A systems approach to improving maternal health in the Philippines
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Objective To examine the impact of health-system-wide improvements on maternal health outcomes in the Philippines.

Methods A retrospective longitudinal controlled study was used to compare a province that fast tracked the implementation of health system reforms with other provinces in the same region that introduced reforms less systematically and intensively between 2006 and 2009.

Findings The early reform province quickly upgraded facilities in the tertiary and first level referral hospitals; other provinces had just begun reforms by the end of the study period. The early reform province had created 871 women’s health teams by the end of 2009, compared with 391 teams in the only other province that reported such teams. The amount of maternal-health-care benefits paid by the Philippine Health Insurance Corporation in the early reform province grew by approximately 45%; in the other provinces, the next largest increase was 16%. The facility-based delivery rate increased by 44 percentage points in the early reform province, compared with 9–24 percentage points in the other provinces. Between 2006 and 2009, the actual number of maternal deaths in the early reform province fell from 42 to 18, and the maternal mortality ratio from 254 to 114. Smaller declines in maternal deaths over this period were seen in Camarines Norte (from 12 to 11) and Camarines Sur (from 26 to 23). The remaining three provinces reported increases in maternal deaths.

Conclusion Making health-system-wide reforms to improve maternal health has positive synergistic effects.

Introduction
Globally, there is renewed interest in applying systems thinking to health programming; that is, in using a broad understanding of the health system’s operations to reveal important relationships and synergies that affect the delivery of priority health services. Through a holistic understanding of a health system’s building blocks, systems thinking identifies where the system succeeds, where it breaks down, and what kinds of integrated approaches will strengthen the overall system and thus assist countries in reaching the Millennium Development Goals (MDGs). This orientation towards designing, implementing and evaluating interventions that strengthen systems is directly relevant to maternal health programmes. Reducing maternal mortality is the health-related MDG whose progress has been “the most disappointing” to date. This highly complex, system-level issue must be addressed across the system rather than in isolation from it.

By coordinating actions across different parts of the health system, programmes to improve maternal and neonatal health can increase coverage and reduce barriers to the use of various services. Effective programmes assemble packages of appropriate reforms in each of the six main building blocks of the health system: governance of the health sector (to provide sectoral policy and regulatory mechanisms, and partnerships with the private sector); infrastructure and technologies (to provide emergency referral centres linked to primary care providers); human resources (to scale up the availability of skilled attendance); financing (to reduce financial barriers for patients and incentivize providers), and services (to ensure quality and an appropriate configuration of maternal and neonatal health services across all levels of care, including family planning).

The Philippines faces unique challenges in aligning its health system with the needs of its inhabitants, mainly because of the country’s geography and income distribution. Many communities are located in isolated mountain regions of the country or in coastal areas that are difficult to reach. Also, there are wide disparities in the use of health services across income levels. A recent study found that 94% of women in the richest quintile delivered with a skilled birth attendant, compared with 25% in the poorest; and 84% of women in the richest quintile had a facility-based birth, compared with 13% in the poorest. Fertility rates also vary widely: in 2008, the total fertility rate for women in the richest quintile was 1.9, compared with 5.2 for those in the poorest quintile. These discrepancies contribute directly to the country’s elevated maternal mortality ratio (MMR). The MDG target is 52 deaths per 100 000 live births, yet the Philippines’ official country-estimated MMR stands at 162 – this equates to seven women dying every 24 hours from pregnancy-related causes. The MMR in the Philippines is higher than in other middle-income countries in the region, such as Viet Nam.

The Government of the Philippines has placed health (in general) and maternal health (in particular) high on its political agenda of reform. In 2006, recognizing that “good maternal health services can also strengthen the entire health system”, the Philippine Department of Health (DOH) launched the innovative Women’s Health and Safe Motherhood Project 2 (WHSMMP2). This project, funded in part by the World Bank, shifted the emphasis from identifying and treating high-risk pregnancies to preparing all women for potential obstetric complications. It fast-tracked system-wide reforms in maternal health in a few selected provinces through a set of interventions, including:

- sector governance: improving accountability and regulatory oversight;
- infrastructure and essential medical products and equipment;
- human resource development: clinical skill-building and formation of village-based women’s health teams (composed of a midwife, a pregnant woman and a traditional birth attendant [TBA]);
The project aimed to strengthen the ability of the health system to deliver a package of interventions, including maternal care, family planning, control of sexually transmitted infections and adolescent health services – with a priority on serving disadvantaged women. Implementation began in Sorsogon and Surigao del Sur provinces in 2006 and is scheduled for completion in 2013. The DOH developed a National Safe Motherhood Programme modelled on the design of the WHSMP2. The DOH has been introducing this nationwide programme into other provinces as an integrated element of a larger initiative to reform the health sector. Despite slow initial implementation, progress has been made; today, Sorsogon province is seen as an early adopter of the National Safe Motherhood Programme.

