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We Need a New Approach in Implementing and Achieving the Sustainable Development Goals

I am delighted that this theme issue follows closely on the heels of the 2015 UN-General Assembly’s Resolution on the Sustainable Development Goals (SDGs). The SDGs, officially known as “Transforming Our World: The 2030 Agenda for Sustainable Development,” are an intergovernmental set of 17 goals with 169 targets (United Nations 2015b). They are the successor to the Millennium Development Goals (MDGs) that galvanized UN agencies and other organizations – including donors, governments, civil society and non-government organizations – into tackling difficult global health issues (United Nations 2015a). While significant progress was made, we did not reach the MDG target goals that were set for 2015. The SDGs now are intended to build on the foundation created by the MDGs, while taking a more integrated system approach in the hope that the goals and targets for 2030 will be achieved.

Yet, despite attempts to create a set of goals that will be treated in a comprehensive manner, we are already witnessing vertical, sectorial thinking. The healthcare community seems to be intently focused on SDG Goal 3 “health and well being” to the exclusion of goals like Poverty, Hunger and the other 14 Goals. I strongly suggest that “Poverty,” which is Goal 1, is related to health. “Hunger,” which is Goal 2, is also related to health, and so on. I argue that if we go down the sectorial one-lane road with a narrow lens on each goal and target, by 2030 we will not have accomplished nearly as much as we could if we take a more holistic, integrated approach while working in partnerships with the relevant stakeholders. It is clear to many of us in the field of global health that partnerships with the agriculture sector, manufacturing sector and others are essential in advancing all of the SDGs.

I am delighted that Jhpiego was willing to work with us to put this issue together. The work of Jhpiego with its emphasis on continuous learning to achieve results can serve as a model for integration and global thinking with local actions. Jhpiego clearly demonstrates the influential role an NGO can play in relation to local leaders, decision makers and civil society. In the opening essay, Mancuso, Johnson, Hart and Austin (2015), describe important lessons in how to function at the community level. Concepts like “leading from behind” and “system-based approaches” help

to demonstrate the role, responsibilities, and functions of the different players in the tapestry of international projects. The case studies showcase various international projects related to maternal and child health. Readers will gain a deep appreciation of how one large and successful NGO can contribute to the attainment of the SDGs through collaboration and partnership with various stakeholders and partners covering multiple sectors.

Dr. Judith Shamian, RN, PhD, FAAN
Editor-in-Chief

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Introduction

This theme issue of *World Health & Population* is published at a time of global transition between the world's celebration of achievement of many of the 2015 targets established under the Millennium Development Goals (MDGs; United Nations 2015a) and the launch of the 2030 Sustainable Development Goals (SDGs; United Nations 2015b). The MDGs were focused on achievement of specific, globally equivalent benchmarks of progress. The SDGs amend this focus to emphasize policies and commitments that will underpin the sustainability of progress that can be made through global partnerships.

Jhpiego, a nongovernmental organization affiliated with Johns Hopkins University, has more than 40 years of history of working with countries and implementation partners around the globe to bring evidence-based solutions to the frontline, to develop and strengthen health systems and to prepare the health workforce to deliver high-quality, evidence-informed interventions in ever-expanding areas of need and interest. Jhpiego's initial work was focused on programming in family planning. The organization's mission evolved to embrace a focus on maternal and newborn health (MNH) and the intersection with cervical cancer and HIV prevention, care and treatment. This mission will continue to evolve as the organization aligns with the new global paradigm envisioned within the

SDGs and the updated Global Strategy for Women's, Children's and Adolescents' Health, which aims to bring evidence-based MNH interventions to scale (Every Woman Every Child and World Health Organization 2015).

The lived and learned experience of Jhpiego's work with country leaders and global partners is reflected in the lead article of this issue. Jhpiego's country program leaders and managers distill the lessons learned about the unique challenges of program implementation in the context of country-specific health systems, human resources and infrastructure. Illustrative case studies are then presented that explore a few of Jhpiego's experiences in more depth and in context, with an emphasis on how these programs were established and continue to unfold.

Some of these cases were unique in that they performed exceptionally well, in spite of anticipated challenges. The remarkable achievements of the maternal and newborn antiretroviral therapy program in Kenya is offered as an example of policy and programming working in synchrony to achieve almost universal coverage of the at-risk population. The clinical governance program implemented in 22 hospitals in Indonesia led to notable improvements in their preparedness to provide emergency obstetric and neonatal care and other key obstetrical interventions. The utility, efficiency and importance of monitoring progress of such interventions are

illustrated through the outcomes of a quality improvement methodology introduced in four countries in sub-Saharan Africa. The quality of service delivery, as measured by clinical performance standards, improved in every country following the intervention, demonstrating the high return on this investment.

Additional case studies are offered that highlight the value of replication of a proven intervention in a new setting or adapting the experience into a new program application. Three case studies provide insight into the benefits to student learning that resulted from amending the academic program of studies for students of the health professions. The first case study presents the value added by the adoption of technology into the curriculum of midwifery studies in Ghana; the second presents insight gained through use of task analysis to help identify critical gaps in curriculum content of a cadre of mid-level practitioners (Medical Licentiates) in Zambia. The third case study demonstrates the health workforce benefit derived from rural clinical placement experiences in Lesotho, which promoted positive student attitudes toward these settings as a place of employment. These case

study findings are augmented by the report of prospective research conducted in Ethiopia that highlighted factors that affected retention and turnover of nurses already in the workforce.

Important lessons can also be learned from the experience of implementing promising interventions that did not succeed as expected. A case study from Pakistan discusses the very limited gain achieved by a breastfeeding media campaign. The case study demonstrates the complexities of programming within a unique social context and culture.

We would like to acknowledge the Jhpiego technical staff who assisted in the various aspects of development of the articles in this special issue. We extend our thanks to Nancy Caiola, Catherine Carr, Linda Fogarty, Leah Hart, Peter Johnson, Adrienne Kols, Young-Mi Kim, Edgar Necochea, Jean Sack, Elizabeth Thompson and Alison Trump for their contributions to literature searches, editorial reviews and programmatic support. We would especially like to thank Judith Fullerton for her service in the role of Managing Editor.

Dr. Leslie Mancuso, RN, PhD, FAAN
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Addressing Maternal and Newborn Health: A Leadership Perspective



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Abstract

Globally, each year 289,000 mothers die in childbirth and three million infants die in the first four weeks of life. The shortcomings in maternal and newborn health are particularly devastating in low-resource countries. This qualitative study describes the experience of an international nongovernmental organization, Jhpiego, which has been implementing public health programs to address maternal and newborn health outcomes for more than 40 years. Themes emerged from interviews with leaders of offices in a variety of countries with unique challenges related to health systems, human resources and infrastructure. Results emphasized the importance of partnerships with governments and international agencies for long-term program impact, as well as the recruitment of local talent for improving health systems to address problems that are best understood by the people who live and work in these countries. The discussion of program successes and challenges may inform best practices for promoting the health and wellness of women and families around the world.

Introduction

Maternal mortality has decreased by almost half over the past 20 years; yet 289,000 mothers still die each year during pregnancy and childbirth (Alkema et al. 2014). Most of these deaths occur in low-resources countries, and the disparities are vast: The lifetime risk of a woman living in sub-Saharan Africa dying as a result of pregnancy and childbirth is over 47 times greater than for a woman living in Canada (Alkema et al. 2014). In addition, 3 million newborns die annually within the first four weeks of life (Blencowe and Cousens 2013) and 2.6 million more are still-born (McClure et al. 2015). Children who die in the first four weeks do so as the result of diseases and conditions that are often associated with quality of care around the time of childbirth and are readily preventable or treatable (Saleem et al. 2014). Globally, the number of newborn deaths declined from 4.7 million in 1990 to 2.8 million in 2013, but still account for 44% of under-five deaths (You et al. 2014). While progress has been made over the past two decades, the global health community has fallen short of 2015 Millennium Development Goal 4, reduce child mortality, and Goal 5, improve maternal health. The global development community now begins work to address 17 new Sustainable Development Goals and 169 targets to achieve by 2030 – including Goal 3.1, reduce the global maternal mortality ratio to less than 70 per 100,000 live births, and Goal 3.2, end preventable deaths of newborns and children under five years of age – with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-five mortality to at least as low as 25 per 1,000 live births (United Nations 2015). The achievement of these goals will enhance the potential that women and newborns avoid an increased risk of death or disability simply because of where they live.

Jhpiego, a global health non-profit affiliate of the Johns Hopkins University, has been working for over 40 years to end preventable

deaths of women and their families. Jhpiego was founded in 1973 to introduce physicians, nurses and administrators from developing countries to reproductive health breakthroughs and strengthen their ability to introduce high-impact, evidence-based practices. Today, Jhpiego has field offices in 30 countries and has worked in more than 150 countries throughout Africa, Asia and Latin America and the Caribbean.

A technical leader in maternal and newborn health recognized worldwide, Jhpiego is currently leading the United States Agency for International Development's global flagship Maternal and Child Survival Program. Jhpiego has developed many widely used reproductive health policies, guidelines and resource packages that enable frontline health workers to take the timely and correct actions needed to save lives.

This study was conducted to identify best practices and challenges associated with the implementation of maternal and newborn health programs in the developing world, and specifically within Jhpiego. The study, based on interviews with a range of leaders responsible for managing Jhpiego's programs at national or country levels, describes effective practices as well as challenges in the implementation of national public health programs. The conclusions are pertinent to sustaining gains made in maternal and newborn health by governments and the global health community, as well as exploring the evidence-based approaches necessary to meet the challenge of the Sustainable Development Goals. The lessons learned from Jhpiego's organizational experience, conducted hand in hand with international and national partners, may be useful to those working to strengthen health systems in order to reach every woman, every newborn, everywhere, every time.

Methods

A research plan was submitted to the Johns Hopkins University Institutional Review Board with a human subject exempt determination.

Leaders from a purposeful cross-section of Jhpiego offices were interviewed. There were two participants from Asia, three from East Africa, one from a Portuguese-speaking country in Africa and two from West Africa. Of the eight key informants, one was a senior member of the headquarters leadership team, six were directors of Jhpiego country offices and one was a national program manager (Table 1). All were asked to respond to a set of open-ended questions related to criteria for program effectiveness. Three interviews were conducted face to face and the remainder by telephone or computer voice over Internet protocol. All interviews were either audio recorded or captured via detailed notes taken by one member of the research team.

Individual interviews were transcribed when necessary and reviewed by all members of the research team using standard qualitative research methodologies. Coding was conducted manually with the data organized and sorted around thematic categories (Polit and Beck 2003). Dominant themes were extracted from transcripts and field notes using a constant comparative technique (Fram 2013). The research team discussed and reached consensus on emerging themes, categories and patterns.

The leaders interviewed for this study have worked for a wide variety of international nongovernmental organizations, donors, United Nations agencies and the World Health Organization. They have vast public health leadership experience (median 21.5, range 10–40 years) with a range of expertise important to Jhpiego's mission. These leaders collectively have experience in programming related to treatment of HIV, malaria and other infectious diseases that plague the developing world; maternal, newborn and child health; family planning and cervical cancer prevention. They also have a broad combination of health systems expertise related to health workforce development, state- and district-level capacity strengthening, competency-based education and training and quality improvement. All have significant experience in their Jhpiego leadership roles (median 5.5, range 3–23 years).

Table 1. Key informant interviewees, Jhpiego position and experience

Name	Country	Years with Jhpiego	Years in a Senior Public Health Position
Headquarters senior leadership	Burkina Faso/USA	23	28
Regional and country director	Kenya	8	14
Chief of party	Ethiopia	3	26
Country director	Myanmar	4	10
Country director	India	6	40
Country director	Zambia	5	25
Country director	Mozambique	11	18
Country director	Ghana	4	11

Results

Results derived from the analysis of the responses of those interviewed were divided into two major themes related to good practices and challenges. Several equally compelling sub-themes emerged in relationship to both good practices and challenges associated with sound implementation of public health programs in the developing world. All are essential to implementation of quality maternal health programs, and they contain processes that are valuable for addressing a full range of public health priorities in low-resource countries. The narrative that follows presents a synthesis of findings; exemplary quotations are provided that support our interpretation.

Good Practices

Thinking Globally, Acting Locally

A two-way flow of communication is essential in order to capture valuable lessons learned from those implementing programs. Global partnerships are important and result in maternal and newborn health consensus documents (standards and guidelines) that are valuable to partners implementing regionally, nationally and locally. Those partnering at the global level are encouraged to engage in a

shared analysis of successes and failures in order to distill best practices and provide functional guidance to those pursuing results at the country, district, facility or community level. Global results require local adaptation.

Global work allows countries to not have to reinvent the wheel.

If things have gone through a global consensus-building process, then countries may be more ready and willing to adopt.

Leading from Behind

The importance of involving stakeholders, such as relevant country Ministries of Health and or Ministries of Education, professional associations, local community-level leaders, providers and consumers, and facilitating their role as leaders of the effort, was one of the strongest themes that emerged from the analysis. Technical advice and support from donors and implementing agencies were keys to successful start-up. However, understanding of local responsibility for leadership, at the outset of a program, is a key to longer-term ownership and sustainability.

The team [and stakeholders] believes that [our capacity-building approach] is working and they have bought in completely. This is how we save lives.

Additional effort to involve and gain support from the community, and those who are not initially enthusiastic about the proposed intervention, offers additional advantage to sustainability.

The system has to take it forward, no donor or partner from the outside can do it.

If you don't have the relationships and commitment, it doesn't matter what level of technical capacity you have. The technical improvements will only have a limited life.

Partnerships and Transparency

Consultation, coordination and inclusion are essential elements of successful partnership. International, regional and local partners should be selected early to enable participation in design, and should be chosen based on a thoughtful and critical analysis of their ability to make a unique contribution to program results. Relationships between organizations, while often established based on an analysis of ability to deliver measurable improvements in public health outcomes, are nurtured through mutual trust resulting from working together toward a common goal. There was strong consensus that *involving Ministry counterparts as partners is crucial for success.*

We are seen as a good partner because we are more open to share what we are doing and how we are doing.

Selecting partners who have a passion for achieving the results that are being targeted, have the opportunity to contribute, and have the capacity to make a unique contribution [is essential].

A Systems-Based Approach to Implementation

Donor-supported programs are often focused on a particular disease burden or perceived public health priority. Implementers should consider their broader systems expertise in relationship to this goal and leverage this opportunity toward broader impact. For example, a limited scope of work aimed at reducing the impact of malaria on pregnancy can result in requests for a more comprehensive set of interventions aimed at maternal and newborn health. Likewise, trust established through visible results in maternal and newborn health may lead to requests to aim successful interventions at infectious diseases, reproductive health and the broader strengthening of health systems. Programs are advised to plan ahead for these opportunities and advocate for them throughout the

span of a program. Respondents noted that *there is often opportunity to use maternal and newborn health projects as a launching pad [for improving systems that support all service delivery]*.

Designing for Sustainability

Implementing partners have a responsibility to design for scalability from the outset and take actions to increase the likelihood that results can be achieved using resources likely to be available after program support is withdrawn. For this reason, successful maternal and newborn health programs focus on building local capacity of governments, professional associations, regulators and local nongovernmental organizations.

Think beyond the project.

A robust understanding of the community in need of support and its stakeholders is essential for sustainability. Mapping the opinions of stakeholders who are opposed to your ideas is as important as listening to those who are supportive. By placing “boots on the ground” at the community level, one can develop the trust and buy-in needed for real results. Fully engaging the community with humility and respecting the resourcefulness of those within it lead to true joint problem-solving for lasting results.

The system will have to carry it [gains] forward, and when the system takes over it may not be perfect, but we have to be prepared for it to be good enough.

Advocating for Evidence-Based, High-Impact Interventions

Implementers should build on the existing evidence base while testing innovations needed to generate new pathways for success. The infusion of a continuous quality improvement philosophy of practice was seen as the linkage between the introduction of changes to practice and their successful

adoption at the facility level. For example, Jhpiego Uganda has worked across 27 facilities supporting quality improvement using an evidence-based, low-dose, high-frequency performance support approach (Bluestone et al. 2013) linked directly to Jhpiego’s Standards-Based Management and Recognition (SBM-R®) quality assurance methodology (Necochea et al. 2015). Remarkable changes were observed.

[The] changes observed were phenomenal. Facilities supported under this program were clean and well-organized by a staff of very motivated workers.

At the same time, there must be critical awareness of the context in which these changes are being introduced, as social, political, religious and regulatory factors each plays a role in the acceptability of the practice of any intervention at the national and community levels. The introduction of home-based distribution of misoprostol is an example of a highly evidenced-based intervention for prevention of postpartum hemorrhage (Smith et al. 2013). Sustainable introduction of this approach, and its acceptability at national and facility- and community-based levels, was possible in some countries only through efforts to fully analyze and adapt the introduction of this intervention in a manner that accommodated and acknowledged these cultural constraints.

Data-Driven Programs

Data can be used to ensure that high-impact interventions are provided on a consistent basis and that these interventions are resulting in measurable, quality outcomes. A results-based monitoring and evaluation plan with clear measures of success is of paramount importance before first steps are taken to implement any specific program. Data must be collected and analyzed on a regular, scheduled basis with sufficient input from a range of stakeholders who can help interpret the nuances of program data.

Ideas, established at the beginning of the program, about what is likely to work may evolve over time with greater understanding of context.

When you plan, you have good ideas based on your experience but you need to be open to change.

Monitoring and evaluation increases the reputation of the institutions providing care and thereby increases access to care.

