Maternal health in Sri Lanka: 75 years of national commitment towards excellence

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Abstract
Sri Lanka has a legacy of religious and cultural practices promoting health, and its rulers have been responsive to health needs of the populace. The healthcare milieu that prevailed in the pre-colonial and colonial periods favorably influenced the evolution of maternal health in the last 75 years. Since independence, maternal health in the country improved in many dimensions and directions, in the backdrop of multiple sociodemographic changes and geopolitical fluxes, while far-reaching advances in the medico-technological and communication fields were taking place at global level.

By 1948, maternal health services were extensive with maternity hospitals, midwifery training school and functional health units in place. The establishment of a cadre of government-trained midwives instead of training traditional birth attendants (TBAs) was a key policy decision that brought long-term dividends. The WHO supported training primary health care workers even before opening their country office in 1952. In the early days, obstetricians relied mostly on their skills to conduct dexterous maneuvers with the generous use of rotational forceps rather than resorting to abdominal deliveries.

The Family Planning Association was founded in 1953, which introduced family planning services to the country till the government took over the subject in 1958. A rigorous campaign (punchi pawla rattharan), promoting sterilization was conducted for population control in 1974, which resulted in the total fertility rate coming down significantly.

Maternal Death Surveillance and Response system (MDSR) was established in 1981 which has been recognized globally as a success and is being upscaled to a confidential Inquiry status. Commitment and untiring efforts of the Ministry of Health: Family Health Bureau, professional organizations, development partners including the WHO, have contributed for the achievements in the area of women’s health.

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technological and communication fields were made at the global level. In order to capture some of the key developments within the last 75 years, they are described here in three slabs of 25 years.

**Post-independence: Early years (1948-1973)**

When Ceylon regained independence in 1948, the population was 7.1 million (which was doubled to 12.5 million by 1978 [4]), and opportunities for women were limited with a female literacy rate of 43.8%, compared to a male literacy rate of 71%. At this time, the country was battling with malaria and hook worm infestations contributing to widespread anemia, affecting women’s health critically [5].

During this period, maternal health was delivered through a network of 572 Health centers, 79 maternity homes (64 government, 12 local authority and 3 private (1947)), totaling 714 beds [6]. By 1950 the De Soysa Maternity Hospital was operational, delivering 11,899 live births (1950). Additionally, a field staff of 840 PHMs and 40 PHNS were providing maternity care (1948) [7].

Ceylon experienced 2,377 maternal deaths in the year 1948 (MMR 830 per 100,000 live births) of which 905 (38%) were due to toxemia, 517 (21.7%) due to sepsis, and 376 (15%) due to hemorrhages. The “Big Three” accounted for nearly three out of four maternal deaths [8].

The experience at De Soysa Maternity Hospital in 1948 captures the maternal health scenario of the era. In that year the MMR for the hospital was 1,126 per 100,000, of these, 23.4% were due to retained placenta, 18% to placenta previa and 16.5% caused by rupture of uterus due to obstructed labour along with a few cases of acute inversion of uterus.

State commitment to health was very strong in the immediate post independent era with a ministerial portfolio allotted for health in the first post-independent cabinet. Every successive government strived hard to fulfill this commitment.

Maternal and child health was a priority programme of the WHO from the First World Assembly in 1948. Other priority programs like malaria control, nutrition and environmental sanitation too had a positive impact on maternal health. The WHO facilitated training of primary care health workers and medical officers in public health including maternal health. This was initially done through an administrative authority for MCH at government level. The WHO country office was established in 1952.

Early investment through the establishment of government-trained midwives instead of training traditional birth attendants (TBAs) was a key policy decision that brought long-term dividends within the modest budget the country could afford [9].

The practice of Obstetrics in the early days was conservative with Caesarean delivery resorted to in “life saving” situations through a vertical abdominal and an upper segment uterine incision. Obstetricians at that time, relied mostly on their skills to conduct dexterous maneuvers and procedures such as internal podalic version and advocated the generous use of rotational forceps which was successfully conducted by “well-trained” hands. However, bladder injuries were commonplace following these interventions, compelling one of the eminent obstetricians at the time to say “The bladder so close to the birth canal, yet so far from our thoughts until the catastrophe strikes” [10]. Long delays in accessing services due to poor transport facilities, and a low threshold for intervention in obstructed labour, resulted in many obstetric fistulae. By 1950, the second national-level maternity hospital was operational as Castle Street Hospital for Women in Colombo [11].

