Insights on Maternal Health in the Philippines from National Health Surveys and Maternal Health Policies

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REVIEW ARTICLE

Abstract

Background: The Sustainable Development Goal 3 (SDG) took effect after many of the world's developing countries failed to meet the previously set Millennium Development Goals (MDG). Despite advances in crucial maternal health metrics, the maternal mortality ratio in the Philippines is still increasing. This study aims to document the progress in maternal health in the Philippines and analyze the patterns in maternal mortality reduction in relation to various maternal health metrics and contextual factors.
Methods: Data from 36,664 livebirths were analyzed from the five published Philippine Demographic and Health Surveys. Direct estimation was used to project the different maternal health metrics within the 20-year period. Data from the Philippine Health Statistics (PHS) reports were also used to plot the maternal mortality ratio in the Philippines throughout the years. Correlation with contextual factors such as government budget, maternal health policies and reports was also done.
Results: Despite the improvements in facility-based delivery and coverage of skilled attendants, there was no direct progress observed in the maternal mortality ratio. Relative inequalities in maternal health indicators between urban and rural settings have also shown considerable improvement. There were also notable milestones in maternal health, including the adoption of MDGs, development of various guidelines and policies, and the passing of the reproductive health law.
Conclusion: Findings indicate that the programs to improve maternal healthcare in the Philippines have not succeeded in improving maternal mortality. For the Philippines to meet SDG3, these programs should be designed to incorporate socioeconomic and contextual factors.

Keywords: *Philippines, maternal health, maternal mortality, MMR*

Introduction

The Sustainable Development Goal 3 (SDG3) aims to ensure health and wellness of all for all ages to encompass universal health care and maternal health. SDG3 took effect after many of the world's developing countries failed to meet their goals. In the Philippines, maternal mortality ratio (MMR) dropped from 96 per 100, 000 livebirths in 2000 to 74 in 2015 [1]. Despite this improvement, the Philippines was still not able to meet its Millennium Development Goal 5 target which was aimed at reduction of three quarters of the MMR from the 1990 baseline of 209 to 52.

The current SDG3 global target in reducing maternal mortality is to attain an MMR of below 70 per 100,000 livebirths. This was brought about by countries not being able to reduce MMR by three-quarters between 1990 and 2015. Regionally, the average maternal mortality in the developing countries of Asia has decreased by more than half, from 344 per 100,000 live births in 1990 to 133 per 100,000 livebirths in 2013 – still falling short from the target reduction by 75%. However, through the course of measuring the MDGs, there were six countries that were seen to be stagnating (and even regressing) in terms of reaching maternal mortality goals. These included Brunei Darussalam, Republic of Korea, Tonga, and the Philippines [2].

The Philippine government, recognizing the magnitude of the problem in recent years, has placed maternal health high on its political reform agenda. The Department of

Health in 2006 launched the innovative Women's Health and Safe Motherhood Project 2 with the recognition that "good maternal health can also strengthen the entire health system." Pillars of intervention included 1) sector governance 2) infrastructure and essential medical products and equipment; 3) human resource development 4) financing and 5) service delivery [3]. However, this project failed to be extended past its 6-year term and ended on December 2012. A Manual of Operations for the implementation of Maternal, Newborn and Child Health Nutrition Strategy (MNCHN) was formulated in 2008 and then modified in 2011 to guide local authorities such as chief executives, health officers and staff to establish, implement and sustain a responsive MNCHN service delivery network in identified priority areas and population groups needing assistance. This strategy is in accordance with the Department Memorandum 2009-0110 "Implementing Health Reforms Toward Rapid Reduction in Maternal and Neonatal Mortality" and Administrative Order 2009-0025 "Adopting New Policies and Protocol on Essential Newborn Care [4]". The last policy development in the MNCHN strategy was in 2014 under Ordinance No. Sp 2379, s-2014. In that year, as part of the Implementing Rules and Regulations (IRR) of the Responsible Parenthood and Reproductive Health (RPRH) Act of 2012 (R.A. No. 10354), through the Office of the Secretary, the DOH again issued another guideline in establishing Service Delivery Networks (SDN) to assist key agencies and hospitals involved in the policy implementation [5]. However, the slow reduction and wide disparity in the MMR between and among different regions and localities in the Philippines still needs to be addressed. In the past, Bredenkamp et.al. (2017) and Paredes (2016) demonstrated that inequalities in maternal health outcomes are amplified by household income variances among the population [6,7]. Another reason for this slow decline in MMR would be inadequate access to post-partum health services due to gaps in maternal health education [8].

