 35 years	57 (29.4%)
No data	03 (1.5%)

Table 5 - Distribution of Maternal deaths in Sri Lanka by parity (2002)

Parity	No (%)
P1	154 (79.4%)
P2-P4	18 (9.3%)
P5 and above	13 (6.7%)
No data	9 (4.6%)

There are a number of factors, which have contributed towards the reduction in maternal mortality in Sri Lanka. Some of which are:

1. Development of the health care delivery system (field and institutional level) to reach remote/rural areas.
2. Organisational structure for the provision of MCH care
3. Favourable policies of the state.
4. Non-health factors such as introduction of free education and equal opportunities for girls and boys, high female literacy (87.9%), increasing age at marriage (25.5 years in 1994), high health literacy level, free health service and low transport cost as well as the availability of a wide-spread network of roads providing better access to health facilities.

1. Development of the health care delivery system (field and institutional)

1.1 Development of the field health service

The first Health Unit was established at Kalutara in 1926 for the delivery of an integrated MCH/FP package and to provide domiciliary and clinic

care. By 1952, Health Units were expanded to cover the entire country. As a result the role of the untrained midwife at village level diminished and a professionalized midwifery service was established which consisted of two main categories– institutional (hospital midwives) and field (public health midwives).
The public health midwife (PHM) is the front line health worker providing domiciliary and clinic maternal care. The PHM resides in the community, which helps to prevent geographical and cultural barriers. The smallest working unit in the preventive heath sector is the area under the PHM with one PHM covering 3000-5000 population. The number of PHMs employed in the preventive health sector is approximately 4600. Every household in Sri Lanka falls within a PHM area.

1.2 Development of institutional health service
The institutional midwife is responsible for the provision of midwifery service in labour rooms and maternity wards and hence responsible for maternal and new-born care. She is employed in maternity homes, rural hospitals, peripheral units, district hospitals, provincial hospitals and teaching hospitals. The number of institutional midwives employed is approximately 2700.
The number of mothers receiving trained care has increased steadily since 1948 (in 1958, 25% were home deliveries in contrast to 2002 where only 2% were home deliveries).

Several factors have contributed to the high institutional deliveries in Sri Lanka:

- National policy favouring institutional deliveries (Sri Lanka does not promote planned home deliveries)
- Important interventions during the antenatal period to improve skilled attendance at delivery
- Early registration of pregnant mothers at home by Public Health Midwives (coverage 94%)
- Increased domiciliary care (average 5 home visits per mother by a PHM) and clinic care (antenatal clinic coverage - 93%)
- Shared care by the public health staff and the institutional health staff.
- Decision making on the place of delivery during the antenatal period
- Development and expansion of supportive services e.g. blood transfusion services
- Availability of laboratory facilities
- Availability of transport facilities and ICU for critically ill mothers

Essential Obstetric Care (EOC) in Sri Lanka
EOC means the availability of essential care for management of pregnancy and delivery related complications and high-risk pregnancies to all women who need it. This includes surgical obstetrics, anaesthesia, medical treatment for eclampsia, facilities for blood replacement and management of risk pregnancies.

EOC Services would comprise the availability of parenteral antibiotics, parenteral oxytocins, parenteral sedatives/anticonvulsants, facilities for manual removal of placenta, for removal of retained products, for assisted vaginal deliveries (forceps/vacuum), for blood transfusions and for caesarean section (elective and emergency). The target of EOC in Sri Lanka is To establish comprehensive EOC facilities for 1 in 500,000 population and two basic EOC facilities for 500,000 population.

2. Organisational structure for the provision of MCH care
MCH care includes care for eligible couples, care for pregnant mothers through the domiciliary and clinic care service and the intra-natal and postnatal care. The bulk of maternal care is provided by well-trained midwives, who are adequately supplied and supervised and supported by midwifery qualified nurses and medical officers.

Family planning services were integrated to Maternal and Child Health services since 1965. Although the initial reduction in MMR in 1945 – 1960 was not significantly related to fertility decline, it has shown a linear decline with MMR after 1960s.

Close supervision and monitoring at field and institutional level has contributed much toward the sustainability and for the maintenance of quality of the MCH service. There is a well defined MIS system i.e. an in-built system of supervision for monitoring and evaluation of the MCH /FP program. Identified categories, identified process norms and standards for supervision as well as defined job functions for supervisors are available.

3. Key policy decisions
Certain important policy decisions made by the government had a positive impact on reduction of maternal mortality.

- Delivery of an integrated MCH package through Health Units.

- Replacement of Trained Birth Attendant (TBA) by trained midwives and discontinuation of TBA training.
- Promotion of institutional deliveries.
- Policies on Family planning and population control. e.g. integration of FP and MCH activities.
- Policies on human resource development.

Maternal Death Investigation System

A maternal death is a notifiable event in Sri Lanka. There is an in-built system of investigation of maternal deaths. Each maternal death is analysed at various levels to identify system failures. Investigation of a maternal death is a fact-finding mission, to correct deficiencies in the prevailing health system in order to prevent further deaths. All confirmed maternal deaths, all deaths of pregnant mothers within 42 days of termination of pregnancy (irrespective of the cause: maternal or non-maternal), and late maternal deaths should be notified. Notification and investigation of maternal death should be done as early as possible within 24-48 hours.

Lessons learned

From the above observations, certain special features have been identified.

- Integrated approach to provision of care as a comprehensive package is very cost effective.
- In built monitoring and supervision of MCH/FP service delivery system is needed for the sustainability as well as for maintaining quality.
- Strong political commitment and politicization as well as commitment, dedication and hard work of health personnel are needed for successful implementation of MCH activities.

Challenges for the future

Although Sri Lanka has shown remarkable progress in the area of maternal mortality reduction, much more remains to be done.

- Equitable distribution of maternal and perinatal care services is needed to reduce inter and intra-district disparities.
- Addressing the issue of special groups such as the plantation sector, conflict-affected areas and urban slums.
- Sustaining adequate coverage of MCH/FP services while maintaining quality.
- Monitoring for the cost effectiveness in the delivery of the MCH/FP services.
- Ensuring adequate resources at field and at institutional level.
- Accommodating other reproductive health activities without disturbing the MCH/FP activities.