In spite of efforts to improve antenatal services, a considerable dropout rate of mothers from care offered, was a concern to the authorities at that time. Of the 15,202 pregnant mothers who first made antenatal clinic visits, only 11,232 came for a second visit (1954) [11]. Antenatal care was strengthened by increasing the cadre of public health midwives: 12 per 100,000 population in 1960, 15 per 100,000 in 1970 and 30 per 100,000 in 1996 [12]. WHO facilitated prenatal testing for Syphilis (1953), laying the foundation to eliminate congenital syphilis, while administration of tetanus toxoid during the antenatal period (1969) paid dividends in eliminating neonatal tetanus which was rampant at the time. Women increasingly selected health institutions where doctors were available, although delivery continued to be managed largely by midwives. The concept of a “peripheral unit” with a doctor in charge was introduced during this period, and women gained greater access to facilities with emergency obstetric care (EOC) facilities.

Efforts made by state and non-state actors had resulted in an institutional delivery rate of 66.3% by 1970 [13]. The first organized effort for introducing family planning was by the Family Planning Association (FPA) founded in 1953 as a non-governmental organization. This service was later taken over by the government (1958). Oral contraceptive pill (OCP) was introduced successfully in 1960 and family planning (FP) was integrated into MCH services. In 1968 WHO enlarged the concept of maternal and child health to family health, family planning became an important component of MCH. The same year, the Maternal and Child Health Bureau was established within the Ministry of Health which was later redesignated as Family Health Bureau.

**Post-independence: Intermediate years (1973 to 1998)**

The World Conference on Population (1974) drew attention to the topic of “population explosion”, and Sri Lankan Government joined the global efforts through a rigorous campaign with the slogan: “punchi pawla
raththaran” (a small family is golden) with a drive for voluntary sterilization, promoted through an incentive payment to the patient and later extended to the staff. With family planning services linked to the population policies of the Ministry of Plan Implementation, programme was considered a success. which was recognized at the World Conference in Mexico (1984) where the Sri Lankan Minister of Health was nominated as the “Parliamentarian of Population” [14]. Nearly 50 years later, there are still concerns about this approach with young adults having gone through a permanent FP procedure. However, the total fertility rate came down from 4.1 (1970-1972) to 2.6 (1985-1987) over the following 10 years [15]. The present approach to family planning shifted back to “contraception by choice” with the “cafeteria approach” in selecting the method.

Safe Motherhood initiative was launched in Nairobi (1978), and Sri Lanka College of Obstetricians and Gynecologists (SLCOG) took the leadership with the collaboration of Asia Oceania Federation of Obstetrics and Gynecology joining with the Family Health Bureau and WHO conducted many safe motherhood programmes across the island and 40 years later, the SLCOG continues with the programme.

Sri Lanka introduced a Maternal Death Surveillance and Response system (MDSR) in 1981 with mandatory notification of maternal deaths gazetted (1985). A structured review of maternal deaths was initiated in 1995 [16].

The commitment and motivation of the officials of the FHB and the professional colleges acted as the catalysts to sustain this process and created a milieu towards its success which has gained global recognition.

Trend analysis of the major causes of maternal deaths (Figure 1) shows the changing maternal health scenario over the years.

Pregnancy induced hypertension (also called PIH, toxoaemia, and eclampsia) was the main cause of death till 1948. With the availability of island-wide antenatal care, its contribution to maternal deaths was nearly halved due to better clinical management through the rational use of antihypertensives, the popularization of magnesium sulphate and the development of national guidelines.

Contribution to maternal deaths from sepsis started to go down even before 1948, possibly with the gradual institutionalization of deliveries and the increasing availability of skilled help at births. This descent continued in the following years.

In spite of increasing hospital deliveries and routine use of parenteral ergometrine, (tablets were used earlier), deaths due to hemorrhage continued to rise till 1995, and thereafter started to fall. The decline of maternal deaths due to hemorrhage may be attributed to: interventions decided at maternal death reviews; promotion of active management of the third stage and popularization of balloon tamponade (condom catheter); use of tranexamic acid; and capacity building exercises on intrapartum care targeting peripheral institutions conducted. Sadly, unsafe abortion as a cause of maternal deaths remains unabated in spite of clear management guidelines.