In monitoring progress of health programs, it is important to note how the different policy actors and processes affect agenda setting and implementation. Social determinants of health and contextual factors such as political agendas, economic progress, historical events, changes in governance, election years, international agendas, and country-based health demographics influence program action, inaction or choice [9].

Unlike the other studies mentioned above that quantitatively measured changes in patterns of maternal mortality, this paper would like to reflect on and give a commentary regarding Philippine maternal health progress in the last 20 years in relation to various maternal health metrics and contextual factors. It seeks to provide a conceptual framework for researches that assess the effectiveness of individual building blocks in the health care system in improving maternal outcomes in different areas in the Philippines. It is also hoped that this paper will bring out valuable lessons that will help the Philippines progress towards achieving SDG3 goals.

Methodology

Data collection

After study approval from the University of the Philippines Manila Research and Ethics Board, assessment of trends in maternal metrics in the last twenty years was done using five Philippine demographic and health surveys from 1993, 1998, 2003, 2008, and 2013 [10,11,12,13,14]. The datasets used in this study were obtained from the "DHS Program: Demographic and Health Surveys" website <https://dhsprogram.com>, the "Republic of the Philippines: Department of Health" website <http://www.doh.gov.ph/>, and the "Republic of the Philippines: Department of Budget and Management" website <https://www.dbm.gov.ph/>. Data can be directly obtained and downloaded from the respective websites mentioned. These national surveys were initiated and implemented by the Philippine Statistics Authority (previously the National Statistics Office), together with the global Demographic and Health Survey (DHS) program. The DHS surveys we used covered 13728, 13708, 13914, 13764, and 16732 households in 1993, 1998, 2003, 2008, and 2013, respectively. The surveys provided us with direct estimates of skilled birth attendance (SBA), and facility based deliveries (FBD) from the 36664 livebirths documented in the complete birth history interviews of the corresponding households (women aged 15-49). The surveys also provided geographically aggregated data into urban or rural divisions.

To document the maternal mortality ratio in the same years when the DHS was released, we obtained data from the Philippine Health Statistics (PHS) report published by the Epidemiology Bureau of the Philippine Department of Health [15]. This document provided cross-sectional data on maternal deaths and number of livebirths through compiled Field Health Service Information System (FSHIS) reports from the different local government health units.

To correlate these health datasets to possible contextual factors, we obtained data on the annual health budget through from the Government Appropriations Act [16], different maternal health program reports and various DOH health policies [2,3,4,5,15,16].

Analysis

Estimates of maternal mortality ratio (MMR) in the same years were generated from raw cross-sectional data of the Philippine Health Statistics Report. To assess trends between these datasets, STATA 13.0 was used to generate two-way scatterplot graphs to visualize possible direct relationships (MMR & SBA, and MMR & FBD). To examine inequalities, variance between the rural and urban setting for the DHS datasets was also documented.

Going beyond the DHS, we searched for contextual factors that might have affected the trends in the maternal mortality ratio. Estimation was done with the data on the DOH annual budget from the General Appropriations Acts of the same years and was also correlated with the MMR. Factors related to health system strengthening were also considered for the analysis. These factors include pertinent policy changes, relevant programs on maternal health, and general health system issues and events that may have affected maternal health outcomes between 1993 and 2013.