Highly successful programs reach beyond tracking inputs and aim toward robust measurement of outcomes or impact. For example, being able to measure a reduction in postpartum hemorrhage, or a midwife's ability to successfully manage a postpartum hemorrhage is far more powerful than simply counting the number of midwives who received training to perform that lifesaving skill. Careful and regular attention to monitoring of program outcomes can be highly motivating to staff.

Championing Equity

The impact of a maternal and newborn health program can be maximized by fully understanding the needs of populations and communities most vulnerable and underserved. A substantial number of leaders interviewed described the importance of promoting equity through their program portfolios.

Looking at the population that we are serving by education, gender, age and income [programs can aim] at those who need the care the most.

Tangible steps can be taken to facilitate equity. For example, one country is designing programs specifically aimed at empowering youth who live in urban slums, while another country is supporting the development of more "woman-friendly" midwifery education systems.

Challenges

Throughout the interviews, the key informants outlined specific challenges that presented barriers to the successful implementation of their work. Sub-themes identified are elaborated below. Exemplar statements are provided to demonstrate the complexity of the ways leaders have addressed these challenges.

Supporting High-Need, Low-Capacity Systems

There are bottlenecks and challenges inherent in working in high-need, low-capacity systems, and implementers *have to anticipate bottlenecks in the system*. Implementers must put themselves in their counterparts' shoes and understand as much as possible how to overcome challenges without building long-term dependency. The most successful programs acknowledge limitations in countries or regions with weak infrastructure, scarce human resources or little political will. This may require more intense support to local stakeholders including assigning program-employed staff within stakeholders' offices or placing greater reliance on higher-level short-term technical assistance from international experts.

If the government had the capacity, they wouldn't be asking for help.

Achieving Impact within Complex Health Systems

Global health implementing partners have always struggled to document impact when supporting complex systems. For example, the inability to document impact as a result of improvements to a national midwifery education system may lead to frustration by donors, implementers and stakeholders within the system. Some interviewed described their use of an evidence-based conceptual model that connects inputs to education of nursing, midwifery or other students in the health professions to outcomes upon graduation and later to community and health systems impact (Johnson et al. 2013).

Maintaining Focus

It is easy for an implementer to lose focus and spread efforts too thinly. One leader interviewed described two efforts to mitigate the impact of malaria on pregnancy occurring in the same country at two points in time. The second effort, which used a pre-calculated amount of resources aimed at two districts, was far more powerful than a previous effort with fewer resources targeted at national-level goals. One must fully understand and act upon the complete set of needs underlying a problem. These may include human resources, logistics and commodities. Implementers *can't just parachute in and make an impact in a developing country.*

Remaining Humble – Balancing Technical Quality with Efforts to Communicate Success
Organizations must balance their efforts between promoting their good work and actually building capacity to achieve results over time. *A certain amount of humility is essential.* Remember to lead from behind, and applaud the work of your local counterparts and partners. Have effective monitoring and evaluation rubrics established and focus on presenting unbiased analysis of program results.

Managing Expectations

Expectations must be actively managed from the beginning of a program. Implementers must strive for front-end consensus regarding intended program results and the indicators used to measure them. If donor representatives lack technical experience, they need to be supported and appropriately advised. Communication pathways need to be clear and actively traversed.

Everything can collapse in a moment based on misinformation.

Discussion

This study was conducted to identify best practices and challenges associated with the implementation of maternal and newborn

programs in the developing world. While the results are limited to the perspective of a single international nongovernmental organization, Jhpiego, the data collected suggest that good public health practices translate to good maternal and newborn health practices and vice versa. These practices, when implemented within strong partnerships and using global guidelines, can create the change necessary for health systems to provide high-quality health services to vulnerable women and newborns.

The findings highlighted that change in practice should begin with a data-driven approach, including the development of a monitoring and evaluation plan, ideally at the start of a program. Comprehensive monitoring and evaluation allow local stakeholders to collaborate together to identify the results they expect, which should emphasize impact and not input, and provide the specific details on how to measure and evaluate progress and results. Celebrate with local counterparts any necessary mid-course corrections that were identified based on these monitoring and evaluation data, as no one can expect to get a new approach perfect in the beginning. This process is also beneficial in initiating change within the country.

The results of the study also emphasized the important role of an implementing partner, which can facilitate access to global evidence, standards, policies and procedures, for country decision-makers to use for their national programs. Access to this type of information provides the foundation for developing country- and community-specific approaches to improving maternal and newborn health outcomes. At the same time, best practices created at the country level and based on program experience can and should improve policy and planning within the global community as well.

Implementing maternal and newborn health programs using a health systems approach in which lessons learned from other parts of the system are easily applied or

utilized in maternal and newborn health can be beneficial. Also, despite the fact that most programs are focused on a specified scope of work, implementers that utilize all opportunities to coordinate with other government and authorized stakeholder activities promote a broader and more lasting impact. A robust systems approach to changing healthcare practices should include integration and a focus on equity.

The study reinforced the understanding that change is not brought about by one person, government or agency, but by collective, collaborative effort. Partnerships that are built on clear goals, trust and shared commitment facilitate information-sharing, creative problem-solving and use of best practices and lessons learned (Agarwal et al. 2015).

The research highlighted the need for program implementers to be cognizant of their role in maternal and newborn health partnerships and assist local country partners to be the face and champions of change. Implementers should provide support from behind to catalyze sustainable change.

The data suggested that evidenced-based change can be threatened by limited human workforce capacity within the existing health system. Managing expectations, acknowledging limitations and maintaining communication with local stakeholders are essential.

It is possible to transfer lessons learned from low-resource countries to developed countries where there are geographic areas that have limited access to maternal and newborn healthcare services. For example, those working on solutions to the public health problems plaguing low-income or rural populations suffering from health disparities could consider applying or adapting lessons learned to their context. Partnerships, evidenced-based systemic approaches and data-driven initiatives should be considered as key elements in these activities.

Conclusion

The paper describes good practices for global maternal and child health programs from the grounded perspective of Jhpiego field leaders who are experienced public health practitioners and whose country teams are responsible for implementation of large-scale programs. The successful approaches defined by Jhpiego leaders are a mix of innovative and evidence-based practices that can lead to meaningful and lasting improvements in healthcare systems that serve women and children in resource-challenged settings. There is also an acute awareness of challenges and suggestions for negotiating bottlenecks. Together, the successes and challenges discussed provide a valuable roadmap to promoting the health and wellness of women and families around the world.

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Case Study: Clinical Governance as an Approach to Improve Maternal and Newborn Health in 22 Hospitals in Indonesia



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Abstract

Clinical governance is a concept used to improve management, accountability and the provision of quality healthcare. An approach to strengthen clinical governance as a means to improve the quality of maternal and newborn care in Indonesia was developed by the Expanding Maternal and Neonatal Survival (EMAS) Program. This case study presents findings and lessons learned from EMAS program experience in 22 hospitals where peer-to-peer mentoring supported staff in strengthening clinical governance from 2012–2015. Efforts resulted in improved hospital preparedness and significantly increased the odds of facility-level coverage for three evidence-based maternal and newborn healthcare interventions.

Introduction

Indonesia is a middle-income nation of 252 million people that has experienced substantial economic growth over the past 15 years. The poverty rate was halved over this same period; however, there have not been comparable improvements in maternal and newborn health indicators. For example, the 2012 Indonesia Demographic and Health Survey (IDHS) reported that 83% of births were attended by a skilled provider (Statistics Indonesia et al. 2013), but significant decreases in maternal and neonatal mortality have not followed. The 2012 IDHS indicated the maternal mortality ratio to be 359 per 100,000 live births—one of the highest in Southeast Asia. The IDHS also reported that the neonatal mortality rate has remained around 20 deaths per 1,000 live births for the past 10 years.

Indonesia's limited progress is not due to weak political commitment. The Ministry of Health has implemented numerous policies to increase skilled attendance at birth, improve emergency obstetric and newborn care (EmONC) and increase national health insurance coverage (National Academy of Sciences 2013; World Bank 2014; Van Lerberghe et al. 2014).

The United States Agency for International Development (USAID)-funded Expanding Maternal and Neonatal Survival (EMAS)

Program (2011–2016) was developed to accelerate reductions in maternal and neonatal mortality in the six provinces of North Sumatra, Banten, West Java, Central Java, East Java and South Sulawesi, where 48% of the maternal deaths in Indonesia occur. EMAS is implemented by Jhpiego, Budi Kemuliaan Health Institution (*Lembaga Kesehatan Budi Kemuliaan* [LKKBK]), the national faith-based organization Muhammadiyah, and nongovernmental implementing organizations Save the Children and RTI International. EMAS identified clinical governance as a strategy to improve and sustain the quality of EmONC in health facilities.

Clinical governance as a concept originated in the 1990s in the United Kingdom's National Health Service (Halligan and Donaldson 2001), and now there are numerous clinical governance models from high-income countries (Phillips et al. 2010). Clinical governance is summarized as “a robust framework that acknowledges the importance of adopting a culture of shared accountability for sustaining and improving the quality of services and outcomes for both patients and staff” (McSherry and Pearce 2011: 29). Specific responsibilities are further defined by hospital management, ward/unit management and individual providers (Brennan and Flynn 2013).

Clinical governance in EMAS originated from LKBK's Maternity and Children's Hospital, the largest and oldest maternity hospital in Indonesia. The facility averages 7,000 deliveries a year. Hospital management has emphasized the principle of good clinical governance since 2006. The hospital created a learning-based organizational culture that emphasizes accountability for delivering high-quality care. It actively uses data to assess and improve performance in a quality improvement process. Quality of maternal and neonatal care has improved, as evidenced by a direct obstetric case fatality rate of 0.9% in 2014, less than the maximum acceptable value of 1% (WHO et al. 2009). EMAS sought to systematically strengthen clinical governance in more than 150 hospitals and 300 *puskesmas* (community health centres) in 10 districts over a five-year period, beginning in 2012. Selected districts had the largest volume of maternal and newborn deaths, and 22 intervention hospitals were chosen based upon their high

delivery volume. In 2014, 35,848 women delivered in the 22 intervention hospitals.

This case study describes the process and initial results of activities to strengthen clinical governance in 22 EMAS-supported hospitals to improve the quality of EmONC. It details the acceptability and feasibility of clinical governance focused on EmONC at the health facility level in a middle-income country in Asia. It demonstrates an association between increases in clinical governance practices and increased coverage of facility-level evidence-based interventions.

Intervention

Based on the experience at LKBK, EMAS introduced a set of five mutually-reinforcing practices to strengthen clinical governance for EmONC (Table 1). Clinical governance was not explicitly defined by EMAS, but the concept emphasized accountability of management and staff to deliver quality EmONC services. Clinical interventions were

Table 1. Hospital-based tools and approaches by level, supported by EMAS

Practices and Tools	Description	Frequency
Hospital management: Creates the systems, standards and culture of clinical accountability and responsibility		
1. <i>Performance standards</i>	A set of tools that define facility readiness to prevent and manage selected complications and good hospital management practices (e.g., infection prevention, clinical governance, client feedback).	Quarterly assessments, with an action plan to address gaps
2. <i>Maternal and neonatal death reviews and near-miss reviews (facility)</i>	Reviews use a simplified case review process for every maternal death, fresh stillbirth and neonatal death (>2,000 grams), as mandated (MOH 2010).	Within 24 hours
Ward/unit management: Sets the processes and procedures to deliver high-quality clinical care safely and efficiently		
3. <i>Emergency drills</i>	Maternal and neonatal emergencies are simulated to practice emergency responsiveness, improve teamwork, maintain skills and resolve possible delays (e.g., client flow, emergency trolleys).	As needed
4. <i>Clinical dashboards</i>	Colour-coded charts display the most important clinical and operational indicators, chosen by each unit/ward. They are used by staff to assess their performance and to take action when sub-optimal performance is indicated.	Weekly
Clinicians: Provide high-quality clinical care safely and efficiently in compliance with clinical policies and standards		
5. <i>Service statistics on the provision of evidence-based interventions for maternal and newborn health</i>	Data on the provision of selected evidence-based interventions* are aggregated monthly from the standardized registers by EMAS staff and analyzed to track coverage. Monthly performance is posted in the facilities.	Daily recording, monthly reporting (including on wall charts)

*Interventions include: active management of the third stage of labour (AMTSL), which includes the provision of a uterotonic for postpartum hemorrhage prevention (WHO 2012; MOH 2013); management of severe pre-eclampsia/eclampsia with magnesium sulfate (WHO 2011; MOH 2013); provision of one or more doses of antenatal corticosteroids to women delivering between 24 to 34 weeks to prevent respiratory distress syndrome in newborns (WHO 2015; MOH 2013); and initiation of breastfeeding for all live births within one hour of birth (WHO 2014; MOH 2013).

prioritized based on the main direct causes of maternal and newborn death: postpartum hemorrhage (PPH), eclampsia and sepsis for mothers (UNICEF and WHO 2014); and low birth weight/preterm birth, asphyxia and sepsis for newborns (UNICEF 2012). Evidence-based interventions that are cited in both World Health Organization recommendations and national clinical guidelines were selected to be recorded and tracked within each hospital to measure change over time. (Ministry of Health [MOH] 2013, WHO 2011, WHO 2012, WHO 2014, WHO 2015).

Peer-to-peer or *pendampingan* (meaning “side-by-side”) mentoring was used to establish good clinical governance practices. The LKBK team mentored staff from the 22 hospitals through a series of six structured mentoring visits that occurred over a 12–16 month period. First, EmONC providers (specialists, doctors and midwives), hospital management and district officials visited LKBK to learn about clinical governance and observe the practices, team work and organizational culture. Communication, workplace organization, privacy, infection prevention and documentation were emphasized. A team of five to seven doctors, midwives and nurses from LKBK then visited each of the 22 hospitals for on-site mentoring. The LKBK team along with hospital staff assessed facility readiness to provide EmONC using standards that were developed by EMAS. This group discussed the findings openly and in-depth so they could develop an action plan to address gaps. Subsequent visits by the LKBK team reviewed progress on the action plan, reinforced key practices and helped staff with problem-solving. Frequent communication also occurred between visits via SMS and phone calls.

Monitoring and evaluation of the intervention included tracking changes in the use of key clinical governance practices, primarily the frequency of death reviews. Increased frequency and rigor of these practices are expected to increase accountability and

improve learning, based on review of prior performance. The increased use of key practices is expected to improve facility readiness to provide EmONC according to performance standards, increase coverage of high-impact evidence-based interventions and ultimately improve the quality of care. The aim was that hospitals and providers achieve at least 80% on performance standards and that key interventions be implemented for 100% of eligible clients in each hospital.

EMAS worked to improve data collection and strengthen data systems and practices within the hospitals to ensure that relevant information was available to staff who implemented clinical governance activities.

Methods

Three types of information were collected from the 22 intervention hospitals between July 2012 and March 2015. EMAS programmatic records were used to monitor the frequency of selected practices (e.g., hospital staff documented the number of death and near-miss reviews conducted; this information was collected quarterly by EMAS staff). Performance standards were used jointly by EMAS and hospital staff to assess facility readiness to provide EmONC and monitor implementation. Assessment results for all 22 hospitals (i.e., number of performance standards achieved) were tracked and reported each quarter. Service statistics were collected on a monthly basis and used to calculate the coverage of four maternal and newborn health evidence-based interventions. Data elements were recorded by facility staff in standardized registers and collected by EMAS program staff.

The percentage of standards achieved, as well as the percentage of clients who received evidence-based interventions was computed quarterly for each of the 22 hospitals. Logistic regression analysis was conducted to test for significant differences in the odds of clients receiving evidence-based interventions between 2013 and 2015, adjusting for clustering within health facilities.

Results

Frequency of Clinical Governance Practices

The frequency of key practices implemented to strengthen clinical governance increased over time. Almost three-quarters (73%) of the 22 facilities practiced emergency drills and 67% were using the dashboards as of March 2015. The proportion of maternal deaths reviewed increased from 48% in 2012 to 85% by March 2015, while the proportion of neonatal deaths among newborns more than 2,000 grams reviewed increased from 39% to 56% in the same period.

Facility Readiness to Provide EmONC

All 22 hospitals completed quarterly assessments using EmONC standards. No facilities achieved 80% of the maternal standards at the 2012 baseline, but 18 hospitals achieved at least 80% by March 2015. Thirteen hospitals achieved at least 80% of the newborn standards in the same period.

Facility-Based Coverage of Key Interventions

A total of 104,016 women delivered in the 22 hospitals between July 2012 and March 2015.

Figures 1 and 2 present average hospital performance scores on EmONC standards and the percentage of eligible clients who received related interventions. Intervention coverage data are presented from July 2013 when the data collection system introduced by EMAS had matured sufficiently to produce reliable information. Figure 1 displays the achievement of standards related to immediate breastfeeding and the management of women delivering preterm with antenatal corticosteroid (ACS) along with actual provision of the interventions. The average achievement of standards quickly increased to 80%, and performance was sustained over time. There was a greater change in ACS intervention coverage between July 2013 and March 2015 compared to the change in breastfeeding.

Figure 2 displays the achievement of standards related to the management of severe pre-eclampsia/eclampsia with magnesium sulfate ($MgSO_4$) and the provision of a uterotonic in the third stage of labour along with provision of the related interventions. The achievement of standards generally increased over time and small increases were observed in the coverage of both interventions.