This paper reports the results of a case study conducted in late 2010 to assess the impact of the National Safe Motherhood Programme by comparing progress among a set of provinces within one region.

Methods

A retrospective longitudinal controlled study design was used to compare one province where health system reforms were being fast tracked with other provinces in the same region where reforms were being introduced in a less systematic and intensive manner.

Study setting

Sorsogon is one of six provinces in the Bicol region. With a population of 709,673, it ranks as the fourth largest province (the other provinces have populations of 1,693,821, 1,190,823, 768,939, 513,785 and 232,757). Sorsogon is poorer than most of the other provinces in the region, with a prevalence of poverty among families of 43.5% in 2006. Masbate was the only province in the Bicol region that had a higher prevalence of poverty among its families.

Sorsogon province was selected as the site of the World-Bank-funded health project in the Bicol region because of its low socioeconomic and maternal health status and because the local government supported the project. The province began implementing a series of reforms in 2006. Because of its participation in the World Bank project, Sorsogon has received more technical support, programme guidance and oversight from the DOH and Provincial Health Office than other provinces in the region. The World Bank loan was not a major source of revenue for Sorsogon province during the study period and was slow to begin disbursement. However, strong support from the provincial governor and mayors empowered the province to access domestic health funding. The National Safe Motherhood Programme and Maternal Mortality Reduction Initiative are being followed in the region's other provinces but only started recently.

Data sources and collection methods

Data collection was organized around a listing of key health system indicators drawn from international best-practice standards and from the DOH sectoral monitoring and evaluation framework. Statistical data routinely collected for 2006–2009 were abstracted from multiple sources, including the national Field Health Service Information System, the information system of the Philippine Health Insurance Corporation (PhilHealth), the Bicol regional and provincial health budgets and records from Safe Blood Supply.

Data were manually extracted in the Bicol Regional Epidemiological Service Unit, the Bicol Regional and Provincial Health offices and the DOH and PhilHealth headquarters in Manila. Annual data were disaggregated by province, and efforts were made to obtain missing and investigate outliers or strange values through follow-up visits to lower-level reporting units, including service delivery points.

Desk reviews were undertaken of DOH provincial ordinances, national administrative orders, project implementation plans and relevant programme documentation provided by the DOH. Selected key informant interviews were conducted with DOH and United Nations officials and with provincial and regional health offices.

Results

Regulatory oversight and governance measures

The experience gained in the design and early implementation of WHSMP2 was an important influence on the development of the programme model articulated in the DOH administrative order, “implementing health reforms to rapidly reduce maternal and newborn mortality”, which was passed for nationwide implementation in 2008. That administrative order spelled out key interventions covering several health system building blocks, including regulatory oversight, human resources, financing and service delivery. Subsequent administrative orders targeted actions for different building blocks, e.g. broadening the range of existing services that midwives could provide to include administration of life-saving drugs (such as magnesium sulfate and oxytocin) and other services necessary to prevent maternal and neonatal deaths. These administrative orders are seen as vital contributions made by the WHSMP2 through its participatory design phase and national management strategy (e.g. there is no project management unit in the DOH or Provincial Health Office).

Sorsogon’s provincial political leadership was an important element in the fast-track implementation of sector reforms and mobilization of domestic resources for health. A set of progressive ordinances released by the province provided guidance on policy and regulatory changes needed to support maternal and neonatal health. For example, in January 2009, Sorsogon province released an ordinance restricting home births and TBAs “from the practice of birth attendance or from performing deliveries of an expectant mother except when providing assistance under the immediate and direct supervision of a skilled birth attendant”.

Infrastructure and essential medical products

We used the volume of blood supplies received by health facilities as a proxy indicator for improvements in the availability of essential medical products for maternal health services. Between 2007 and 2008, Sorsogon province reported an eightfold increase in the blood sup-
plies (from 36 to 355 units) received by health facilities; between 2008 and 2009, an additional threefold increase (from 355 to 983 units) took place. This increase was accompanied by improvements in several ancillary services, such as community blood collection, and in blood information and transport systems. The volume of blood received in 2009 by Sorsogon was similar to that received by Camarines Sur (941 units), yet Sorsogon has less than half the population of Camarines Sur, a telling sign of the magnitude of this accomplishment. During the study period, Sorsogon province rapidly implemented several facility renovations and upgrades using domestic health resources. These enhancements were successfully completed by the end of 2009 in the two tertiary hospitals and 20 first level referral health facilities. Twelve rural health units and one barangay (neighbourhood or village) health station were transformed into first level referral facilities, an indication that second level care has reached into remote rural areas. Only anecdotal information was available from the other provinces, but it suggested that health-facility upgrades did not start until much later (at the end of the study period).