Strong policy commitment towards maternal health during this period is evident in the contents of the National Health Policy of 1992, the National Health Policy of 1996, and the Populations and Reproductive Health Policy of 1998.

When HIV/AIDS made its appearance in other countries WHO helped the restructuring the Anti VD

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**Figure 1.** Percentage contribution made by selected causes, to maternal mortality, 1930-2000 [17].
campaign as the National STD'AIDS control Programme. Sri Lanka received WHO validation for Ending Mother to Child Transmission of HIV and Syphilis in 2019.

The expansion of the specialist cadre had been slow initially: 23 in 1953, 24 in 1962, and gradually reaching 50 in 1967. Limited opportunities for obtaining postgraduate qualifications were a bottleneck that persisted for many years. The decision to establish the Postgraduate Institute of Medicine in Sri Lanka (1980) and benchmarking the degree awarded as the qualification for recruitment of specialists had far-reaching benefits to the country. Adequate numbers of specialists became available to all specialist hospitals with two consultants delivering Island-wide, 24/7 comprehensive obstetric care. Between 1980 and 2020 PGIM produced 315 consultants in Obstetrics [18].

Post-independence: later years 1998 to 2023

Sri Lanka became a signatory to the Millennium Declaration in 2000. The Millennium Development Goal 3 (MDG 3) focused on the health status of the mother and the child. The indicators to assess the achievements of this goal were identified and were reviewed in 2014. Indicator 5.1 was maternal mortality and Sri Lanka was considered to be on track. Sri Lanka had achieved the Indicator 5.2: the proportion of births attended by skilled birth attendants (%) by reaching 99.5% [19].

Since the birth of the first baby by in-vitro fertilization (IVF) in 2002, IVF services have expanded and brought relief to untold suffering of thousands of infertile couples. However, there are still many ethical concerns and unanswered questions that need to be clarified in this area. A few attempts have been made by the National Science and Technology Commission (NASTEC 2003) and the Sri Lanka Medical Council Committee on Ethics (2005), to achieve this, but so far, nothing concrete has materialized [20]. However, a clearly documented, legally defined monitoring and quality assurance mechanism in the form of an independent Authority on assisted reproduction is urgently needed [21].

An unusual threat to pregnant women appeared in the form of Aspergillus meningitis in 2004 which caused a cluster of five deaths. Although, what led to this outbreak was not precisely identified but a lapse of quality assurance of equipment/syringes in the background on a hasty post Tsunami response was considered as a likely possibility [22].

Increase in non-communicable diseases is changing the maternal health scenario, in synchrony with that of the general health of the country requiring appropriate changes in the maternal care provided. Special concern on new communicable diseases like AIDS, new strains of Influenza, H1N1, is also necessary. The WHO has provided technical and financial support for prevention and control programmes.

Policy response to maternal health was further strengthened by the development of the National Policy of Maternal and Child Health (2012) which was totally dedicated to maternal and child health. Policy goals 1 and 2 focused on maternal care while goal 7 addressed family planning. Goal 11 of this policy addressed the research needs in this area.

A service availability and readiness assessment at national level conducted in 2017 found that antenatal care services were available within 84% and 65% of public and private sector institutions respectively. In the public sector, 100% of MOH offices, 100%, tertiary hospitals, 89% secondary hospitals and 76% of primary institutions provided antenatal care. All components of antenatal care services were available except blood sugar monitoring which was available only in 75% of facilities. Overall, 85% of public sector hospitals offered delivery services. In addition, emergency transport facilities were available in all hospitals. The national level use of partogram was 57%. The availability of Comprehensive Obstetrics Care and Newborn Care (9 signal functions) was 100% in tertiary hospitals and 65% at the secondary level. (In 2017 some of the base hospitals were not specialist hospitals) [23].

Improvements in transport contributed to the improvement of maternal health with better roads, abundance of three-wheeler vehicles in rural communities and latterly, the establishment of free island-wide ambulance service (Suva Sariya 1990) in 2016 became a turning point in this regard.

The COVID-19 pandemic (2019) stretched the healthcare delivery system of the country to its limit. A total of 11,214 COVID-19 positive pregnant women were reported from March 2020 to December 2021. Follow-up information was available for 66% [7,408] of the total registered. 73% of these women were hospitalized, 133 patients were treated in ICUs, out of which 96 were ventilated, and 11 were managed with extracorporeal membrane oxygenation (ECMO). A total of 57 [0.76%] deaths among COVID-19 positive pregnant women were reported up to 31st of December 2021[24]. Consequences of the COVID-19 pandemic on maternal health were multidimensional [25]. The success of the health system in reaching near 100% immunization of pregnant mothers was remarkable.