Figure 1. Newborn care: Average achievement of EmONC standards for ACS and immediate breastfeeding relative to coverage of related interventions (N = 22 hospitals)

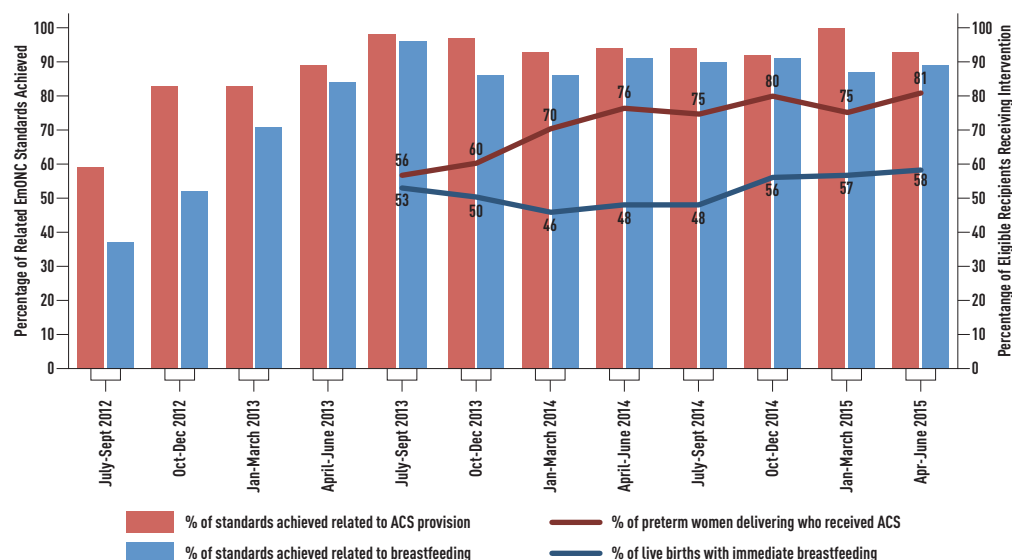
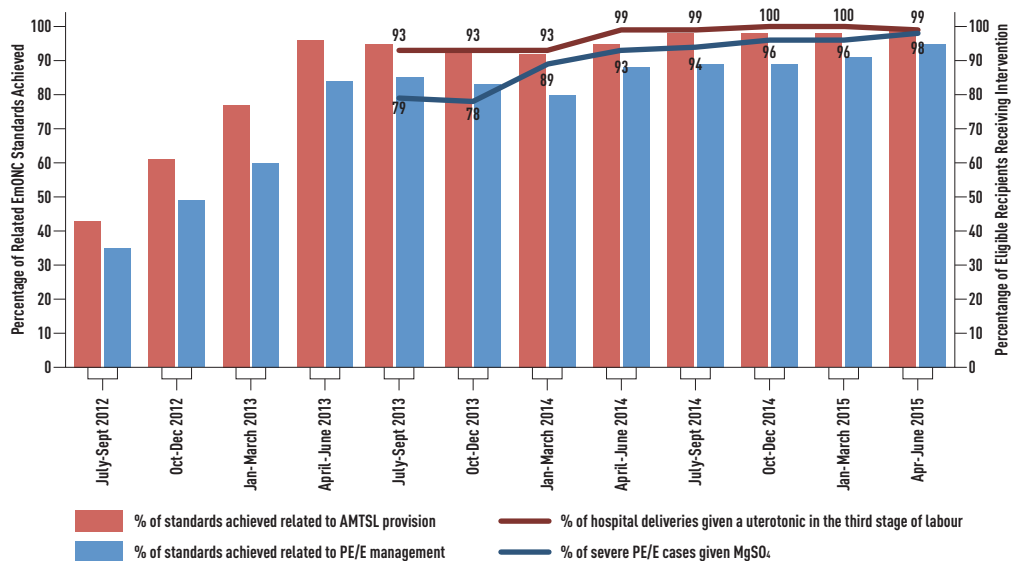


Figure 2. Obstetric care: Average achievement of EmONC standards for the active management of the third stage of labour and management of pre-eclampsia/eclampsia with MgSO₄ relative to coverage of related interventions (N = 22 hospitals)



AMTSL = active management of the third stage of labour
PE/E = pre-eclampsia/eclampsia

A logistic regression model for grouped data, adjusted for within-facility correlation, assessed the difference in odds of receiving care between 2013 and 2015. The results in Table 2 indicate that the odds of uterotonic provision (Odds Ratio [OR]: 38.2, Confidence Interval [CI]: 3.79–386.4), ACS provision (OR: 2.35, CI: 1.80–3.09) and MgSO₄ provision (OR: 7.21, CI: 2.22–23.4) were significantly higher in 2015 when compared with 2013.

Discussion

Efforts to systematically strengthen clinical governance using peer-to-peer mentoring in 22 hospitals in Indonesia have resulted in increased frequency of selected practices (e.g., use of clinical dashboards and death and near-miss reviews). Facility readiness to provide EmONC improved, as evidenced by the majority of hospitals that scored over 80% on maternal and/or newborn care

Table 2. Odds of clients receiving maternal and newborn health interventions: 2013 compared to 2015 in 22 hospitals

Intervention	Number of eligible clients (2013)	Number of eligible clients (2015)	Odds Ratio	95% CI	p-value
Routine care					
Breastfeeding within one hour*	10,023	8,430	1.18	0.75–1.85	0.483
Uterotonic provision*	10,297	8,532	38.2	3.79–386.4	0.002
Care for complications					
ACS provision**	494	491	2.35	1.80–3.09	0.032
MgSO ₄ provision**	1,036	799	7.21	2.22–23.4	0.001

*22 facilities included; **21 facilities included; two-level logistic regression model for grouped data with standard errors adjusted for within-facility correlation; p < 0.05 level of significance.

standards. Facility-level coverage of three evidence-based interventions also increased. This case study in Indonesia is an important contribution to the literature, given the limited evidence of the influence of clinical governance on quality of care in low- and middle-income countries (Okwundu 2011).

The concept of good clinical governance resonated in these hospitals as a way to improve EmONC. LKBK as a hospital, as well as its staff and leadership, provided inspiration and exemplified why and how clinical governance works. While practices have been successfully introduced in supported hospitals, there is still room for improvement in their execution. The proportion of neonatal deaths that were reviewed in 2015 improved from the 2012 baseline figure, but remains low at 56%. Death reviews require on-going effort to improve quality (i.e., timeliness, rigor and completion). Similar challenges were noted in conducting perinatal mortality audits (Pattinson et al. 2009). Improved practices and facility readiness were not associated with a significant increase in breastfeeding. Factors associated with failure to initiate immediate breastfeeding include cesarean delivery (Patel et al. 2015). The average cesarean section rate at these hospitals was 42% (2015 data).

Ramsey et al. (2010) reported that accountability was central to clinical governance models. EMAS helped increase accountability by creating systems, clarifying roles, encouraging discussion across units and measuring performance related to EmONC. Accountability for performance was possible due to changes in data collection systems that produced relevant quality data. Data use and visualization to measure and improve performance were not routine in these hospitals prior to EMAS, but were modeled at LKBK and heavily emphasized during mentoring. Death reviews increased accountability and engaged staff in frank discussions of poor outcomes to promote learning as part of quality improvement.

The EMAS experience shows that strengthening clinical governance improves accountability at different levels within a facility, transforms hospital organizational culture to value learning and openness and promotes the use of relevant service delivery data to drive quality improvement.

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Case Study: A Rapid Rollout of Universal Maternal HAART Improves Outcomes among HIV-Positive Women and Their Infants in Kenya



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Abstract

Globally, countries have made significant achievements in reducing rates of mother-to-child transmission (MTCT) of HIV. In Kenya, MTCT rates were most recently estimated at 8%, with 220,000 children under 15 years of age living with HIV. In 2013, the World Health Organization recommended highly active antiretroviral therapy (HAART) for all HIV-infected pregnant and lactating women. APLUSKAMILI supported rollout of a county-level, targeted, rapid scale-up of HAART in 152 high-volume facilities in Kenya. A review and comparison of data from these facilities in 2013 and 2014 revealed a significant increase in the proportion of women started on HAART and a reduction in MTCT.

Introduction

Globally, programs targeting the prevention of mother-to-child transmission (PMTCT) of HIV have transitioned from preventing HIV-infection among infants born to pregnant women living with HIV to implementing interventions that not only prevent transmission but also keep the mother alive and healthy. There have been significant reductions in adult and pediatric HIV prevalence in sub-Saharan Africa. From 2008 to 2011, there was a 24% decline in new infections among children. In six countries (Kenya, South Africa, Togo, Burundi, Namibia and Zambia), new infections among children declined by 40–49% (WHO 2013). Kenya, identified as one of 22 priority countries by the Joint United Nations Programme on HIV/AIDS (UNAIDS) (UNAIDS 2014), has an estimated HIV prevalence of 6% and approximately 1.6 million people living with HIV/AIDS, including 79,000 pregnant women in need of PMTCT interventions annually (UNAIDS 2014; NASCOP 2014a). Kenya has made substantial progress since the PMTCT program began in 2002 with the introduction of HIV testing and counseling among pregnant women and provision of antiretroviral (ARV) prophylaxis. In 2007, Kenya adopted an “opt-out” HIV testing policy for antenatal care (Ujiji et al. 2011). Provision of a single dose of the ARV

nevirapine (NVP) to HIV-positive mothers at the onset of labour was the basic intervention to reduce MTCT of HIV, which can occur in utero, during delivery or through breastfeeding. A short course of prophylaxis with one or more ARV drugs given around labour and delivery reduces the transmission risk, but the risk of postnatal transmission remains high in settings where prolonged breastfeeding is the norm, as in Kenya (Becquet et al. 2009; NASCOP 2014b). Transmission of HIV from mother-to-child through breastfeeding accounts for 10–15% of the MTCT risks (NASCOP 2014b). Kenya’s guidelines recommend six months of exclusive breastfeeding for all women, both HIV-infected and uninfected.

According to the most recent Demographic and Health Survey in Kenya, by six months, over 99.3% of women were still breastfeeding, but only 42% were exclusively breastfeeding, which poses a great risk of postnatal transmission due to mixed feeding (KNBS 2015; NASCOP 2014b).

By 2009, more than 80% of pregnant women accessing antenatal care services in Kenya were being tested and counseled for HIV and 79% of those testing positive received maternal ARV prophylaxis with two drugs, zidovudine (AZT) and NVP; however, the MTCT rate remained high at 27%, largely due to health system challenges related to

obtaining CD4 counts, an indicator of immune suppression and a criteria for determining eligibility for treatment versus prophylaxis. In 2012, one study showed that 83% of women living with HIV in Nyanza Province did not have samples taken for CD4 testing (Dillabaugh et al. 2012). However, by 2012, Kenya had achieved universal HIV testing with more than 90.7% percent of all pregnant women in Kenya tested for HIV (NASCO 2014b).

After multiple PMTCT guideline adaptations, based on the expanding evidence base and World Health Organization (WHO) recommendations, in 2014, Kenya began scaling up access to lifelong HAART for all HIV-infected pregnant and breastfeeding women. Not only does HAART take into consideration the well-being of the mother (treatment instead of

prophylaxis), but it is also more effective in reducing transmission of HIV to her child (NASCO 2014a). The evolution of guideline recommendations can be found in Table 1.

The 2014 guidelines are better for both the provider and women living with HIV for several reasons, most importantly that the regimens are simpler, drugs prescribed have fewer side effects than those used previously and all women receive the same treatment, eliminating the need for providers to interpret complicated algorithms. Now, pregnant and breastfeeding mothers living with HIV receive a fixed dose combination of tenofovir, lamivudine, and efavirenz given once daily (NASCO 2014a; WHO 2013).

PMTCT services in Kenya are implemented as part of focused antenatal care (ANC) provided within maternal child health settings

Table 1. Kenya national guideline changes from initiation of the PMTCT program to present

Year	Recommended interventions for prevention of mother-to-child transmission of HIV	
	Mother	Infant
2002	Single dose NVP at onset of labour	
2005	AZT from 28 weeks gestation; single dose NVP at onset of labour	
	HAART (AZT/3TC/NVP) for pregnant women with CD4 count <200 or WHO clinical stage 3 or 4	
2006	AZT from 28 weeks gestation; single dose of NVP + AZT/3TC at onset of labour; AZT + 3TC for 7 days	Single dose NVP + AZT for 7 days
	HAART (AZT/3TC/NVP) for all pregnant women WHO clinical stage 4	
	HAART (AZT/3TC/NVP) for pregnant women with CD4 count <350 and WHO clinical stage 3	
	HAART (AZT/3TC/NVP) for pregnant women with CD4 count <200 and WHO clinical stage 1 or 2	
2010	AZT from 14 weeks gestation; single dose NVP at onset of labour; AZT + 3TC for 7 days	Single dose NVP + 3TC 7 days + AZT for 6 weeks
	HAART (AZT/3TC/NVP) for pregnant women with immunosuppression (CD4 <350 or WHO clinical stage 3 or 4)	
2011	HAART (AZT/3TC/NVP) for pregnant women with immunosuppression (CD4 <350 or WHO clinical stage 3 or 4)	NVP for 6 weeks
	AZT from 14 weeks gestation; single dose NVP at onset of labour; AZT + 3TC for 7 days	NVP until 1 week after cessation of breastfeeding
2012	Option A: AZT from 14 weeks gestation; single dose NVP at onset of labour; AZT + 3TC for 7 days	NVP until 1 week after cessation of breastfeeding
	Option B+: HAART (TDF/3TC/EFV) for all pregnant and breastfeeding women living with HIV	NVP for 6 weeks
2014	HAART (TDF/3TC/EFV) for all pregnant and breastfeeding women living with HIV	NVP for 12 weeks

NVP = nevirapine; AZT = zidovudine; 3TC = lamivudine; TDF = tenofovir; EFV = efavirenz; (NASCO 2014a; WHO 2013)

and include: provision of HIV testing and counseling for women, their partners and other family members; nutritional counseling and psychosocial support; initiation and monitoring of women on HAART; and follow-up of HIV-exposed infants. Integration of HIV into ANC has improved the follow-up and health outcomes of mother-baby pairs (Turan et al. 2012). This case study looks at whether a rapid scale-up of implementation of HAART guidelines in project-supported facilities was effective in increasing HIV testing for pregnant women, initiating HIV-infected women on HAART and providing ARV prophylaxis to HIV-exposed infants.

Intervention

The APHIAPLUSKAMILI project, led by Jhpiego, is implementing comprehensive HIV services in Eastern and Central regions of Kenya, covering 480 health facilities in nine counties. The project is funded by the United States Agency for International Development (USAID) and works closely with the Ministry of Health to strengthen health services and build the capacity of healthcare workers to provide comprehensive HIV/AIDS services, including PMTCT. Several of APHIAPLUSKAMILI project's staff are members of the national PMTCT/antiretroviral therapy (ART) guideline committee, which developed the government plan outlining the path to elimination of MTCT of HIV. Project planning to scale up the uptake of HAART among HIV-infected pregnant women began in late 2013, before the release of the new guidelines in June 2014 (NASCO 2014a). As a first step, county managers, sub-county health managers and more than 3,000 PMTCT service providers were sensitized on the new guidelines.

Due to frequent revisions of the national HIV guidelines, there was a need to update service providers with the latest national HIV guidelines and ART recommendations to build their skills and competence in implementing the current guidelines. Continuous

medical education, monthly supportive supervision and clinical systems mentorship were used as cost-effective ways to transfer skills. Laboratory networks were strengthened to ensure that all HIV-exposed infants receive a polymerase chain reaction (PCR) test to establish if they were infected in utero, and that all mothers living with HIV have access to viral load testing, an essential component of HIV clinical care. To enhance social support and improve retention in care, the project introduced the government-endorsed "Mentor Mothers" program, where mothers living with HIV provide support and guidance to pregnant women newly diagnosed with HIV. The program aimed to increase the number of women newly tested and initiated on HAART, transition pregnant and breastfeeding women previously started on ARV prophylaxis onto HAART and engage women known to be living with HIV but not on HAART to start treatment and adhere to it. Quality improvement initiatives included administration of a site-integrated management system—an assessment tool that looks at the quality of care offered to people living with HIV, chart reviews and an HIV-exposed infant cohort analysis.

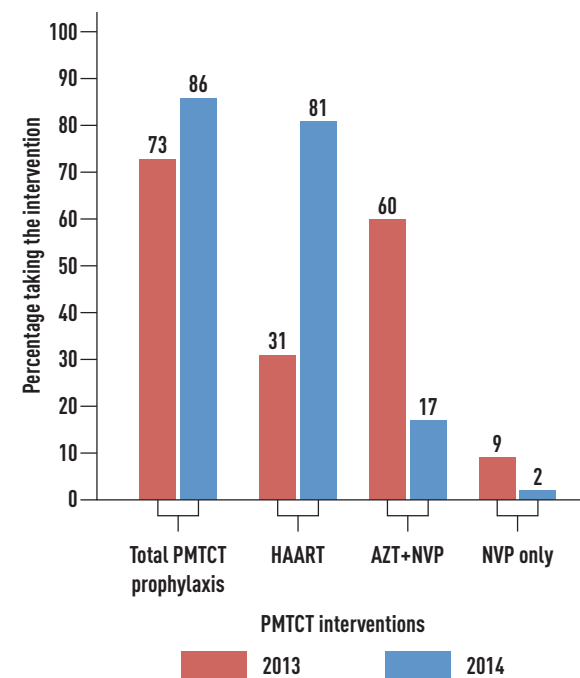
Methodology

Routine data from project-supported health facilities were collected using the Ministry of Health's official PMTCT data reporting tool; data reports were entered in the project's database for analysis. Indicators were collected along the PMTCT cascade from initial diagnosis of the mother until establishment of HIV status of exposed infants at 0–9 months of age. Data obtained in 2013 were used as the baseline and were compared to 2014 data, representing the period of intervention, to see if there was significant change between the two periods. Pre- and post-cohort analysis was conducted using Stata 10. The level of statistical significance was set at $p \leq 0.05$.