Results

Figure 1 shows that the estimates of maternal mortality ratio did not show sharp reduction in the 20-year period. In 1993, the point estimate of MMR was 92.1 deaths per 100,000 livebirths. This then increased by 17%, to reach a point estimate of 107.7 deaths per 100,000 livebirths in 2003. By 2013, the point estimate dropped to 86.4 deaths per 100,000 livebirths, which is a 20% decrease in MMR. Relatively, the maternal mortality ratio decreased by only 6.2% from 1993 to 2013.

Other maternal metrics such as delivery at a health facility, and skilled birth attendance rate both improved through the 20-year period. As seen in Figure 2, the point estimate of percent live births delivered in health facilities in 1993 was 28.2%. By 2013, facility-based deliveries (HFD) were estimated to be at 61.1% (which amounts to a 116.7% improvement). Similarly, Figure 3 shows us 37.9% improvement in skilled birth attendance (SBA) from 1993 to 2013 – with point estimates of 52.8% SBA in 1993, and 72.8% in 2013.

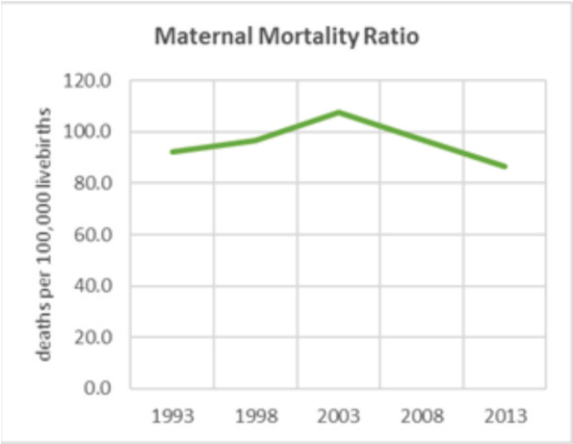

Figure 1. *Maternal Mortality Ratio from 1993 to 2013*

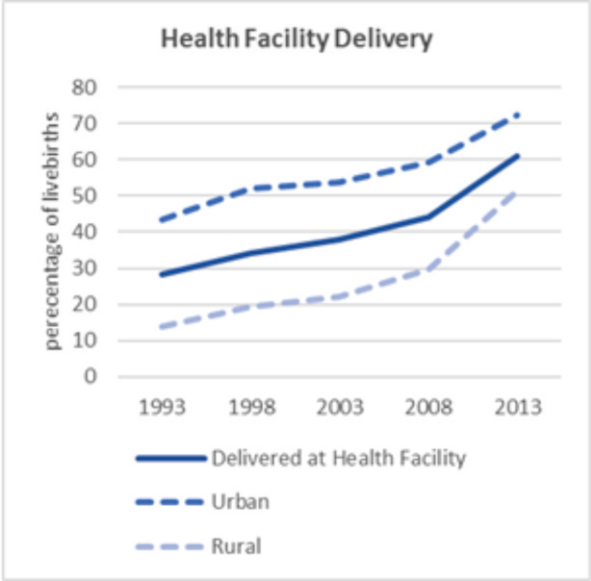

Figure 2. *Percentage of Facility-Based Delivery from 1993 to 2013*

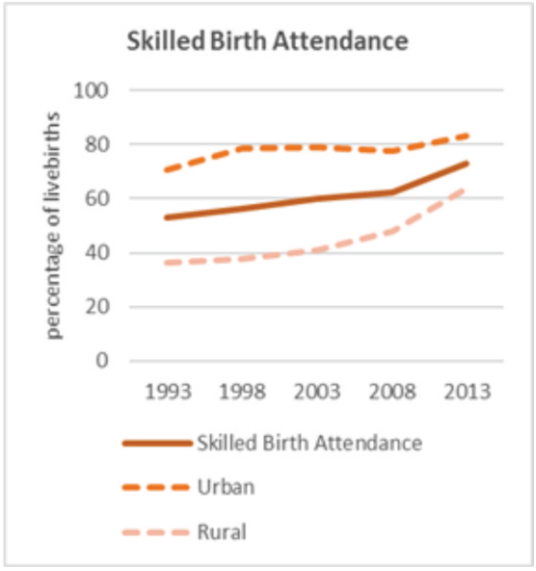

Figure 3. *Percentage of Skilled Birth Attendance from 1993 to 2013*

Table 1. *Comparison of FBD and SBA point estimates between Urban and Rural settings from 1993 to 2013*