**Human resource development**

The national maternal health strategy prioritizes the creation of community-based women’s health teams. In the Bicol region, Sorsogon province reported the formation of 871 women’s health teams in 541 barangay (neighbourhood or village) health stations, compared with 391 in Catanduanes province. The other provinces did not report data on the formation of women’s health teams during the study period; however, anecdotal evidence suggests that, by the close of the review period, the other provinces were moving quickly with this element of the national programme model. Each member of a woman’s health team receives a cash incentive through a performance-based financing mechanism. The payment to the TBA is intended to incentivize referral to a health facility by offsetting the potential income the TBA forfeits by making the referral. The payment to the midwife is a type of overtime salary adjustment. The payment to the pregnant woman supports transportation or other out-of-pocket expenses associated with the institutional delivery. The DOH had operational problems in delivering the first wave of performance-based grants but resolved these problems as experience increased. In 2009, Sorsogon province reported having disbursed 98% of the funds that had been budgeted for women’s health teams. No such funds were disbursed in the other provinces during the study period.

Sorsogon province reported that about three-quarters (74%) of the first level referral providers had successfully completed a competency-based clinical training programme. No information on clinical training was available for the comparison provinces in the Bicol region.

**Financing**

Sorsogon province reported spending a higher average amount on health as a percentage of the total provincial budget between 2007 and 2010 (28.76%) than did Masbate (25.73%) or Albay (13.24%) provinces (no other provinces in the Bicol region reported this information). Although the World Bank project did not set preconditions on health budget targets, the availability of loan funds to the provincial safe motherhood programme could have served as a stimulus for government to meet co-financing commitments. Sorsogon province also realized vital achievements in expanding coverage of the national social health insurance scheme PhilHealth. Before PhilHealth can make any payments, facility accreditation is required. This requirement has been a barrier to expanding coverage because of the need for capital infrastructure improvements and on-site inspection by regulators. Sorsogon province had a threefold increase (from 5 to 17) in the number of PhilHealth-accredited facilities for outpatient care between 2006 and 2009; it also had an increase in facilities accredited for the maternity care package of benefits (from 0 to 15). Other provinces also had increases in the number of accredited facilities, but of smaller magnitude (e.g. between 2007 and 2008 these increased from 3 to 7 in Albay, from 1 to 2 in Camarines Norte and from 0 to 3 in Masbate; they remained at 3 in Camarines Sur). By the end of 2009, Sorsogon province had the largest number of PhilHealth-accredited facilities in the Bicol region. Only one province (Albay) reported PhilHealth maternity care package insurance payments in 2006, but by 2009, three other provinces – Camarines Norte, Masbate and Sorsogon – also reported benefits. The amount of benefits paid out in Sorsogon province grew by approximately 45%, and the province moved from having the smallest amount paid out to the second largest. Among the other provinces, Albay reported a 16% increase and Camarines Norte reported a 300% increase, whereas Masbate only began making payments in 2009. However, the total amount of the 2009 payments in Camarines Norte was approximately one-half of the amount paid by Sorsogon (equivalent to 7041 and 12 995 United States dollars, respectively).

**Service delivery**

Five of the six provinces in the Bicol region reported modest increases in the number of women delivering in health facilities from 2006 to 2009 (Fig. 1). The gains in the facility-based delivery rate in the other provinces were between 9 and 24 percentage points, compared with Sorsogon province, which had a 44 percentage point increase. The largest gain occurred between 2008 and 2009, when Sorsogon reported a 34 percentage point rise in facility-based births.

**Health impact: maternal mortality**

The results presented in Fig. 2 are consistent with increases in the facility-based deliveries, and with the positive changes shown in the different health system components that are critical for improving maternal health. Between 2006 and 2009, the actual number of maternal deaths in Sorsogon fell from 42 to 18; the MMR fell from 254 to 114 during the same period. Other provinces in the Bicol region reported declines in the number of maternal deaths, but of lesser magnitude. It is noteworthy that Sorsogon reported slight increases in the number of maternal deaths between 2008 and 2009, as did other provinces. A possible explanation for this situation is that an increasing trend towards facility-based birth results in fewer women dying at home and therefore in more institutional deaths being captured in the vital registration system. It could, however, indicate substandard quality of care at referral centres; this would be of serious concern and warrants close attention. In spite of the improvements, the MMR of 114 is still quite high, and Sorsogon province was still far from achieving the MDG target of
Discussion

The findings presented in this paper indicate the positive synergistic effects of increased investments (technical and financial) across multiple health system functions to improve maternal health. The constraints of the study design did not allow us to distinguish between the effects of a generalized increase in resources and the effects of applying a systems approach when selecting and organizing these additional resources.