Results

In 2013, 84,688 women were newly counseled and tested in ANC and in maternity wards, while in 2014, 91,542 were counseled and tested, an increase of 8% in the number of women tested. HIV prevalence among pregnant women tested for HIV did not differ significantly from baseline to endline, 3.1% and 2.9%, respectively. In 2014, the majority of pregnant women living with HIV accessing services at APHIAPLUSKAMILI sites received HAART (81% compared to 31% in 2013). Figure 1 shows the changes in the types of PMTCT interventions provided between 2013 and 2014. Similarly, there was a significant increase in the percentage of HIV-exposed infants who received ARV prophylaxis in 2014 (2,265 or 84.7%) compared to 2013 (1,919 or 71.6%).

Figure 1. Comparison of the uptake of PMTCT interventions by women living with HIV between 2013 and 2014



NVP = nevirapine; AZT = zidovudine

Significant reductions in mother-to-child positivity rates were reported in the two Eastern and Central project regions during the intervention period, compared to the period before the intervention. Table 2 provides information regarding the HIV test results of HIV-exposed infants, as determined by PCR. Nearly 10% of PCR tests conducted were positive in 2013, compared to 6.5% in 2014.

Discussion/Conclusion

Pregnant and breastfeeding women living with HIV should receive HAART for best outcomes for both themselves and their children. The change in the national guidelines and project support to Ministry of Health facilities in Kenya led to a 2.5-fold increase in maternal access to HAART, which likely contributed to the decrease in the percentage

of infants who tested positive for HIV by PCR. The use of single-dose NVP, an intervention that is no longer recommended by WHO (WHO 2013), has almost been eliminated in the project sites; only 2% of women received this intervention.

Adherence to treatment is an essential component of successful PMTCT programs. APHIAPLUSKAMILI promotes retention of mothers in care by deploying Mentor Mothers to give one-on-one counseling to other women living with HIV. Formation and support of psychosocial support groups also contributes to improving maternal and infant outcomes.

Table 2: Infant prophylaxis and early infant diagnostic testing outcomes in 2013 and 2014

	2013	2014
Infant prophylaxis		
HIV-exposed infants who received nevirapine prophylaxis	1,910	2,265
Percentage of total HIV-exposed infants who received nevirapine prophylaxis	71.6	84.7
Early infant diagnostic testing		
PCR tests conducted	1,814	1,929
Positive PCR results (%)	168 (9.5)	123 (6.5)

There is a tendency for slow adoption of national guidelines and recommendations in resource-limited settings due to gaps in the health-care delivery system (Paintsil and Andiman 2009). Efforts by the APHIAPLUSKAMILI project, a rapid results initiative aimed at addressing the gaps, have resulted in faster implementation of guidelines and earlier achievement of improved outcomes. (Rapid results initiatives use a series of accelerated activities to increase achievement of specific health indicators.) The rapid rollout of HAART guidelines resulted in a 49% increase in the proportion of women initiated on HAART. These findings agree with a study of a 2012 rapid results initiative in Nyanza, in western Kenya, which focused on the implementation of the 2010 Kenya ART guidelines and scale-up of universal access to maternal HAART and infant prophylaxis; this initiative produced a 40% increase in HAART uptake and was sustained during the post-initiative period (Dillabaugh et al. 2012). The results of our case study also concur with other rapid results initiatives in PMTCT, such as the 2014 initiative, also in Nyanza, in which male partner participation increased from 7% to 54% (Akama et al. 2014).

Universal maternal HAART has the capacity to reduce MTCT rates and keep mothers and their HIV-exposed infants alive and healthy, as shown in the results of clinical trials that have been done to assess the efficacy of HAART on PMTCT in

resource-limited settings, where significant reductions have been observed when maternal HAART was introduced. For example, in a study in Botswana, pregnant women living with HIV who were started on various combinations of HAART in pregnancy, which continued to six months postpartum, had marked reductions in MTCT rates to 1.1% (Shapiro et al. 2010)

Development and dissemination of clinical care guidelines are an important component of any public health program; however, translating recommendations into rapid action is challenging in settings with limited resources. Comprehensive care for women living with HIV, including access to maternal HAART and peer support, is the most effective way of achieving elimination of MTCT of HIV.

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Case Study: Experience Applying and Tracking a Quality Improvement Approach for Maternal and Newborn Health Services in Sub-Saharan Africa



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Abstract

The Standards-Based Management and Recognition (SBM-R®) approach to quality improvement was applied to maternal and newborn health services in Guinea, Mozambique, Nigeria and Zimbabwe. In every country, the quality of service delivery, as measured by clinical performance standards, improved following the intervention. The performance of evidence-based service delivery practices, as measured through service statistics, also increased and institutional rates of postpartum hemorrhage and very early neonatal deaths exhibited declining trends. Findings suggest that the effects of SBM-R reach beyond service delivery processes to health outputs and outcomes and demonstrate the potential returns of investing in quality improvement approaches.

Background

Many low- and middle-income countries did not achieve the Millennium Development Goal targets for reductions in maternal and child mortality (United Nations 2015), despite notable increases in utilization of maternal and newborn health (MNH) services. A focus on increasing attendance at facility-based MNH services, at the expense of quality, contributed to the problem (Austin et al. 2014; Srivastava et al. 2014). Quality improvement initiatives play a critical role in guiding how services are provided so that they can have the intended impact on morbidity and mortality. However, there is a lack of global evidence regarding the benefits of quality improvement initiatives, in part because routine data needed to monitor progress are missing or unreliable (Bhutta et al. 2014; Bradley and Yuan 2012).

Quality improvement was one focus of the Maternal and Child Health Integrated Program (MCHIP), a global program of the United States Agency for International Development (USAID) that supported the introduction and scale-up of high-impact maternal, newborn and child health interventions. From 2008 to 2013, MCHIP worked with Ministries of Health to apply the Standards-Based Management and

Recognition (SBM-R®) quality improvement approach to a range of health service areas in 16 countries. This case study describes the experience of four countries that applied SBM-R to MNH services (Guinea, Mozambique, Nigeria and Zimbabwe) and the results of their efforts.

Intervention

SBM-R is a practical approach to quality improvement that empowers providers and managers to take the initiative to improve the quality of services in their facility. Each of the case study countries applied the SBM-R approach following a four-step process that incorporates a continuous “Plan, Do, Study, Act” (PDSA) cycle (Necochea and Bossemeyer 2005; Necochea et al. 2015; Tawfik et al. 2010):

1: Set standards. Detailed, evidence-based standards for the organization and functioning of MNH services were established based on international and national evidence-based norms, policies and guidelines. These standards defined desired provider performance and specified tasks essential to good quality care. The standards also formed the basis for an SBM-R MNH assessment tool for use at the facility level.

2: Implement standards. Trained quality improvement teams of health workers at each facility that implemented the SBM-R approach, starting with a baseline assessment of the extent to which MNH services at their facility complied with the performance standards, using the SBM-R MNH assessment tool. The tool included observations of client-provider interactions, an inventory of essential supplies and equipment and provider interviews about how care was provided for complications, such as postpartum hemorrhage. Teams used the results to identify gaps between actual and desired performance, analyze root causes of these gaps, create an action plan and mobilize the resources to implement their action plan.

3: Measure progress. Facility teams conducted follow-up assessments with the same tool every three to nine months and addressed any remaining or new gaps in the quality of care. Teams also monitored service statistics that were relevant to the service delivery practices promoted by the SBM-R standards. Each of the MCHIP country programs in case study countries worked with their Ministry of Health counterparts to expand the types and quality of information available. For example, programs in Guinea and Nigeria modified registers to record data on active management of the third stage of labour (AMTSL) and partograph use, while programs in Mozambique and Zimbabwe worked to integrate MNH indicators into the national health management information system. MCHIP also trained providers and supervisors in all four countries on how to correctly record data in new and revised forms and introduced monitoring systems for data quality and data management.

4: Reward achievements. The programs offered incentives for performance improvement. For example, when facilities in Guinea and Mozambique achieved targets for performance standards, the facilities were recognized and the staff rewarded with plaques, certificates and donated materials and equipment.

MCHIP staff and their Ministry of Health counterparts in each case study country supplemented the SBM-R intervention by conducting competency-based MNH training to strengthen providers' clinical skills. They also strengthened supervision and the use of data for decision making in Mozambique and Zimbabwe.

Methodology/Change Process/Results

A secondary analysis of data was conducted from SBM-R performance assessments and routine service statistics from 63 health facilities in Guinea, Mozambique, Nigeria and Zimbabwe. Ethical clearance was not needed for the analysis because it uses de-identified secondary data.

Data from routine facility assessments with the SBM-R MNH assessment tool were used to calculate the mean percentage of performance standards achieved across health facilities in each country during one assessment period per year. A health facility must meet every item in a detailed checklist of relevant tasks in order to achieve a standard.

Facility service statistics from maternity registers and monthly reports and, in some countries, supplemental data collection forms introduced by MCHIP were used to measure the use of evidence-based practices promoted by SBM-R and related health outcomes. Limited data were available and data varied between countries. Eight priority facility performance indicators expected to be affected by SBM-R were calculated: the proportion of women in labour who had a companion present during labour or birth; the proportion of women delivering at a facility who received

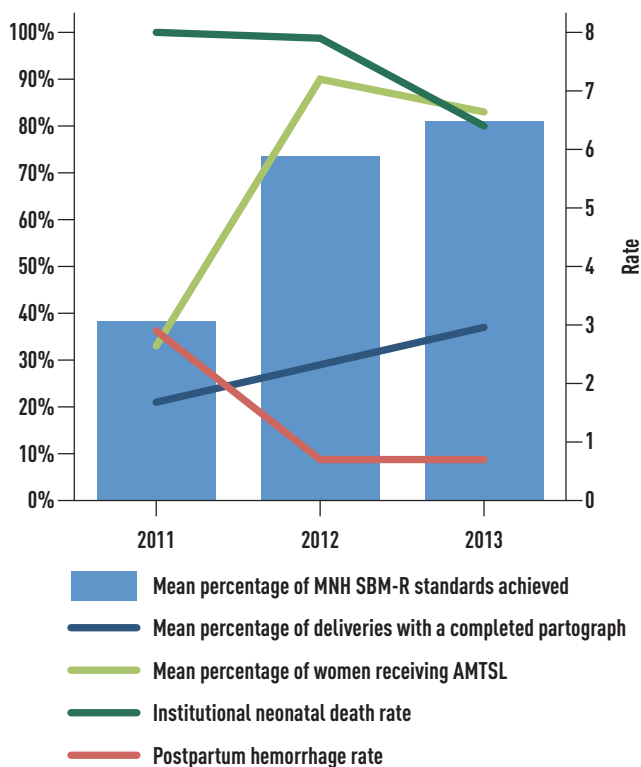
AMTSL or a uterotonic immediately after birth; the proportion of deliveries for which a partograph was used; the proportion of newborns who had skin-to-skin contact with their mother immediately after birth; the proportion of newborns who were breastfed within one hour after birth; the proportion of women delivering at a facility who experienced a postpartum hemorrhage; the institutional very early maternal death rate (number of maternal deaths before discharge divided by the number of deliveries at a facility); and the institutional very early neonatal death rate (number of neonatal deaths before discharge divided by the total number of live births at a facility). It was not possible to calculate every indicator in all four countries as they did not all collect the same data elements.

This analysis is restricted to the facilities in each case study country that offer complete data on selected indicators. Results in Guinea come from six facilities (of 52 implementing SBM-R) that participated in a later phase of the intervention when more data were collected. Results in Mozambique come from 34 facilities (of 104 implementing SBM-R) that participated in the initial phase of the intervention and had more years of implementation. Results in Nigeria come from six hospitals; five health centres that also implemented SBM-R were excluded because they collected fewer data and had low caseloads, making it difficult to detect change. Results in Zimbabwe come from all 17 facilities that implemented SBM-R. Most of the 63 health facilities included in this case study were hospitals (41)

located in urban areas (40) and government-affiliated (54).

Figure 1 shows the trends in Guinea after SBM-R was initiated in April 2011. The mean percentage of MNH standards achieved by facilities almost doubled in the first year. A large increase in the use of AMTSL in the first year was accompanied by a favorable decrease in a related health outcome, the institutional postpartum hemorrhage rate. Partograph use increased slowly but steadily, and the institutional very early neonatal death rate exhibited a declining trend in 2013. Data for two other health outcomes are available only for 2012 and 2013, during which the fresh stillbirth rate decreased from 3.6% to 3.3% and the institutional maternal death rate decreased from 0.6% to 0.4% (data not shown).

Figure 1. Trends in Guinea: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 6 facilities



Number of deliveries is 4,017 in 2011, 3,665 in 2012, and 3,405 in 2013. SBM-R intervention began in April 2011 at these six health facilities.

The institutional very early neonatal death rate decreased from 8% in 2011 to 6.4% in 2013.

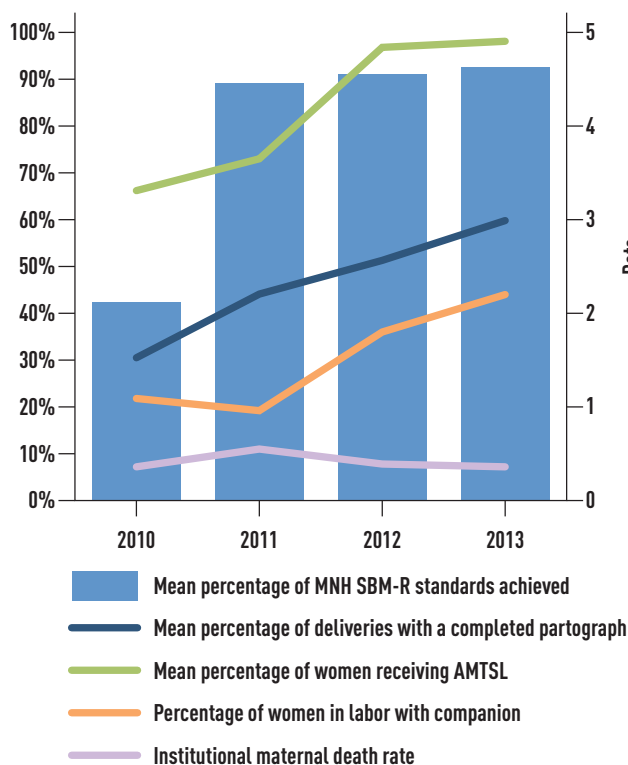
Figure 2 shows the trends in Mozambique after SBM-R was initiated in January 2010. The mean percentage of MNH standards achieved doubled in the first year, after which scores changed little. Use of partographs and AMTSL increased, and AMTSL was nearly universal by 2013. The institutional very early maternal death rate began and ended at the same level. By 2013, the proportion of women with a companion during labour or birth had doubled. Immediate skin-to-skin contact with the mother and breastfeeding within the first hour of birth were relatively common at the baseline (about 75%) and remained high (70% to 76%) over the next three years (data not shown).

In Nigeria, the mean percentage of SBM-R MNH standards achieved rose dramatically for two years in succession after the introduction of SBM-R, from 12% in 2007 to 49% in 2008 and 84% in 2009 (data not shown). Use of AMTSL decreased from 88.2% of deliveries in 2007 to 50.7% in 2008, before rebounding in 2009 to 79.5%. As would be expected, changes in postpartum hemorrhage exhibited an inverse trend to those in AMTSL, first increasing and then decreasing. The institutional very early maternal death rate decreased from 3.5% in 2007 to 1% two years later, when MCHIP support ended.

Figure 3 shows the trends in Zimbabwe after SBM-R was initiated in October 2010. The mean percentage of MNH standards achieved more than tripled by 2013. Use of

uterotonics immediately after birth to prevent postpartum hemorrhage was high at the baseline but still improved over time. The institutional very early neonatal death rate decreased from 7% to 3.4% in the first year and then remained at this level. The very early institutional maternal death rate, which was very low at the baseline, edged up slightly.

Figure 2. Trends in Mozambique: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 34 facilities



Number of deliveries is 127,156 in 2010, 76,799 in 2011, 100,322 in 2012, and 124,277 in 2013. SBM-R intervention began in January 2010 at these 34 health facilities.

Discussion/Conclusion

In all four countries, the proportion of MNH standards achieved by facilities more than doubled during the two to three years after the introduction of SBM-R.

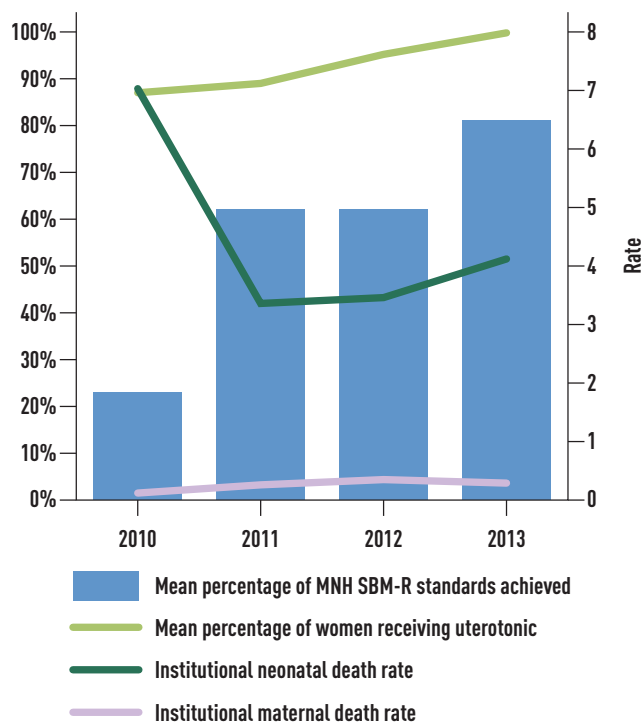
Concurrently, improvements were observed in use of evidence-based practices and some health outcomes, suggesting SBM-R is producing the intended effects. Although a causal link between the use

of the SBM-R approach and improved health outcomes cannot be established with routine data from intervention facilities alone, the consistent patterns exhibited across four different real-world settings provides a strong argument for the effectiveness of the SBM-R approach (Shelton 2014). Maternal mortality showed a declining trend only in Nigeria, but it is unrealistic to expect to see decreases in such a rare event over short time periods, especially at facilities with low delivery caseloads. All SBM-R programs had to strengthen data collection at the facility level in order to document the effects of the intervention and generate information for decision making.