		1993	1998	2003	2008	2013
Factory Based Deliveries		28.2	34.2	37.9	44.2	61.1
	Urban	43.5	52.1	53.7	59.2	72.4
	Rural	13.8	19.2	22.0	29.8	51.3
	**difference*	29.7	32.9	31.7	29.4	21.1
Skilled Birth Attendance		52.8	56.4	59.8	62.2	72.8
	Urban	70.4	78.5	79.0	77.5	83.3
	Rural	36.1	37.7	40.9	47.7	63.8
	**difference*	34.3	40.8	38.1	29.8	19.5

Aside from metrics such as facility delivery and skilled birth attendance, what other observable factors may have influenced the measured maternal mortality ratio estimates from 1993 to 2013? In the past twenty years, we have observed significant gains in terms of health financing for the Department of Health. As in 1993, the annual budget for DOH was at ₱6.9 billion – this slightly increased to ₱9.9 billion by 2003 (43.2% in 10 years). In the decade following 2003, we observe a sharper increase in the health budget, where government appropriations for DOH reached ₱86.4 billion in 2013 – a 409.2% increase in 10 years [16]. Aligned to this improvement in health financing, we also observe that the estimated maternal mortality ratio also began to improve starting in 2003 – with a 20% decrease by 2013 [15].

Between 1993 and 2013, there were also notable milestones in maternal health and health systems in general as seen in Figure 4. These include decentralization of health governance, the adoption of millennium development goals, the signing of various maternal health policies, the development of operations guidelines for maternal health, and the passing of the reproductive health law [2,3,4,5,17].

Discussion

Skilled birth attendance (SBA) and healthcare facility-based delivery (FBD) are effective and accepted measures to reduce maternal mortality [2,3,4]. In the Philippines, the most recent demographic and health survey in 2013 showed that since 1993, SBA and FBD have improved by 37.9% and 116.7%, respectively [10,18]. However, if we compare these two maternal health indicators to maternal mortality ratio (MMR), we see that there is a lack of correlation – an increase in MMR by 17 % from 1993 to 2003; followed by a 20% decrease from 2003 to 2013 [15].

A limitation of this paper is that there is no standard data source for maternal mortality ratio in the Philippines. The Department of Health releases an annual figure for MMR; yet, this varies between the different internal DOH divisions, local government units, and other government ministries. If we compare 2003 to 2013 MMR data from two internal DOH sources, such as the Philippine Health Statistics report, and the Field Health Information System, it will reflect that difference in MMR could range from 16.06 to 40.4 per 100,000 livebirths yearly (average of 29.44) [14,15]. Though the exact reasons for variances in MMR data in the Philippines have not yet been determined, some countries associate discrepancies to rising cases of non-specific causes of death, inconsistent coding practices, differences in population data, and over-reporting [28]. Unfortunately, the demographic and health survey, a data source known for its accuracy, does not include MMR as its reported indicators. Still, despite these variances in MMR estimates, the Philippines was not able to reach the MDG5 targets on maternal health [19].

The World Health Organization together with the Human Reproduction Programme (HRP) released a strategic framework to address the unfinished agenda in maternal

health – transitioning from MDG5 to SDG3. This document presents five strategic objectives to guide program planning towards ending preventive maternal mortality: (1) Address inequities in access to and quality of sexual, reproductive, maternal and newborn health care; (2) Ensure universal health coverage (UHC) for comprehensive sexual, reproductive, maternal and newborn health care; (3) Address all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities; (4) Strengthen health systems to respond to the needs and priorities of women and girls; and (5) Ensure accountability to improve quality of care and equity [20]. Inspired by this framework we would like to discuss some challenges and gains in improvement of maternal health in the Philippines.