Attention to mental health was paid rather late in the evolution of maternity care. Higher incidence of perinatal depression and considerable number of suicides among women while pregnant, although suicides were not directly attributed to the pregnancy, initiated a dialogue that resulted in the inclusion of a screening tool for mental health issues in routine antenatal care.

At the end of 75 years of commitment and untiring efforts of all concerned, Sri Lankan women experienced an MMR of 29.5 per 100,000 live births in 2020. (a reduction of 82% from 167 in 2001 in 20 years [26].) The percentage of pregnant mothers with gravidity 5 or more registered was only 2.3%, the average number of clinic visits by a mother was 5.6%, the percentage of home deliveries was 0.1% [27].
The rising Cesarean section (CS) rates observed in the country are a concern. The national cesarean section rate stood at 43.1% in 2021, an increase of nearly 33%, from 2015 (34.5%). This increase is over a short span of 6 years. A trend analysis performed using joint point regression and autoregressive integrated moving average (ARIMA) using CS rates 2006-2016, made an ominous prediction of 53.2% C.S. rate for 2025 [29] i.e. every other baby would be delivered by CS.

While accepting that multiple factors, some being non-health, inclusive of exercising women’s right to choose the mode of delivery, are responsible for this trend, it is now timely to do an in-depth root cause analysis and address them in a holistic manner through a national multi-stakeholder dialogue.

Since independence, Sri Lanka has adopted a free health policy for all Sri Lankans. The rapidly expanding private sector has access to a full spectrum of care on a fee levying basis. Sri Lanka’s total expenditure on healthcare (both public and private) is around 3.8% of GDP: 3.2% (2012),4.08% (2019). Between 2015 and 2021, the domestic sources of financing accounted for, on average, 94.7% of public health spending, while foreign sources accounted for only 5.3%. The recent COVID-19 epidemic was an additional strain on an already depleting budget to the tune of LKR 117.5 billion in 2020 and LKR 53 billion till June 2021. The country received some financial support from multiple international and local donors during this period.

In this gloomy scenario, the health system experiences a double jeopardy at present: economic crisis and the exodus of health professionals, which is very likely to affect the future of maternal health significantly, unless remedial or at least “damage control” measures are initiated early and effectively.

The UN recently highlighted that Sri Lanka is in the midst of the worst socio-economic crisis in its history, and the once robust health-care system is nearing collapse. An estimated 215,000 Sri Lankan women are currently pregnant, including 11,000 adolescent girls. Around 145,000 women will deliver in the next six months [30]. Sustaining the achievements made in maternal health over the last 75 years has now become a challenge in this context.

**The way forward**

1. Future responses needed are high-tech, expensive to acquire and sustain. Establishment of a well-planned cost-efficient provincial network of high-tech service units with facilities such as ECMO, dialysis, etc. for women who survive the acute event but need highly specialized interventions.
2. The number of women surviving critical event at COCs and need short-term intensive care support are high and a planned expansion of intensive care facilities available/dedicated for maternity patients to prevent long-distance transfer of very ill patients is needed.
3. The high-dependency beds in every specialist obstetric unit (with adequate staff training) may be part of a cost-effective solution.
4. High-concept risk situations such as placenta accreta

![Figure 2. Cause specific MMR 2001-2019](image)
(high scar prevalence with rising CS rates), are increasing and the establishment of a few Provincial Units in selected hospitals is needed.

5. Preventing maternal morbidity and mortality needs closer collaboration between multiple specialties and subspecialties. Consultations between these specialties need to be promoted through closer linkages with professional organizations.

6. The State, professionals, and professional organizations need to have a frank dialog with a wider group of actors on issues such as rising CS rates in order to promote healthy behaviors and practices.

7. The crisis involving the health workforce due to resignations needs urgent attention of the State and professional organizations. Coping strategies need to be identified and a short- and long-term action plan need to be developed through multi-stakeholder engagement.

8. In the context of the macroeconomic crisis affecting the country, health disparities affecting different marginalized groups need to be identified; the intersectionality of resultant adverse outcomes taken into account; and appropriate interventions integrated into the maternal health programs.

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