The literature is limited, but some studies confirm that a well-designed and properly implemented quality improvement intervention can lead to increased use of evidence-based service delivery practices during the intrapartum period, leading to improved MNH outcomes (Dettrick et al. 2013). Studies in Belize, Nicaragua and Tanzania documented increased use of best practices and lower morbidity and mortality at the facility level following quality improvement interventions (Kidanto et al. 2012; Lin et al. 2003; Ministry of Health 2011). Two randomized controlled trials of quality improvement interventions focused on MNH also have yielded largely positive results (Colbourn et al. 2013a; Colbourn et al. 2013b; Dumont et al. 2013).

There are some limitations to the findings that should be recognized. The SBM-R interventions were implemented as part of

Figure 3. Trends in Zimbabwe: Maternal and newborn health SBM-R standards, service delivery practices and health outcomes at 17 facilities



Number of deliveries is 9,310 in 2010, 2,901 in 2011, 12,018 in 2012, and 3,139 in 2013. Data is for 12 months for all years except 2013, which includes data for October through December. SBM-R intervention began in October 2010 at these 17 health facilities.

government initiatives to improve MNH, not as part of research studies, so comparable data were not collected from facilities that did not implement SBM-R. In addition, SBM-R peer assessments conducted by facility staff may not be as objective as external assessments. It is also possible that limiting the case study to facilities with more complete datasets has introduced some bias to the results.

Program efforts to increase the types and quality of service statistics available to measure the results of SBM-R are an important advance in monitoring quality improvement initiatives. Prior evaluations have largely relied on assessments of performance standards alone (Kim, Banda et al. 2013; Kim, Chilila et al. 2013; Necochea et al. 2015) and have been limited by incomplete recordkeeping when trying to use service statistics (Rawlins et al. 2013).

Quality improvement initiatives targeting HIV/AIDS services have recognized and addressed the need for routine data sources to monitor and assess progress (El-Sadr et al. 2015). Concerted efforts are likewise needed to strengthen the MNH components of national health management information systems in order to routinely assess the effects of continuous quality improvement interventions (Bhutta et al. 2014).

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Case Study: Effects of a Media Campaign on Breastfeeding Behaviours in Sindh Province, Pakistan



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Abstract

A 2013–2014 media campaign in Sindh Province, Pakistan, promoted healthy breastfeeding practices. According to data from annual household surveys, 26.7% of mothers saw one television spot and 19.4% saw another. The proportion of mothers who received breastfeeding information via television increased from 8.3% to 29.4% after the campaign ($p \leq 0.05$) and the percentage receiving information from doctors, mothers-in-law and relatives/friends nearly doubled ($p \leq 0.05$). However, no improvements in breastfeeding practices were reported. The experience in Sindh suggests that, in order to change breastfeeding practices, mass media interventions should be linked with other interventions, such as provider counseling, that involve influential family members in addition to mothers.

Introduction/Background

Mother's milk provides all essential nutrients for infant health, growth and development for up to 6 months of age (Kramer and Kakuma 2012). Early and exclusive breastfeeding reduces child morbidity and mortality and is a cornerstone of child survival strategies (Bhutta and Labbock 2011). However, in Pakistan, only 18% of newborns are breastfed within 1 hour after birth, and 58% within the first 24 hours; only 24.1% of infants 4–5 months old are exclusively breastfed (National Institute of Population Studies and ICF International 2013). Rates of early and exclusive breastfeeding have remained virtually unchanged in Pakistan for two decades despite breastfeeding promotion programs (Hanif 2011).

Widely accepted beliefs and customs contribute to unhealthy breastfeeding practices in Pakistan. Some mothers provide prelacteal feeds (such as honey, water and juice) to the newborn, delay initiation of breastfeeding and discard colostrum (Badruddin et al. 1997; Khadduri et al. 2008), increasing the risk of infection and malnutrition and reducing the likelihood of successful and exclusive breastfeeding. Pakistani mothers commonly believe that prelacteal feeds clear the stomach of meconium and reduce colic;

prelacteals are usually administered by a respected family elder because they are thought to imbue the baby with the traits of the person feeding them (Asim et al. 2014; Fikree et al. 2005; Khadduri et al. 2008; Laroia and Sharma 2006). Mothers-in-law may advise delaying the first feeding due to perceptions that colostrum is harmful or that the mother has insufficient milk (Gul et al. 2014). Discarding colostrum as “stale” or “poisonous” is an ancient custom across South Asia (Asim et al. 2014; Fikree et al. 2005; Khadduri et al. 2008; Laroia and Sharma 2006).

Most interventions to promote positive breastfeeding practices in developing countries have been delivered by health workers using interpersonal communication (Dyson et al. 2005; Lassi et al. 2010; Lewin et al. 2010), but recent reviews have highlighted the need for different approaches (Baker et al. 2013). Some researchers, citing the impact of media campaigns on HIV/AIDS, family planning and vaccination programs, have posited that behaviour change communication strategies implemented through mass media alone may improve breastfeeding practices (Hornik 2002). Despite theoretical transferability (or plausibility) of this approach, a recent *Lancet* review article concluded that evidence of effectiveness of mass media campaigns was much weaker for

breastfeeding than other health goals (Wakefield et al. 2010). This case study describes the lessons learned from implementation of a mass media campaign to encourage breastfeeding in Sindh Province, Pakistan, and explores the barriers that may have limited its success.

Intervention

In 2013, the United States Agency for International Development's Maternal and Child Health program in Sindh Province implemented a first-ever media campaign to promote breastfeeding. Sindh has the second largest population of Pakistan's four provinces and high rates of neonatal and infant mortality: 54 per 1,000 live births and 74 per 1,000 live births, respectively (National Institute of Population Studies and ICF International 2013). Television was selected as the main media channel because a 2013 survey found that 55% of women in Sindh watched television weekly, while far fewer listened to the radio or read newspapers (Agha and Williams 2013).

The mass media campaign was implemented in three phases. A 45-second television spot promoting early initiation of breastfeeding and giving colostrum to the newborn (TV Spot 1) was aired 3,538 times during Phase 1 (July–August 2013). A 43-second television spot emphasizing the importance of exclusive breastfeeding for the first 6 months (TV Spot 2) aired 4,337 times during Phase 2 (November 2013–January 2014). Both spots were aired an additional 11,097 times during Phase 3 (March–April 2014). TV spots were broadcast on national news and drama channels in prime time, in both the national and local languages. Mothers were the primary audience, but secondary audiences included husbands and mothers-in-law, and the spots highlighted the role of family elders as well as parents. Radio spots, newspaper advertisements and announcements on local cable TV channels reinforced the messages of the TV spots throughout the campaign. Health education on breastfeeding by healthcare providers

was also part of the program's behaviour change strategy, but this component was not rolled out until after the media campaign.

Methodology/Change Process/Results

This case study draws on data from two rounds of the annual Maternal and Child Health Program Indicator Survey in Sindh Province (Agha and Williams 2013) to assess the reach and effects of the media campaign. The first survey was conducted in June–July 2013, prior to and early in Phase 1 of the campaign. The second was conducted in June–July 2014, 1–2 months after Phase 3 had concluded. A multi-stage sampling scheme was used to select survey respondents among women aged 15–49 who had a live birth in the last two years ($n = 4,000$ in 2013; $n = 6,200$ in 2014). The sample was designed to be representative of all districts of Sindh and used probability proportional to size sampling to select urban and rural areas in each district. In each area, households were randomly selected to participate.

The survey instrument was based on the Demographic and Health Survey instrument (National Institute of Population Studies and Macro International 2008) and the Knowledge, Practice and Coverage Survey instrument developed by the Johns Hopkins University/Child Survival Support Program and revised by the Maternal and Child Health Integrated Program (Agha and Williams 2013; MCHIP 2015). Information was collected on women's socio-demographic characteristics, health service use and sources of breastfeeding information. Four outcome variables were constructed from survey data: whether the woman breastfed within the first hour after birth, whether she breastfed within 24 hours after birth, whether colostrum was fed to the newborn and whether exclusive breastfeeding was practiced during the first three days of life. The instrument was translated into Urdu and Sindhi and pilot tested to ensure its precision.

Respecting the gender and cultural norms of Pakistan, female interviewers contacted study participants at home and conducted

face-to-face interviews in Urdu or Sindhi. Interviewers were cognizant of local cultural norms and had prior experience as data collectors. They and their supervisors were trained to ensure data quality. Interviewers obtained oral consent from participants prior to the interview and ensured their privacy during the conversation. The Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health and the National Bioethics Committee of Pakistan approved the study.

The data analysis for this case study was restricted to respondents who reported having had a live birth in the last 12 months, because they were more likely to accurately recall newborn feeding events. Bivariate data analysis was conducted with STATA. Confidence intervals were computed, and a p -value of ≤ 0.05 was used to determine the statistical

significance of changes between the two survey rounds.

A total of 2,115 women responding to the 2013 survey reported a live birth in the last 12 months; 3,203 women did so in the 2014 survey. There were no significant differences between surveys in women's socio-demographic characteristics (data not shown). The sample was evenly distributed across wealth quintiles in both years. Approximately half of respondents lived in rural areas (50.1% in 2013 and 48.3% in 2014), had no education (55.9% and 52.6%), were age 25–34 (53.4% and 55.2%) and had three or more children (50.4% and 52.3%). Most respondents had delivered in a health facility (67.5% and 71.2%) and had made at least four antenatal care visits (54% and 55.7%).

More respondents in both surveys reported receiving breastfeeding information from

Table 1. Exposure to breastfeeding information in the past 12 months during first and second round surveys

Information source	First round survey: 2013 ($n = 2,115$)		Second round survey: 2014 ($n = 3,203$)	
	%	95% CI	%	95% CI
Mass media				
Television*	8.3	6.68–10.17	29.5	26.89–32.20
Radio*	0.7	0.38–1.29	2.3	1.55–3.55
Print media*	0.6	0.29–1.19	2.5	1.68–3.64
Other outreach intervention				
Health education/awareness session*	0.4	0.22–0.87	1.8	1.03–3.27
Telephone helpline	0.8	0.46–1.37	1.6	0.85–2.91
Health workers				
Doctor*	18.6	15.91–21.72	42.3	39.41–45.23
Nurse/midwife*	6.2	4.84–7.93	12.9	11.12–14.82
Lady Health Worker (LHW)*	8.6	7.13–10.25	21.4	18.92–24.04
Lady Health Visitor*	3.6	2.71–4.78	8.1	6.70–9.77
Outreach Worker (non-LHW)*	1.5	1.02–2.33	3.4	2.18–5.13
Dai/TBA	9.8	8.03–11.87	13.4	11.72–15.31
Homeopath	1.2	0.69–1.93	1.9	1.19–3.09
Hakeem (herbal medicine practitioner/traditional healer)	0.9	0.55–1.55	1.6	0.78–3.20
Family/Friends				
Mother-in-law*	18.2	15.67–21.08	32.5	30.11–34.96
Other relative or friend*	22.7	19.55–26.21	44.3	41.31–47.31

* Statistically significant difference between 2013 and 2014 data ($p \leq 0.05$)
Dai = untrained traditional birth attendant; TBA = traditional birth attendant

television than any other media channel (Table 1). The proportion who received information from television increased significantly from 8.3% in 2013 to 29.5% in 2014. More respondents saw TV Spot 1 (26.7%) than TV Spot 2 (19.4%) (data not shown). Breastfeeding information received from radio and print materials increased significantly, but less than 3% of mothers reported receiving breastfeeding information from these sources.

In both surveys, mothers were more likely to receive breastfeeding information from doctors, mothers-in-law and other relatives/friends than from television. There were significant increases in the proportion of mothers who learned about breastfeeding from formal healthcare workers, mothers-in-law and other relatives or friends. Information from doctors more than doubled and information from mothers-in-law and other relatives and friends almost doubled.

There was, however, no significant change in the proportion of mothers who engaged in desirable breastfeeding practices after the campaign (Table 2).

Discussion

Up to one-quarter of mothers surveyed saw each television spot, which is notable in Pakistan where many programs compete for audience share. Shifts in television viewership may have limited the reach of the campaign. The spots were aired on public as well as private cable television channels; public channels are losing viewership to cable channels in Pakistan as literacy and income increase (Yusuf 2013).

Mothers were significantly more likely to report learning about breastfeeding from health workers and family and friends after the campaign. Evidence from other studies shows that mass media campaigns have stimulated interpersonal communication on other health topics (Rogers 1995). Still, these survey data are insufficient to prove that the campaign prompted the increase in breastfeeding advice offered by health workers, family and friends (notably, these were secondary audiences for the TV spots).

Breastfeeding practices in Sindh did not improve over the campaign despite increased exposure to breastfeeding information. The limited reach of the campaign certainly contributed to the lack of impact. In addition, the brevity of the TV spots—43 to 45 seconds—reduced the opportunity to enhance knowledge, change attitudes and influence behaviours compared with longer (but more costly) dramas or talk shows. The evaluation window may have been too short; it is unreasonable to expect a mass media campaign to induce a complex behaviour change in just one year. However, the experience in Sindh also casts doubt on whether mass media alone can alter breastfeeding practices. While mass media effectively broadcasts information, interpersonal communication with health workers or family has greater persuasive power to influence behaviour (Maibach et al. 2007; Rogers 1995).

Mass media may be particularly ineffective in changing breastfeeding practices. Wakefield et al. (2010) have theorized that habitual, ongoing behaviours like breastfeeding are less amenable

Table 2. Reported changes in breastfeeding practices among women who gave birth within the 12 months prior to the survey

Breastfeeding practice	First round survey: 2013 (n = 2,115)		Second round survey: 2014 (n = 3,203)	
	%	95% CI	%	95% CI
Breastfed immediately after delivery	50.2	46.84–53.48	49.0	46.23–51.86
Breastfed in first 24 hours	88.0	86.11–89.57	84.7	82.94–86.30
Gave colostrum	74.0	71.26–76.64	77.2	75.04–79.17
Exclusive breast feeding for first three days after birth	44.2	40.75–47.70	46.1	43.53–48.60

Comparisons of 2014 with 2013 data were statistically non-significant for all behavioural outcome variables.

to change through mass media than one-time or episodic behaviours like vaccination. However, the breastfeeding practices promoted by the campaign and assessed here were mostly episodic in nature, including early initiation of breastfeeding and giving colostrum.

Breastfeeding also differs from behaviours that have been successfully promoted by mass media because breastfeeding is powerfully influenced by cultural factors (Daglas et al. 2005; Laroia and Sharma 2006). Mothers face stiff barriers to adopting improved behaviours, including deep-rooted cultural beliefs surrounding infant feeding, low maternal literacy rates, mothers' lack of decision-making power and powerful influences of elders and healthcare providers (Ayaz and Saleem 2010; Khadduri et al. 2008; Rahman et al. 2012; Wakefield et al. 2010). Appropriate counseling by providers that involves influential family members as well as mothers may be more effective than mass media in diminishing these cultural barriers (Monterrosa et al. 2013; Naugle and Hornik 2014; Sanghvi et al. 2013).

Limitations

The cross-sectional survey data used in this case study were not specifically designed to assess the effect of a mass media campaign. It is possible that the TV spots prompted the increase in breastfeeding information observed, but causation cannot be attributed. Multiple organizations in Sindh were conducting activities to promote breastfeeding at the time of the media campaign; these efforts may explain all or part of the increase in exposure to breastfeeding information. In addition, information on outcomes was limited to early breastfeeding practices; there was no information on exclusive breastfeeding at 4–6 months, which may be a better indicator of ongoing behavioural change.

Conclusions

This case study suggests that the mass media campaign increased mothers' exposure to information about breastfeeding but did not change breastfeeding practices. The restricted reach of the campaign likely limited its impact. However, the experience in

Sindh suggests that while mass media interventions may not directly impact breastfeeding behaviour, they may be very effective in improving access to information and, potentially, influencing social norms. Mass media campaigns to promote breastfeeding may be more effective if they are linked with counseling by health providers, mobilization of community leaders as change agents, and involvement of influential household members and others who act as gatekeepers of cultural beliefs.

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Case Study: Primary Healthcare Clinical Placements during Nursing and Midwifery Education in Lesotho



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Abstract

In Lesotho, primary healthcare is the main access point for health services. While nurses and midwives provide most of the care at this level, assessments of the clinical education programs have highlighted gaps in primary healthcare experiences for nursing and midwifery students. This case study examines placement of nursing and midwifery students in primary health clinics alongside preceptors. The placements provide students with varied clinical experience, better preparing them to practice in primary healthcare clinics. To date, more than 700 nursing and midwifery students have been placed in 40 rural health centres and 228 preceptors have been trained. The government is scaling up the program nationally.

Introduction/Background

The Kingdom of Lesotho is a small, land-locked, mountainous country in Southern Africa. The majority of the population of 1.8 million subsists on farming (World Bank 2015) and three-quarters live in rural areas (United Nations 2015). Despite its small size, the country faces extraordinary health challenges; nearly one-quarter of adults 15–49 years of age are living with HIV (22.9%) (UNAIDS 2014) and Lesotho has the world's second highest tuberculosis incidence rate at 916 cases per 100,000 population (WHO 2014a; WHO 2014b). Lesotho also has one of the highest maternal mortality ratios in the world at 490 per 100,000 live births, with a lifetime risk of maternal death at 1 in 64 (WHO 2014c).