Addressing inequities and ensuring universal access to maternal health

The Philippine road towards universal health coverage started in 2010 with Administrative Order 2010-0036: "The Aquino Health Agenda: Achieving Universal Health Care for All Filipinos", which supported the enrolment of the lowest wealth quintile of the population into the Philippine Health Insurance Corporation (PhilHealth). Social health insurance coverage grew from 74% in 2010 to 91% in 2016 [21]. By doing so, more Filipinos gained access to maternal health services subsidized by the government. Through the introduction of the "Maternity Care Packages for Normal Spontaneous Delivery (NSD)" performed in hospital and non-hospital facilities in 2003, PhilHealth provided claims reimbursement of ₱4,500 for the first two normal deliveries of the member mothers [22,23]. Presently, access to more maternal health services has been improving at the level of local districts and municipalities. PhilHealth maternity care package has now expanded to include complicated deliveries and obstetric emergencies – aligned to this, reimbursements for case rates have increased as well [24].

In a more macro pursuit of universal access to maternal and reproductive health (RH) services, the first RH bill was filled in congress in 1999. For thirteen years, various stakeholders including legislators, civil society organizations, health professional societies, and patient groups advocated and lobbied for the passing of this bill into law. Despite the resistance of some politicians and the Catholic church, the bill was signed by President Benigno Aquino III into the "Responsible Parenthood and Reproductive Health (RPRH) Act of 2012". Through the RPRH law, the Philippines can ensure that quality maternal, neonatal, and child care will be accessible for all, and would have sustainable financing [17]. By formalizing this into a law, maternal programs will remain to be a priority despite changes in the political landscape.

Strengthening health systems and ensuring accountability

In 1991, the Philippine government underwent a major decentralization of health governance through the Local Government Code of 1991. Through this law, the responsibility for prioritization, financing and delivery of government health programs was devolved to the local government units (LGU). By decentralizing the health system, inequities between various local health systems became more apparent. For some LGUs, health programs are not being funded because of lack in financial and political commitment by local chief executives. Proper referral systems between local health systems are also not coordinated [25].

During the early implementation of devolution, health human resource management in the LGUs suffered as well. Local health facilities were understaffed, and the manpower lacked the necessary capacities to implement health programs on the ground. Regulatory functions of the central DOH were perceived to be weak, where local chief executives leverage on political appointments and retention of LGU health staff [25]. As a stop-gap measure to this, DOH initiated various health human resource augmentation programs, such as: "Doctors to the Barrios (DTTB)" and the "Nurse Deployment Program (NDP)", where the DOH central office funds the salaries of health manpower for the LGUs for two years. For maternal health, Rural Health Midwives (RHM) were deployed to serve poor performing and hard-to-reach communities throughout the Philippines. Their objective is to ensure safe motherhood and newborn care, and eventually reduce maternal and perinatal morbidity and mortality. These RHMs usually lead the health teams at the level of the barangay health centers. The national government also provides midwifery scholarships for health works to be deployed in the DOH and LGU health facilities. From 2007 to 2012, the DOH has provided a total of 529 scholarships under the "Midwifery Scholarship Program of the Philippines [26]".

To strengthen infrastructure in local health systems, the DOH introduced the "Health Facilities Enhancement Program (HFEP)" in 2006. What started as a strategy to fund capital outlay for the Philippine Hospital Development Plan (PHDP) of 2000, HFEP expanded to support the building of smaller health facilities such as barangay health stations, birthing clinics, and infirmaries. Through this platform, local

government units could request technical assistance from the DOH to create a development plan for local health facilities which will be funded by the national government. After the construction of these health facilities, DOH also provided technical support for the improvement and eventual accreditation of said facilities in order for them to be viable for PhilHealth reimbursements – including normal spontaneous deliveries in rural health units [16,22,23,24].