Nevertheless, the findings did give a strong indication of how maternal health programmes can coordinate a package of multifunctional interventions to achieve a rapid impact.

Use of the term systems approach draws on the “sector-wide approach” terminology to emphasize the importance of strengthening governmental systems to achieve development goals. In the Philippines, the DOH’s purposeful implementation of a World-Bank-funded project within the context of the sectoral reform programme provides a good model of aid-effectiveness principles in practice. The experience of the country’s maternal mortality reduction programme indicates the positive outcomes that can be achieved when local government leadership is coupled with investments (both domestic and foreign assistance) in multiple areas of the health system.

The systems approach to improving maternal health is not a “quick fix.” The Philippines programme clearly experienced a slow start, and there were many operational delays as the country worked to refine financial mechanisms, policy development and operational guidelines. A systems approach does not mean that significant gains cannot be realized by targeted clinical interventions such as the active management of the third stage of labour, the use of magnesium sulfate to prevent eclampsia or the scale-up of skilled attendance. In the absence of a system-wide, holistic approach, maternal health programmes should not be constrained to take action in a step-by-step manner. However, the ability to sustain gains made by discrete interventions – and to scale them up – will only be realized as related functions in other health system building blocks are addressed.

Conclusion

Several challenges remain in developing health system capacity to provide maternal health care in the Philippines. For example, the health information system has not yet benefited from the sector reform programme and remains a stumbling block to effective monitoring and evaluation. The data extraction for this study was a laborious exercise; it required repeated field visits to the provincial and regional data collation centres and drew upon multiple national data repositories. The DOH has recently
Developed a common monitoring and evaluation framework for the health sector, but much work remains to be done on consolidating different data sources, harmonizing operational definitions and increasing the efficiencies of reporting streams. The challenges in giving remote coastal communities and isolated mountain hamlets rapid access to referral emergency-care facilities remains largely unresolved – in Sorsogon province as elsewhere in this island nation – and point to the limitations of a sector-specific response in achieving national development goals.

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Résumé

Systématique des réformes précoces avait créé 871 équipes féminines de soins de santé pour améliorer la santé maternelle à des effets synergétiques positifs.

et 2009, le nombre réel de décès maternels constaté dans la province à réformes précoces était tombé de 42 à 18, et le taux de mortalité maternelle de 254 à 114. Des baisses moindres du nombre de décès maternels pour la même période avaient été constatées dans la province du Camarines Norte (de 12 à 11) et dans celle du Camarines Sur (de 26 à 23). Les trois autres provinces ont signalé des décès maternels en hausse.

Conclusion Réaliser des réformes sur l’ensemble du système de santé pour améliorer la santé maternelle a des effets synergétiques positifs.

References


Resumen

Acercamiento sistemático a la mejora de la salud materna en Filipinas

Objetivo Examinar el impacto de las mejoras en todo el sistema sanitario sobre los resultados de salud materna en Filipinas.

Métodos Se empleó un estudio controlado longitudinal y retrospectivo para comparar una provincia que agilizó la aplicación de las reformas del sistema sanitario respecto a otras provincias de la misma región que introdujeron las reformas de manera menos sistemática e intensiva entre los años 2006 y 2009.

Resultados La provincia que realizó la reforma con mayor celeridad mejoró rápidamente las instalaciones de sus hospitales de remisión de nivel primario y terciario, las otras provincias acaban de iniciar sus reformas al final del periodo de estudio. La provincia de la reforma temprana había formado 871 equipos de salud femenina antes de que acabara el 2009, en comparación con los 391 equipos de la única provincia, además de la primera, que había comunicado contar con dichos equipos. La cantidad de prestaciones maternas sanitarias abonadas por la Corporación de Seguros Sanitarios de Filipinas en la provincia de la reforma temprana creció aproximadamente un 45% en el resto de provincias, la que más aumentó lo hizo en un 16%. La tasa de partos en centros sanitarios aumentó 44 puntos porcentuales en la provincia de la reforma temprana, en comparación de los 9–24 puntos porcentuales de las otras provincias. Entre los años 2006 y 2009, el número real de defunciones maternas en la provincia de la reforma temprana descendió de 42 a 18, y la tasa de mortalidad materna, de 254 a 114. Se registraron descensos menos marcados en las defunciones maternas durante este periodo en Camarines Norte (de 12 a 11) y Camarines Sur (de 26 a 23). Las otras tres provincias notificaron aumentos en las defunciones maternas.

Conclusión La aplicación de reformas en todo el sistema sanitario para mejorar la salud materna demostró tener un efecto sinérgico positivo.
Research
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