The country's health workforce is challenged to meet the needs of its population. The nursing and midwifery workforce is six per 10,000 compared to neighboring South Africa's 41 per 10,000 and 11 per 10,000 for the Africa region (WHO 2009). In Lesotho, over half (54%) of nurse and midwife posts remain vacant in rural areas (Ntlale and Duma 2012).

Participation in primary healthcare rotations in rural areas during nursing and midwifery studies is an educational intervention noted by the World Health Organization

(WHO) for attracting, recruiting and retaining health workers in rural areas (WHO 2011). Research has demonstrated that clinical experiences acquired in rural communities can influence the locations in which students choose to practice after graduation, can aid students to develop professional networks in rural areas and can increase awareness about rural health (Bennet et al. 2014; Couper et al. 2007). This case study describes the approach taken to increase nursing and midwifery students' exposure to primary healthcare skills in Lesotho.

Intervention

It is vital that nursing and midwifery students acquire the skills and competencies needed for rural deployment and also experience the realities of working in rural health centres in order to build their confidence to accept these posts as places of employment. Pre-service primary healthcare clinical experiences can serve as the link between community health theory and practice and are crucial for clinical skills development and professional socialization (Lofmark et al. 2008).

The United States Agency for International Development's (USAID's) Maternal Child Health Integrated Program (MCHIP), implemented through Jhpiego, began work in

Lesotho in 2011 with a specific focus on strengthening pre-service nursing and midwifery education. To address the absence of a primary healthcare emphasis in pre-service education, MCHIP supported clinical placements in primary care settings for certificate-level nursing assistant and diploma-level registered nursing and midwifery students. The placements were designed to place small cohorts of four to six students with trained preceptors to provide the students with clinical experiences that reflect the country's needs, improve oversight by preceptors and increase confidence in students' delivery of primary healthcare skills. Other activities were conducted in partnership with the Nursing Directorate in the Ministry of Health (MOH) (see Table 1) that were congruent strategies recommended by WHO for rural workforce development in order to address equally compelling health workforce retention issues.

Methodology/Change Process

Lesotho has six schools of nursing education; five of which also provide midwifery education. Four of the schools are faith-based, overseen by the Christian Health Association of Lesotho; the remaining two are government-run schools. The National University of Lesotho, which offers the only degree program, has a five-year combined nursing and midwifery program of study. Five schools offer a nursing diploma after three years of study. Three schools offer a two-year certificate program for nursing assistants. Nursing assistants have a limited scope of nursing compared to their general nursing counterparts, similar to vocational nurses in many countries. Lesotho midwifery education is a one-year post-basic nursing diploma program that is offered in four of the five schools of nursing.

Table 1. WHO strategies to improve attraction, recruitment and retention of health workers in remote and rural areas compared to Lesotho's workforce development activities

World Health Organization recommended interventions or strategies	Lesotho activities
Increased enrollment of rural students	A special retention package was developed for nurses at 46 hard-to-reach health centres to encourage students in rural areas to seek nursing as a career path.
Rural clinical rotations	The MOH partnered with MCHIP/Jhpiego to place nursing and midwifery students in rural health clinics.
Primary healthcare and rural health curriculum	The MOH partnered with global initiatives (Millennium Challenge Corporation/Health Systems Strengthening Project and Nurse Education Partnership Initiative) in a review of the primary healthcare components of both the midwifery and general nursing curricula.
Regulation of standards and scope of practice	Lesotho Nursing Council, with support from MCHIP, reviewed and revised the national nurse practice act. Scopes of practice, standards and competencies are currently being revised.
Financial incentives	The MOH entered into negotiations with the Global Fund for money to increase nurse and midwife salaries.
Scholarships and bonuses	The nongovernmental organization Irish Aid is offering signing bonuses, televisions, telephones, housing and travel allowances to health workers for working in rural areas.
Personal and professional support	The MOH partnered with MCHIP/Jhpiego and other partners to provide training and supportive supervision/mentoring for preceptors in their clinical settings.
Continuing education programs	Lesotho Nursing Council's professional development program, which is linked to re-licensure, was revised to include credit for preceptors overseeing students in rural clinical placements.
Improvement of clinic and rural infrastructure	The MOH partnered with Millennium Challenge Corporation to build or revitalize more than 80% of Lesotho's health centres.

Initial pre-service education assessments of nursing and midwifery programs conducted in 2009/2010 highlighted gaps in student education and clinical experiences and indicated that most students were placed in hospital sites without trained preceptors and where the nursing staff had little time to serve as preceptors. Despite the fact that primary healthcare services are most in demand, in Lesotho, the nursing and midwifery programs did not include community and primary healthcare clinical experiences. Students' lack of experience was illustrated in their consistently low community health test scores.

To fill the need for nurses at primary health clinics, MCHIP conducted a pilot placement in 2012. The pilot was designed to 1) ensure graduates were competent and confident in primary healthcare skills upon graduation; 2) contribute to increasing recruitment and retention of nurses and midwives in rural areas; and 3) contribute to a workforce that was effective in addressing the health needs of the community and the nation.

Four faith-based nursing and midwifery schools agreed to place 15 students for two-to-four-week clinical rotations (based on the school's preference and study calendar) at three primary health clinics, the majority in rural areas, with students staying on-site and being supervised by clinical preceptors who were trained for that role by MCHIP personnel. Based on the feedback from the pilot, the placement project expanded in 2013.

During the 2012/2013 school year, 31 nurse

educators and 62 clinical nursing staff were trained as preceptors. The five-day training for preceptors focused on development of clinical teaching skills, how to provide effective feedback to students and methods of documentation for the purpose of monitoring and evaluation. MCHIP provided on-site supportive supervision to all preceptors after training. Not all health centres that hosted students had trained preceptors during the first clinical placements due to time and financial constraints. MCHIP provided support to school-based nursing educators to meet with the preceptors and/or nurse-in-charge of the health centres before the placements and to visit students during their primary healthcare rotations.

Health centre assessments were conducted prior to student placement and guided MCHIP to ascertain what items were needed for the clinical rotations to be successful. Based on the assessments, the project supported development of primary healthcare clinical evaluation tools, provided transportation for students and nurse educators to and from clinical sites, secured accommodations and purchased necessary supplies for students during their clinical placements—for example, cook stoves, beds and solar lamps.

Results

Between January and June 2013, a total of 192 students from the four nursing education institutions were placed in 35 health centres for a single rotation lasting two to four weeks (Table 2). This case study reports the findings

Table 2. Students placed at health centres between January and June 2013, by school and cadre

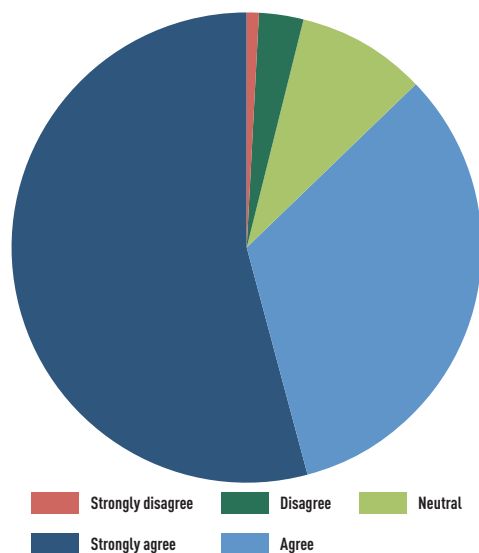
Name of school	Nursing assistant students <i>n</i>	2 nd year general nursing students <i>n</i>	3 rd year general nursing students <i>n</i>	Midwifery students <i>n</i>	All students <i>N</i>
Maluti	N/A	N/A	N/A	10	10
Paray	18	N/A	28	N/A	46
Roma	N/A	23	22	19	64
Scott	22	21	N/A	29	72
All Schools	40	44	50	58	192

N/A = not applicable.

taken from the program's evaluations, which included 15 questions with a Likert-like scale survey and four open-ended questions: 1) state three clinical skills you feel have most improved during this clinical placement; 2) list three of the best experiences of this placement; 3) upon completion of your training, would you like to work in a similar rural clinic? Briefly explain your answer; and 4) list three areas that need improvement in regard to this clinical placement.

Each of the 192 students who had a clinical placement in a primary healthcare facility received the questionnaire; 161 students completed questionnaires (84% response rate); a total of 197 questionnaires were completed because some students filled out multiple questionnaires as they rotated to different clinical sites during their placement. The evaluations sought to identify placement strengths and weaknesses, provide the students with a venue to comment on their clinic placements and provide recommendations to enhance the learning environment of the placements. Each of the four open-ended questions was reviewed and broad themes were developed for each question.

Figure 1. Responses to the statement “The placement enhanced my clinical skills”



Clinical Skills Improvement

Overall, the majority of the questionnaire responses ($n = 171$) agreed or strongly agreed that the placement enhanced their clinical skills (Figure 1) and their confidence in working in a rural clinic improved as a result of the clinical placement (88%).

A common theme identified by the students was that the placement provided a diverse clinical learning experience, including a wide variety of patient presentations and clinical skills practiced. A third year Roma nursing student stated *there were many patients with different conditions that upgraded my skills/improved experience*. Another theme noted that the primary healthcare clinics provided a good clinical learning atmosphere.

Six themes were identified from the students' answers when they were asked to identify skills they had most improved following their primary healthcare placement (Table 3). Thirty-two percent of questionnaires listed diagnosis and treatment skills as most improved; all cadres of students felt that their communication skills and maternal and child healthcare skills improved (12% and 22% respectively). Other skills that were most improved included those specific to HIV care, such as testing, counseling and HIV care and treatment; performing physical examinations; and providing health education.

Willingness for Deployment in Primary Health Clinics Following Graduation

The majority of questionnaire responses (68%) indicated that students would like to work in a similar setting after graduation (134 yes; 45 maybe; 18 no). Six themes were identified as reasons students were willing to work in rural clinics: independence, challenging and diverse clinical care, supportive staff and community, the need for staff and having had a good learning experience. For example, one student wrote on independence, *I was able to do everything ... in a hospital, we expect the doctor to do everything*.

Table 3. Skills self-identified by students as most improved following primary healthcare clinical placement

Rank	Theme	Student responses to most improved skills practiced during clinical rotation	Number of questionnaire responses* (%)
1	Diagnosis and treatment of primary health conditions	<ul style="list-style-type: none"> Identifying and treating diseases Consulting and diagnosing patients 	154 (32)
2	Maternal and child health	<ul style="list-style-type: none"> Managing pediatric patients Assessing pregnant woman during antenatal care Caring for pregnant woman Offering family planning 	106 (22)
3	HIV Management	<ul style="list-style-type: none"> Counseling and testing for HIV Initiating of adults and children on ART 	79 (17)
4	Communication/ counseling	<ul style="list-style-type: none"> Counseling patients Communicating with diverse populations 	56 (12)
5	Physical examination	<ul style="list-style-type: none"> Performing head-to-toe examinations 	24 (5)
6	Health education	<ul style="list-style-type: none"> Providing health education 	23 (5)

* The number of responses was greater than the total number of students because a student could provide multiple answers and students who rotated through multiple clinics filled out one survey per clinic rotation.

Students who answered “maybe,” overwhelmingly stated that they would work in rural areas if issues of resources could be addressed, including transportation, electricity and water, and improvement of the infrastructure of the clinics.

Less than 10% ($n = 18$) of the students participating in this program stated that they would be unwilling to work in a similar rural clinic following completion of their programs. Reasons included the poor clinic work environments, location in rural areas with limited resources and infrastructure, preference for hospital work, distance from family and already having a job following program completion.

Suggestions for Improvement of Clinical Placements

Overall, the areas students identified for improving clinical placements are also common reasons rural nurses give for leaving their jobs, including inadequate staffing and lack of electricity, water and supplies (Mokoka et al. 2010). Additionally, students thought that the experience could be improved by having greater oversight from faculty of their schools during the placement. Students from all cadres and schools stated that having a longer duration for the clinical

placement would improve the experience. A second-year nursing student who underwent a two-week rotation, echoed many other students, *the duration should be at least a month so that we shall be well equipped with clinical experience.*

Discussion/Conclusion

Student nurses and student midwives need pre-service clinical experiences that are relevant to their deployment post-graduation and that are responsive to national health priorities. If the majority of nurses work in primary healthcare but only have clinical experiences at tertiary hospitals, then there is a mismatch of clinical education with skills required in the workplace. The evaluation of participants’ experience during this clinical placement documented that students felt they improved their skills in diagnosis and treatment of primary health conditions, providing maternal and child health and HIV/AIDS care, which corresponds closely with national health needs. In addition, many of these students will be deployed upon graduation to health facilities with few or no doctors, which essentially requires these nurses to have diagnosis and treatment skills that were strengthened during their clinical placements.

Placing students at clinics presents extensive challenges and requires close and ongoing collaboration between the MOH, donors, clinical preceptors and nursing and midwifery faculty; for example, developing and maintaining a dialogue between the primary healthcare clinics and the schools. As a result of this study, we recommend that each school identify a focal person and that ongoing support be provided to schools to ensure clinics are visited and to coordinate planning, which will contribute to improved communication and coordination between facilities and schools. Retention of nurses and midwives remains a challenge for Lesotho; however, the national scale up of this program addresses key issues related to recruiting and retaining staff in rural areas by exposing students to the realities of healthcare priorities in Lesotho before deployment.

One major success of the program is that the MOH has budgeted for primary healthcare clinical placements for students as of 2015. MCHIP support covered the initial start-up costs of the placements; however, ongoing costs such as transport of students and nurse educators as well as additional training of preceptors will be covered by the Lesotho government, ensuring government ownership and sustainability of the program.

Due to its success, the placement project was expanded from the four original institutions to the additional two nursing schools in January 2015; all nursing schools in the country are now participating in the activity. To date, over 700 students have experienced primary healthcare clinical placements as part of their nursing and midwifery education, 42 health centres have hosted students and 228 preceptors have been trained and supported. Based on the evaluations and feedback from the 2012/2013 school year, MCHIP provided the schools with additional resources, such as text books and multimedia learning materials and learning models at select health centres.

The primary health clinic is often the first point of contact individuals and communities have with healthcare providers. If client

healthcare needs are well managed at the primary care level, there will be fewer referrals to hospitals and a healthier population. Nursing and midwifery students perceive clinical practice settings as most influential in acquiring needed skills and expertise to provide primary healthcare services (Doherty and Govender 2004). Pre-service primary healthcare clinical rotations can be used effectively to demonstrate the realities of healthcare while at the same time enhancing students' knowledge and skills. Finally, if clinical placements in rural settings improve students' confidence, graduates may be more willing to accept rural posts, thereby filling many "hard to fill" positions that often remain vacant for years and reducing delays in the provision of care while ensuring patients care needs are met.

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Case Study: The Role of eLearning in Midwifery Pre-Service Education in Ghana



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Abstract

The issues and challenges of implementing eLearning in pre-service health education were explored through a pilot study conducted in six nurse-midwifery education programs in Ghana. Case-based, interactive computer mediated eLearning modules, targeted to basic emergency and obstetrical signal functions, were delivered both online and offline using a free-for-use eLearning platform, skool HE®. Key success factors included broad stakeholder support, an established curriculum and student and tutor interest. Challenges included infrastructure limitations, large class sizes and added workloads for tutors and information technology staff. National scale up is planned.

Introduction and Background

Ghana, like much of sub-Saharan Africa, faces critical health worker shortages that significantly constrain its ability to meet national maternal and newborn health needs (Alhassan et al. 2013; Bell et al. 2013; Grobler et al. 2009; UNFPA 2014). Ghana's maternal mortality ratio is estimated at 350 per 100,000, with only 68% of births attended by a skilled health provider (UNFPA 2014). Workforce challenges include inadequate numbers and uneven distribution of midwives across regions; both known to be related to poor health outcomes (Lori et al. 2012). Midwifery shortages are further exacerbated by emigration to developed countries (Donkor and Andrews 2011; Kwansah et al. 2012) and an aging midwifery population that faces mandatory retirement at age 60. The number of practicing midwives is far short of the number needed to provide adequate and equitable skilled childbearing services for the whole country (Lori et al. 2012).

In response to workforce shortages and concern for meeting Millennium Development Goals 4 and 5, the Government of Ghana significantly increased the number of midwifery schools, from 13 in 2012 to 38 in 2015, and increased the class sizes in existing schools with numbers per class as high as 450 (Bell et al. 2013). Tutor numbers did not increase with larger class sizes, leading to significantly greater workloads and high student-to-instructor ratios (Bell et al. 2013; Fullerton et al. 2011). The country has not yet achieved the benefit of an increase in newly licensed midwives from this substantial increase in the student population, given that the majority of these students are only now graduating from the schools, and the pass rate on the licensing examination has decreased. The Ministry of Health (MOH) identified the need for updated learning materials as a partial approach to address the licensing examination results. eLearning, defined in this context as digitally delivered instruction to support learning (Clark and Mayer 2011), was

selected as a method to provide updated content and to help mitigate tutor workloads.

A recent World Health Organization (WHO) systematic review of eLearning for undergraduate health professional education noted that many countries are using technology to address teacher and faculty shortages and increase access to education (Al-Shorbaji et al. 2015). Evidence-based, interactive self-study modules that are linked to the curriculum can provide learners with accessible information on critical topics, and eLearning modules may be more quickly and cheaply updated than textbooks and can be adapted to country context. eLearning can be equally as or more effective than face-to-face instruction (Alhassan et al. 2013; Bluestone et al. 2013, George et al. 2014), but the materials must be interactive and prioritize essential content. eLearning increases efficiency by allowing learners to progress based on their individual learning needs rather than being dependent on group progress and content may be reviewed as many times as the learner wishes. Learner-centred methods can also facilitate critical thinking and promote student responsibility for learning (Bluestone et al. 2013; Fullerton et al. 2013).