To further standardize local policies and enhance accountability of the LGUs on maternal health, the DOH implemented Administrative Order 2008-0029: "Implementing Health Reforms for Rapid Reduction of Maternal and Neonatal Mortality" in 2008. This strategy aimed to guide the development, implementation and monitoring of maternal health programs in the country. As a guide for local government units to implement this policy and achieve the maternal and neonatal mortality reduction goals, the DOH then cascaded an "Maternal, Newborn, Child Health & Nutrition (MNCHN) Strategy Manual of Operations" in 2011. This document provides direction to the LGUs in identifying local maternal health priorities and ensure quality service delivery [4].

To address the gaps in maternal health referral systems, the DOH introduced a service delivery network (SDN) approach following the DOH's MNCHN Strategy. It is defined as a province- or city-wide network of health care facilities, both public and private, that can provide MNCHN services. These services include basic and comprehensive emergency obstetric and essential newborn care. The SDN is also in charge of communications and transportation supporting the network. It is composed of three tiers: (1) Community level service providers; (2) Basic Emergency Obstetrics and Newborn Care (BEmONC)- capable network of facilities and providers; and (3) Comprehensive Emergency Obstetrics and Newborn Care (CEmONC)- capable facility or network of facilities [4,5].

Considering contextual factors

In the early 1990s the Philippines had one of the highest maternal mortality ratios in Southeast Asia with 209 per 100,000 live births in 1991, as compared to 140 per 100,000 livebirths in Vietnam and 59 per 100,000 livebirths in Malaysia. Because of this, five international partners initiated a large maternal health program called "Women's Health and Safe Motherhood Project (WHSMP)" from May 1995 to June 2002. This project focused on providing technical support for the DOH to address gender and maternal issues related to the MDGs. In addition to this, the project also provided financial support to hospitals and rural health facilities, and supplied safe home-delivery kits for midwives. By the end of the WHSMP in 2002, however, the project was not able to achieve its objective to make sustainable impact in the provincial and regional levels. Because they selected 41 provinces, actual coverage of the project only amounted to 10% of the total health facilities per province. This unsatisfactory performance was also attributed to insufficient consultation with local government units, and failure to factor in the effects of devolution [27].

With the Philippines still recognizing the magnitude of the maternal health problem, the DOH launched the "Women's Health and Safe Motherhood Project 2 (WHSMP2)" in 2006. In contrast to the first project, WHSMP2 now shifted emphasis to the management of high-risk pregnancies and preparation for obstetric complications. With a smaller pilot of six provinces covering one region, WHSMP2 focused on sector governance and regulation, essential medical products, infrastructure and equipment, human resource development, financing, and service delivery. By the end of the project, the DOH gained a deeper appreciation of the "systems approach" to health systems strengthening, and the value of involvement of local government leadership in the programs [3].

From these examples, we have learned that there is no "one-size-fits-all" strategy in addressing all causes of maternal mortality and morbidities. From 1993 to 2013, there have been various policies and programs that have been essential in strengthening the country's maternal health outcomes (Figure 7). Table 2 summarizes the gains and challenges for each of the WHO strategy to reduce maternal mortality. From all these, we cannot overemphasize the need to develop programs and priorities based on country-specific contexts that are unique per health system. Proper documentation and reporting are also essential for creating strategies that are tailored to current and future needs.

Conclusion

Findings from this paper indicate that despite the improvements in facility-based delivery and coverage of skilled attendants over the 20-year period, there was no direct progress reflected in the maternal mortality ratio. Other factors, such as program and policy milestones in maternal mortality, seem to affect the trends in these