We developed a pilot study to evaluate the feasibility and effectiveness of this eLearning approach for midwifery pre-service education in Ghana. The eLearning content for this pilot study included four existing interactive, case-based modules on the basic emergency and obstetrical signal functions. The modules had been previously developed in collaboration with UNFPA, with expert review and validation from a technical advisory committee from the International Council of Nurses, International Confederation of Midwives and International Federation of Gynecology and Obstetrics. Two additional modules, on reducing HIV stigmatization and malaria in pregnancy, were developed locally; these were not available in time for this study. The modules are delivered to students either wirelessly or via flash drive, and completion was

tracked in a simple, cloud-based management system, skool HE, a free-for-use eLearning platform from Intel. skool HE allows both online and offline use, a critical feature in a region with unreliable Internet connectivity. All the modules are relatively short, interactive and case-based and include pre-tests, post-tests and spaced assessments throughout the course to increase learner involvement. This case study assesses the feasibility of using targeted supplementary eLearning modules in midwifery pre-service education.

Intervention

The pilot study was conducted in six schools in order to understand the issues and challenges of implementing eLearning in midwifery and nursing education. Human subjects research approval for the study was received from the Ghana Health Services Ethical Review Committee and the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

The MOH selected schools for diversity in size and the length of time schools had been in operation (a mix of older, well-established and newer schools) (Figure 1). The selection also included a mix of diploma and certificate programs. Midwifery instructors from each of these schools had recently participated in faculty and preceptor development activities and had expressed interest in eLearning to supplement teaching. The modules were used as supplementary learning materials for the existing curriculum.

Preparation for eLearning activities included a rapid readiness assessment of each school's technology resources and infrastructure conducted by a MOH information technology (IT) team. Findings from the assessment revealed connectivity problems, poor computer lab functionality and limited IT staff. The team recommended that dedicated and qualified IT staff be hired at each school and that improvements be implemented, as necessary, to resolve connectivity and sustainable power supply problems.

The government addressed these recommendations, to the degree possible, prior to the initiation of the pilot study. IT tutors were hired for each school, connectivity was

Figure 1: Map of Ghana showing midwifery pre-service education eLearning pilot school locations



MTS = Midwifery training school..

established and computer lab issues were partially addressed. Connectivity bandwidth and sustainable power supplies remained ongoing issues for the schools. Principals advocated for further funding for some infrastructure improvements.

The MOH IT team was first oriented to the skool HE platform so that they could provide ongoing support to the schools' IT tutors. The MOH IT team then initiated a structured introduction of the eLearning activity to the schools, including selecting and training IT tutors for each school and orientating tutors and principals. The MOH IT team and the newly oriented IT tutors installed the skool HE platform and the initial (pre-existing) four eLearning modules on computers in each school. Technical delays reduced the time that modules were available at the schools from the planned four months to two months.

Methodology

Qualitative and quantitative methods were used to understand the experience and feasibility of implementing an eLearning system from a variety of viewpoints. Quantitative data sources included a tracking database of registered users and results of survey questionnaires completed by students and tutors. Survey data were collected during visits to the schools where convenience samples of students and midwifery tutors were queried

about their experience with the modules. Qualitative data were obtained from interviews with IT tutors, school principals and the MOH IT team. IT tutors and principals or their designees were interviewed regarding their role in supporting eLearning, their views of eLearning implementation and both the benefits and the costs to their schools of implementing eLearning. The MOH IT team was asked about the technical support they provided to the whole system, in particular to the IT tutors.

The study population was drawn from students, teachers or implementers at participating schools who interacted with the modules. Participants were a convenience sample of those available during data collection visits to the schools. A total of 336 of the 872 final-year students enrolled at these six schools were surveyed; the analysis is based on reports from the 328 of those students who reported using at least one eLearning module. Twelve (of 26) midwifery tutors from four of the schools were surveyed. No tutors were surveyed from two schools due to scheduling problems at the time of the data collection visit (Table 1). Five (of six) of the principals (heads) of schools, all six school-based IT tutors and three of the five MOH IT team members were interviewed. These interview data were reviewed for the emergence of common themes.

Table 1. Numbers of respondents by school

Midwifery Training School (MTS)	Final-Year Students		Midwifery Tutors	
	<i>N</i>	Respondents <i>n</i> (%)	<i>N</i>	Respondents <i>n</i> (%)
MTS Goaso	96	45 (46.8)	4	3 (75.0)
MTS Jirapa	131	50 (38.2)	3	3 (100.0)
Nursing and Midwifery Training College Twifo Praso	29	28 (96.5)	5	3 (60.0)
MTS Pramso	59	31 (52.5)	5	0 (0.0)
MTS Mampong	407	125 (30.7)	5	0 (0.0)
MTS Hohoe	150	49 (32.6)	4	3 (75.0)
Total	872	328 (37.6)	26	12 (46.2)

Survey data from students and midwifery tutors were analyzed to identify issues related to accessibility, usability and acceptability of the eLearning activities (Table 2). Students and midwifery tutors reported a high level of personal computer ownership, though schools varied in access to onsite computer availability. Respondents reported that initial problems in using the modules were primarily resolved by the IT tutors, with support as needed from the MOH IT team. School principals were supportive, but noted significant

infrastructure challenges and reported the need to continue to advocate for funding for such things as computers, generators, servers and strategies to resolve issues that affected the reliability of Internet connectivity. Certain infrastructure challenges were unexpected, such as the almost complete lack of current antivirus software noted by the MOH IT team and the school IT tutors. IT tutors and the MOH IT team mentioned an increase in their workload but expressed satisfaction at being a part of the project (Textbox 1).

Table 2. Participant responses

Student responses (N = 328)	n (%)
Do you own a computer?	
Yes	238 (73)
Were computers available at school for class assignments?	
Yes	169 (52)
No	150 (46)
What type of problems did you have using the modules? (all that apply)	
Logging on	159 (48)
Completing modules	136 (41)
Taking quizzes	63 (19)
Other	12(4)
Who helped with skool HE problems?	
IT tutor	236 (72)
Friend	62 (19)
Course tutor	19 (6)
Where did you use the eLearning modules? (all that apply)	
Personal computer	238 (73)
Computer lab	34 (10)
Friend's computer	101 (31)
In class	68 (21)
What was your experience with the modules? (all that apply)	
Helped understand content	166 (51)
Know more about topics	46 (14)
Able to review content on own	83 (25)
Would like to use additional modules	117 (36)

Tutor responses (N = 12)	n (%)
Do you own a computer?	
Yes	12 (100)
Computer availability in school:	
Available for students	7 (58)
IT support available	8 (67)
IT short courses available for tutors	2 (17)
How easy was it to learn to use the skool HE?	
Very easy	8 (67)
Somewhat easy	3 (25)
Somewhat difficult	1 (8)
What types of problems did you have with the modules? (all that apply)	
Logging on	3 (25)
Following student activity	3 (25)
Using the module in classrooms	5 (42)
End user difficulties	3 (25)
Who helped with these problems? (all that apply)	
IT tutor	7 (58)
Colleague	2 (17)
Figured it out	5 (42)
How did you use the modules? (all that apply)	
Individual assignment	9 (75)
Group assignment	2 (17)
In-class work	5 (42)
How useful were the modules in teaching the content?	
Very useful	12 (100)
What challenges did you face using the modules? (all that apply)	
Time needed to revise syllabus	4 (33)
Inadequate access to computers	4 (33)
Electricity outages	3 (25)

Textbox 1. Interview themes and exemplary quotations: IT tutors, principals, MOH IT team**Change in roles**

I see myself as the facilitator of the program—IT tutor

[I have] increased responsibilities, but now am part of the midwifery education program—IT tutor

Where we needed help, the MOH assisted—Principal

Added responsibility, MOH pulled people from different directorates for this project—MOH IT

Challenges

Infrastructure is inadequate – small number of computers shared with other departments—Principal

The number of computers we have is woefully inadequate (noted found funds to order more)—Principal

We didn't have Internet connectivity at first—Principal

Infrastructure; we have 38 computers shared by over 1,300 students—IT tutor

Student computers are infected with viruses, I have to clean them, reinstall software before installing the platform—IT tutor

We need modern computer laboratories . . . more IT help at MOH—MOH IT

IT tutors spent their own money for airtime (for troubleshooting)—MOH IT

Structured rollout

Started with the workshop (MOH oriented IT tutors), then introduced to the principals, then the tutors then the students—IT tutor

Started with needs assessment, then workshop with IT tutors. We empowered the IT tutors at the schools; we gave them our full support and had confidence in them—MOH IT

First briefed by MOH, then the IT tutor went to a workshop and showed us how the modules were used—Principal

IT tutor first discussed it, then we heard about it at principal meetings—Principal

Overall experience

Now this new thing, it's creating passion to understand . . . a good platform for their (students) knowledge base—MOH IT

Students have benefited from access to material, reduced tutor workload, support from MOH to the MOH IT team—MOH IT

In my school, we are very, very welcoming to change. My level of engagement was to ensure that the whole staff, the IT/tutors/ students was ready to embrace it—Principal

I would say I played an advocacy role—Principal

It has come to enhance our teaching. When you use it, everything is there and explained—Principal

The students love the inter-activeness of the modules—IT tutor

The leader of the school is a big picture leader, very supportive—IT tutor

Discussion

Our findings indicate that using eLearning modules in midwifery education is feasible in terms of acceptability, accessibility and usability. As computer use has become increasingly common across Africa, students and tutors are eager to make use of technology in teaching and learning.

Because there is very little literature about eLearning for health professionals in low- and middle-income countries, this study assumes additional importance. Existing literature is primarily from high-income countries; and literature from low- and middle-income countries is derived primarily from the results of pilot projects, most commonly based on in-service training, with small numbers of participants. No studies from Africa were included in the WHO systematic review of eLearning for undergraduate health professional education (Rasmussen et al. 2014).

Several key factors enabled us to implement an eLearning system that was acceptable, accessible and usable for stakeholders. First, the MOH had identified eLearning as a means of closing gaps in student learning and was

politically supportive. This governmental support enlisted other stakeholders including the Nursing and Midwifery Council, the body responsible for licensing, curriculum and accreditation of schools, which laid a foundation for formal integration into the curriculum (acceptability). Second, to enhance implementation, the government provided computers to the schools and students, which enabled a greater percentage of students to access and use the materials. Third, the integration of eLearning into an already established curriculum made it easier to implement eLearning as supplemental material for existing courses. Fourth, students, tutors and other stakeholders reported an enthusiasm about eLearning. Midwifery schools embraced the idea of eLearning and principals recognized the benefits to their students and tutors of these enhanced learning options and additional education tools. IT support at both school and national levels was critical to the success of the project. The schools' IT tutors were instrumental in implementation at the institution level and the MOH IT team provided backstop to the schools.

However, the complexity of introducing eLearning into pre-service education should not be underestimated. It must be noted that introducing eLearning into pre-service education requires extensive coordination among all stakeholders. In this pilot study, the early and continuing inclusion of stakeholders such as ministry, school, regulatory bodies and partners promoted strong ownership of the project. Sustainability over the longer term requires local capacity building, including the ability to develop additional educational modules to expand the content available for eLearning.

There were several limitations of the study. The small number of schools and modules limit generalization and the convenience sample and self-reported responses may not reflect the total population of users in Ghana or in other settings. The study evaluated module use for a short time, limiting information about long-term experience. The MOH IT staff had limited time to develop stronger systems to manage the platform. Nevertheless, based on the success of this program, Ghana plans to scale up eLearning to all 38 midwifery education programs as well as to nursing programs.

It is important for future research to examine both capacity building and student outcomes. Additional modules are being developed by teams of country stakeholders and will be disseminated by local IT teams. Having demonstrated feasibility, the next cohorts will be evaluated on whether their exposure to the eLearning topics results in increased knowledge and confidence as demonstrated on examinations and by self-report. The sustainability of eLearning will rest on the ability of faculty to develop their own high-quality, learner-centred teaching materials. Future research should examine how supplemental eLearning materials affect teaching effectiveness.

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Factors Affecting Turnover Intention among Nurses in Ethiopia



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Abstract

Background: Reducing turnover is essential to address health worker shortages in the public sector and improve the quality of services. This study examines factors associated with Ethiopian nurses' intention to leave their jobs.

Methods: Survey respondents (a sample of 425 nurses at 122 facilities) rated the importance of 20 items in decisions to leave their jobs and reported whether they intended to leave their jobs in the next year. Descriptive and inferential statistical analyses were used to identify predictors of nurses' intentions to leave their jobs.

Results: Half (50.2%) the nurses said they intended to leave their jobs in the next year. A multivariate analysis identified three significant predictors of nurses' intention to leave their jobs: holding a university degree rather than a diploma (adjusted odds ratio (OR) = 2.246, 95% confidence interval (CI) = 1.212, 4.163; $p < 0.01$), having worked fewer years in the public health system (adjusted OR = 0.948, 95% CI = 0.914, 0.982; $p < 0.01$) and rating the importance of limited opportunities for professional development more highly (adjusted OR = 1.398, 95% CI = 1.056, 1.850; $p < 0.02$).

Conclusion: Interventions to increase the retention of nurses at public health facilities in Ethiopia should target young nurses who are completing their compulsory service obligation and nurses with a university degree. They should include both non-financial and financial incentives.

Background

Although Ethiopia has the highest number of health workers in sub-Saharan Africa, its large population has left it with a very low health workforce density of 0.84 per 1,000 people (Feysia et al. 2012), well below the minimum of 2.3 health workers per 1,000 recommended by the World Health Organization (2006). Hence, Ethiopia's 2009–2025 Human Resource for Health Strategic Plan calls for sharply increasing the number of health workers as well as the quality of services they offer. Government workforce objectives, revised in 2015, include posting 63,325 additional nurses by 2025 (Government of Ethiopia Ministry of Health 2014); the government has also vigorously expanded pre-service education and training programs for health workers (Feysia et al. 2012). As a result, there has been a surge in the nurse-to-population ratio, from 1 per 5,000 in 2009 (the World Health Organization's benchmark) to 1 per 2,132 in 2014

(WHO 2006; Government of Ethiopia Ministry of Health 2014).

However, even as Ethiopia and other low-income countries work to produce additional nurses, they must also struggle to motivate and retain the nurses they have already deployed. Studies have assessed the extent of the retention problem by asking nurses whether they intend to leave their current jobs in the next year; these "turnover intentions" are widely acknowledged as the best predictor of actual turnover (Kaur et al. 2013). Regional studies conducted in Ethiopia have found that 50% to 61% of nurses say they intend to leave their current positions in the next year (Asegid et al. 2014; Engeda et al. 2014; Getie et al. 2015).

Other studies conducted across low- and middle-income countries have linked health worker retention with a variety of factors, including financial incentives, working and living conditions, management and supervision, opportunities for career development and workers' personal characteristics and

work history (El-Jardali et al. 2013; Engeda et al. 2014; Kaur et al. 2013). Governments have used this evidence to design a variety of incentive packages to motivate and retain health workers (Dambisya 2007). However, it is vital to tailor interventions to the local context, as multi-country studies have demonstrated that the determinants of job satisfaction and turnover intentions vary between countries (Blaauw et al. 2013; Fogarty et al. 2014). In Ethiopia, direct evidence on nurses' turnover intentions is limited to three studies of small, scattered geographic areas. While there is some overlap in their findings, there is also considerable disagreement, in part, because they employed different sample designs and data collection instruments with different variables and operational definitions of key concepts. In East Gojam zone, Amhara region, inadequate payment, poor training opportunities, poor organizational commitment, unfair treatment, lack of transport and job dissatisfaction were associated with nurses' turnover intentions (Getie et al. 2015). In Sidama zone, Southern region, predictors included marital status, type of health facility, working environment and training opportunity (Asegid et al. 2014). In referral hospitals in Amhara region, predictors included nurses' age, marital status, organizational commitment and educational level (Engeda et al. 2014).

The Strengthening Human Resources for Health Project (2012-2017), funded by the United States Agency for International Development, is working with the government of Ethiopia to pilot retention mechanisms in selected regions, with the aim of identifying a feasible and effective combination that can increase retention of public sector health workers. A nationwide survey of job satisfaction, motivation and retention was conducted among nurses in Ethiopia in 2014 to provide policy makers and human resource managers in Ethiopia with the information needed to develop and implement effective policies and strategic interventions to reduce turnover among public sector nurses. This article looks at the results of

the survey and addresses three questions: What proportion of nurses intend to leave their current jobs in the next year? What factors do nurses consider important when making decisions to stay or leave the job? What factors are associated with nurses' turnover intentions?

Methods

Study Design and Sample

The 2014 nationwide survey employed a cross-sectional study design to provide nationally representative information for nurses working in the public sector. A total of 45,006 nurses were serving in 2,782 public health facilities in Ethiopia's 11 regions in 2013. Calculations showed that a sample size of 500 nurses was required, based on a statistical parameter of 95% level of confidence, 50% assumed intent to leave, and 10% non-response rate for safeguarding the minimum sample size (Turner et al. 2001). The tolerated margin of error was set at plus or minus five percentage points. The design effect was set at a default value of 1.2, since there is no similar study to estimate the design effect for adjusting the loss in precision of estimates by using cluster sampling instead of simple random sampling.