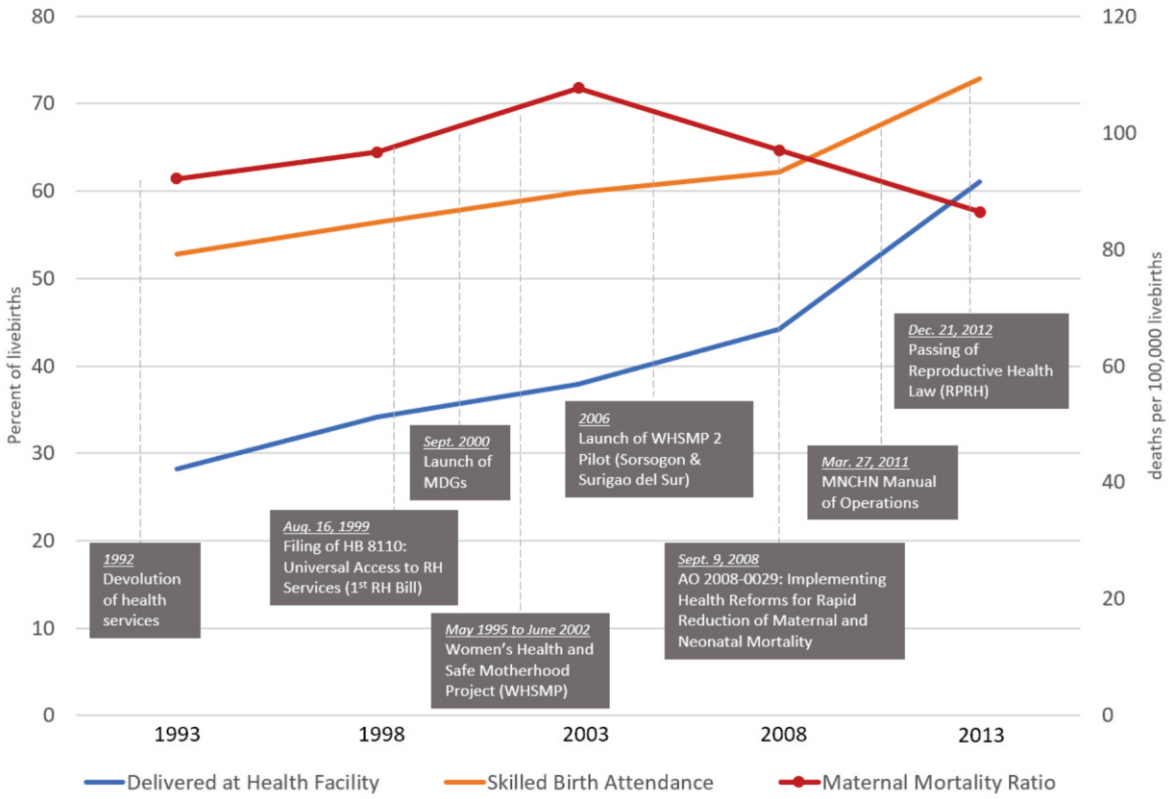

Figure 4. *Summary of Milestones in Maternal Health from 1993 to 2013*

Table 2. *Summary of Gains and Challenges in Maternal Health*

WHO Strategy Towards Ending Preventable Maternal Mortality		Gains	Challenges
1	Address inequities in access to and quality of sexual, reproductive, maternal and newborn health care	• Health Facility Enhancement Program (HFEP) • Service Delivery Networks (w/ BEmONCs and CEmONCs)	• Continuous household income and education disparity
2	Ensure universal health coverage (UHC) for comprehensive sexual, reproductive, maternal and newborn health care	• Aquino Health Agenda (UHC) • Expansion of Philhealth maternal health packages	• Inconsistent LGU access because of devolution
3	Address all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities	• Launch of Millennium Development Goals	• Lack in consultation with local constituents for maternal health programs
4	Strengthen health systems to respond to the needs and priorities of women and girls	• DTTBs, NDPs, RHMs • DOH training programs	• Understaffed health facilities
5	Ensure accountability to improve quality of care and equity	• AO 2008-0029 • MNCHN Strategy Manual • RPRH Act of 2012	• Poor documentation of maternal health data

maternal outcomes. For the Philippines to attain SDG3, maternal health programs should be designed to incorporate lessons from these geopolitical, socioeconomic, and contextual factors.

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