A two-stage stratified cluster sampling technique was used, first randomly sampling 125 public health facilities and then randomly sampling four nurses in each facility. Participating facilities were randomly selected from a list of all health facilities in the region. Facilities in the sample were allocated proportional to the total number of facilities in each region and also to the number of hospitals and health clinics, in order to obtain heterogeneous information.

Nurses perform similar services at hospitals and health centres, but hospitals are larger facilities, located only in urban areas and offer tertiary care; health centres are present in both urban and rural areas. When data collectors arrived at each facility, they requested a list of all nurses working there and then used a

random table to select four nurses to participate in the study. Nurses were eligible for the study if they had at least six months of work experience, were available during the data collector's visit and were willing to participate.

Data Collection

A structured questionnaire was used to collect data on nurses' job satisfaction, motivation and retention. Items covered respondents' demographic characteristics and work history, working and living conditions and turnover intentions. The questionnaire was adapted from a health worker's job satisfaction and motivation tool developed by the Capacity Project (2006), which has been used in Uganda but lacks systematic studies on reliability and validity. The questionnaire was customized and pre-tested with 10 health workers at one hospital. Some questions were reordered, but no major modifications were made.

A total of 24 interviewers who had a university degree in a health or related social science field were recruited and 11 supervisors, one per each region, were hired. Interviewers and supervisors attended two days of training on the consent procedure, research ethics, the data collection tool and interview techniques. Practice interviews using role play were part of the training.

To assess nurses' perceptions of 20 items that the literature suggests may affect decisions to stay or leave the job, interviewers asked: "If you were planning to leave your job, how important would each of the following items be in that decision?" Respondents rated each item on a five-point Likert-like scale (5 = extremely important, 4 = very important, 3 = important, 2 = somewhat important, 1 = not important). Nurses' turnover intentions were assessed by a yes-or-no question: "Are you planning to leave your job in the next one year?"

Individual interviews were conducted with each respondent in a private space, using the Amharic language. Interviews were scheduled for times that were convenient for respondents

and did not disrupt patient care. Data were collected from May 28 to June 14, 2014 in nine regional states and two city administrations.

Data Analysis

Data were entered into an Epi-Info database and exported to STATA 13.1 for cleaning and statistical analysis. Exploratory factor analysis (data not shown) and the literature (Hayes et al. 2012) were used to group the 20 items into six uncorrelated factors that may affect decisions to leave the job: living conditions, conditions at the workplace, relationships with supervisor and co-workers, work burden, opportunities for professional development and basic salary. Cronbach's alpha coefficient (ranges from 0 to 1) was used to check the reliability and internal consistency of items in each factor, with a cut-off value of 0.7 (Pallant 2007).

An independent sample t-test and analysis of variance (ANOVA) were used to test differences in the importance of perceived factors by gender, facility type, education qualifications and years of services; a chi-square test was used to find associations between nurses' demographic and work-related characteristics and turnover intentions; and logistic regressions were used to identify predictors of turnover intentions. A bivariate logistic regression analysis examined the independent effect of potential predictors on intention to leave; these included personal and facility characteristics (gender, age, marital status, dependents, birthplace, educational qualifications, years of service, compulsory service obligation and facility type and location) and mean scores for the six factors affecting decisions to leave the job. Then a multivariate logistic regression model was fitted using a stepwise (backward) variable selection process to extract potential predictors of turnover intentions. All factors were entered into the multivariate model and then stepwise selection with a criterion for variable removal was used with $p = 0.3$ from the full model; this process reduced the number of variables included in the multivariate model to two personal characteristics (education and

years of service) and four decision-making factors. The outcome variable was intention to leave the current job in the next one year (1 = yes, 0 = no). Multicollinearity among predictors (correlation between predictors) was assessed to ensure reliability of the multivariate model. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated to show the magnitude of associations. A *p*-value ≤ 0.05 was used to decide statistical significance for all tests.

Ethical Considerations

The study protocol was approved by the Johns Hopkins University Institutional Review Board. Permission to conduct the study was obtained from the Ministry of Health and Regional Health Bureaus in Ethiopia. Informed consent was obtained from participating nurses using an oral consent script in the national language, Amharic, and respondents were assured that their identities would not be disclosed.

Results

Characteristics of Respondents and Turnover Intentions

A total of 424 nurses participated in the study; 15% of the 500 nurses selected for the study were not present at the health facility for interviews when data collectors visited. About half of the nurses surveyed were female (52.8%) and currently married (52.8%). A large majority (92.0%) worked at health centres (Table 1). Most (86.6%) had graduated from three-year programs at technical and vocational education and training colleges that lead to a diploma, but 13.4% had a Bachelor of Science degree from a four-year university program. Small proportions had worked for two years or less in the public health system (19.2%) and were fulfilling their government-mandated compulsory service obligation (12.3%).

Half (50.2%) of all nurses surveyed said they intended to leave their jobs in the next

year (Table 1). Three characteristics were significantly associated with nurses' intentions to leave the job: being younger than 30 years old, holding a bachelor's degree and having two to five years of work experience.

Importance of Decision-Making Factors

Five of the six decision-making factors assessed exceeded the standard applied to assess their reliability (Cronbach's alpha coefficient ranged from 0.74 to 0.85), indicating that the items in each factor were internally consistent. The one exception was conditions at the workplace; these items were not strongly internally consistent or reliable (Cronbach's alpha = 0.64).

Table 2 shows that nurses rated basic salary as the most important factor in decisions to leave the job (mean score = 4.46; SD = 1.07), followed by opportunities for professional development (mean score = 4.15; SD = 0.99). Over 90% of nurses agreed that three of the 20 individual items were important in their decision: low pay, limited opportunity for promotion and poor access to higher education.

Table 3 depicts the finding that there were no significant differences in nurses' ratings of the importance of each factor by gender, educational qualification or facility type. Ratings of work burden increased significantly with the number of years served ($p \leq 0.05$).

Factors Associated with Nurses' Intention to Leave the Job

Bivariate analysis found that nurses' turnover intentions were significantly associated with their age, educational qualification and years of service and also with the perceived importance of living conditions, relationship with supervisor and co-workers, opportunities for professional development and basic salary (Table 4).

Six variables appeared in the multivariate model after the stepwise selection process and three were significant predictors of turnover intention. Nurses with a university degree were twice as likely as nurses with a diploma to

Table 1. Distribution of respondents and percentage who intend to leave their jobs in the next year, by socio-demographic and work-related characteristics

Characteristic	Total number of respondents	Percent distribution of respondents	Respondents who intend to leave their job in the next year		
			<i>n</i>	% of total	<i>p</i> -value ^a
TOTAL	424	100	213	50.2	NA
Gender					
Male	200	47.2	106	53.0	0.282
Female	224	52.8	107	47.8	
Age					
≤30 years	301	71.0	165	54.8	0.003
>30 years	123	29.0	48	39.0	
Marital status					
Single	193	45.5	100	51.8	0.760
Currently married	224	52.8	109	48.7	
Divorced/widowed	7	1.6	4	57.1	
Dependents/family members					
Yes	306	72.2	148	48.4	0.215
No	118	27.8	65	55.1	
Birthplace					
Urban	181	42.7	90	49.7	0.856
Rural	243	57.3	123	50.6	
Educational qualification					
Bachelor of Science	57	13.4	36	63.2	0.036
Diploma	367	86.6	177	48.2	
Years of service in public health system					
6 months – 2 years	81	19.2	35	43.2	0.036
>2–5 years	189	44.8	108	57.1	
>5 years	152	36.0	69	45.4	
Currently fulfilling compulsory service obligation ^b					
Yes	52	12.3	27	51.9	0.795
No	372	87.7	186	50.0	
Type of facility					
Hospital	34	8.0	17	50.0	0.977
Health centre	390	92.0	196	50.3	
Location (region) of facility					
Oromia	145	34.2	13	53.8	0.173
Amhara	116	27.4	65	56.0	
Southern Nations, Nationalities and People	88	20.8	78	44.3	
Tigray	35	8.2	39	37.1	
Other	40	9.4	18	45.0	

^a Chi-square test.

^b The government requires nurses who graduate with a diploma or Bachelor of Science degree to work for two to four years in the public sector, depending on the region where they work.

Table 2. Factors in decisions to leave the job: Percentage of nurses who consider an item important, mean and median scores

Factors and items	n	% who say factor is important ^a	Score ^b	
			Mean (SD)	Median
Living conditions				
Poor/lack of utilities (water, electricity) at home	421	73.4	3.45	4
Lack of housing facilities	418	78.5	3.81	4
Transportation problems	415	68.4	3.39	4
Lack of access to telephones to stay in touch with family and friends	411	63.0	3.09	3
Work is far from home	398	55.5	3.02	3
Poor educational facilities for children	280	73.2	3.54	4
High cost of living	423	84.2	4.09	5
<i>Overall factor score (7 items)</i>			<i>3.49 (1.02)</i>	<i>3.67</i>
Conditions at the workplace				
Poor/lack of utilities (water, electricity, Internet) at work	422	74.2	3.44	4
Concerns about safety at work	423	84.9	3.87	4
Poor access to supplies and equipment at work	418	67.2	3.13	3
<i>Overall factor score (3 items)</i>			<i>3.56 (1.02)</i>	<i>3.67</i>
Relationship with supervisors and co-workers				
Poor supervision and feedback	422	66.1	3.13	3
Social conflicts in the workplace	421	63.4	2.95	3
Unfair treatment by a supervisor	419	76.8	3.61	4
Lack of recognition for good work done	421	77.9	3.55	4
<i>Overall factor score (4 items)</i>			<i>3.42 (1.02)</i>	<i>3.50</i>
Work burden				
Heavy workload	422	62.8	3.17	3
Long hours of work	423	66.2	3.17	3
<i>Overall factor score (2 items)</i>			<i>3.16 (1.24)</i>	<i>3</i>
Opportunities for professional development				
Limited opportunities for promotion	423	90.3	4.17	5
Poor access to higher education	424	90.3	4.24	5
Limited opportunities for in-service training	424	81.8	3.70	4
<i>Overall factor score (3 items)</i>			<i>4.15 (0.99)</i>	<i>4.33</i>
Basic salary				
Low pay	424	91.8	4.46	5
<i>Overall factor score (1 item)</i>			<i>4.46 (1.07)</i>	<i>5</i>

SD = standard deviation

^a Includes responses of: extremely important, very important and important.^b Maximum score is 5.0; minimum score is 1.0.

Table 3: Mean scores for importance of factors in decisions to leave the job, by gender, educational qualification, facility type and years of service

	<i>n</i>	Living conditions	Conditions at work place	Relationship with supervisor and co-workers	Work burden	Opportunities for professional development	Basic salary
Gender							
Male	200	3.53	3.63	3.49	3.14	4.23	4.55
Female	224	3.45	3.51	3.36	3.19	4.08	4.41
<i>p-value</i> ^a		0.437	0.232	0.210	0.686	0.101	0.179
Educational qualifications							
Bachelor of Science	57	3.56	3.70	3.60	3.20	4.05	4.44
Diploma	367	3.48	3.54	3.39	3.16	4.12	4.49
<i>p-value</i> ^a		0.551	0.242	0.137	0.823	0.438	0.738
Facility type							
Hospital	34	3.41	3.42	3.12	3.35	4.07	4.62
Health centre	390	3.50	3.57	3.45	3.15	4.16	4.69
<i>p-value</i> ^a		0.650	0.400	0.070	0.351	0.616	0.432
Years of public health service							
6 months – 2 years	81	3.37	3.66	3.50	2.88	4.01	4.41
>2–5 years	189	3.45	3.49	3.41	3.19	4.20	4.53
>5 years	154	3.60	3.59	3.40	3.27	4.16	4.46
<i>p-value</i> ^b		0.106	0.688	0.480	0.020	0.286	0.729

^a *p*-values are generated from independent sample t-test.

^b *p*-values are generated from ANOVA.

intend to leave their jobs in the next year (adjusted OR = 2.246, 95% CI = 1.212, 4.163; $p < 0.01$). Nurses were 40% more likely to intend to leave with each one-point increase in their rating of the importance of opportunities for professional development (adjusted OR = 1.398, 95% CI = 1.056, 1.850; $p < 0.02$). Intentions to leave the job decreased by 5% with each additional year of service (adjusted OR = 0.948, 95% CI = 0.914, 0.982; $p < 0.01$).

Discussion

Half of nurses said they intended to leave their jobs in the next 12 months. This is consistent with previous studies of nurses in southern and western Ethiopia, which found

turnover intentions of 50% and 59.4%, respectively (Asegid et al. 2014; Getie et al. 2015). Like the study in southern Ethiopia (Asegid et al. 2014), no significant difference in turnover intentions by gender was found. However, the analysis also found no difference by facility type, while turnover intentions in the southern Ethiopia study were higher in hospitals than in health centres.

Three significant predictors of turnover intentions among nurses were identified in the multivariate analysis: work experience, educational qualifications and opportunities for professional development. Nurses were more likely to intend to leave their jobs if they had fewer years of experience. This is consistent

Table 4. Bivariate and multivariate logistic regressions: intention to leave job in the next year, by socio-demographic characteristics and importance of decision-making factors

Predictors	Bivariate logistic regression			Multivariate logistic regression ¹		
	Crude OR/ Coefficient	p-value	95% CI of crude OR	Adjusted OR/coefficient	p-value	95% CI of adjusted OR
Age in years	0.953/-0.049	0.002	0.924–0.982	–	–	–
Gender						
Male (ref.)	–	–	–	–	–	–
Female	0.811/-0.209	0.282	0.554–1.188	–	–	–
Marital status						
Single (ref.)	–	–	–	–	–	–
Currently married	0.881/-0.126	0.521	0.600–1.296	–	–	–
Divorced/widowed	1.240/0.215	0.782	0.270–5.689	–	–	–
Dependents/family members						
No (ref.)	–	–	–	–	–	–
Yes	0.764/-0.269	0.216	0.499–1.170	–	–	–
Place of birth						
Rural (ref.)	–	–	–	–	–	–
Urban	0.965/-0.036	0.856	0.657–1.418	–	–	–
Educational qualification						
Diploma (ref.)	–	–	–	–	–	–
Bachelor of Science	1.840/0.610	0.038	1.035–3.273	2.246/0.809	0.010	1.212–4.163
Years of public health service	0.956/-0.045	0.008	0.924–0.988	0.948/-0.054	0.003	0.914–0.982
Currently fulfilling compulsory service obligation						
No (ref.)	–	–	–	–	–	–
Yes	1.080/0.077	0.795	0.604–1.930	–	–	–
Type of facility						
Hospital (ref.)	–	–	–	–	–	–
Health centre	1.010/0.010	0.977	0.501–2.036	–	–	–
Importance of decision-making factors						
Living conditions	1.265/0.235	0.016	1.045–1.531	1.202/0.184	0.215	0.898–1.608
Conditions at workplace	1.202/0.184	0.057	0.995–1.453	0.779/-0.250	0.129	0.563–1.076
Relationship with supervisor and co-workers	1.294/0.258	0.008	1.070–1.565	1.153/0.142	0.263	0.899–1.479
Work burden	1.066/0.064	0.419	0.913–1.244	–	–	–
Opportunities for professional development	1.434/0.361	0.001	1.165–1.766	1.398/0.335	0.019	1.056–1.850
Basic salary	1.210/0.190	0.043	1.006–1.455	–	–	–

¹ All factors were entered into the multivariate model and then stepwise selection was used to remove from the full model those with a $p > 0.3$.
OR = odds ratio; CI = confidence interval.

with studies of nurses in southern Ethiopia (Asegid et al. 2014), Ghana (Bonemberger et al. 2014), Tanzania, Malawi, South Africa (Blaauw et al. 2013; George et al. 2013) and Lebanon (El-Jardali et al. 2013). Notably, significantly lower turnover intentions among nurses over age 30 were found in the bivariate analysis, although this association did not remain significant in the multivariate analysis. Younger, inexperienced nurses may be more mobile because they are less likely to be married and have children and more likely to seek advanced education to further their careers. In Ethiopia, this pattern may also be linked with the government's compulsory service scheme, which is designed to retain new graduates in the public sector. Depending on geographic location, the government requires nurses who graduate from diploma- or bachelor's-level programs to work for two to four years in the public health system before they can receive their diploma or degree. This may explain why turnover intentions peaked among nurses with two to five years of experience. However, study results show that turnover intentions are just as high among nurses currently fulfilling their compulsory service obligation as other nurses, suggesting that the scheme may not be having the desired impact.

University graduates were more likely to intend to leave the job than nurses who held a diploma from a technical and vocational education and training college. This finding is consistent with a study in Lebanon (El-Jardali et al. 2013) and may be due to the greater job opportunities open to university graduates. Their credentials make it easier to get a better job with a higher salary at private health facilities or with international nongovernmental organizations. This poses a serious challenge for the public health system because nurses with advanced education and training are required for many essential services (FMHACA 2013).

The more highly nurses rated the importance of opportunities for professional development, the more likely they were to

intend to leave their jobs. This confirms prior studies in Ethiopia that linked nurses' intention to stay in the job with professional opportunities (Engeda et al. 2014) and their intentions to leave with a lack of training opportunities (Getie et al. 2015). During in-depth interviews in Malawi, nurses explained that further educational opportunities were a primary motivation for remaining in the public health system (Schmiedeknecht et al. 2015).

Although just three variables remained significant in the multivariate analysis, the findings suggest that Ethiopian nurses consider many elements of their work and home life when making decisions to leave their jobs. Low pay and poor living conditions were the two most important factors in the bivariate regression. The Ethiopian government recognizes the importance of these factors and recently established a package of transportation, duty and professional allowances, housing benefits and salary adjustments to retain and motivate health workers. The government does not offer all of these benefits to all cadres in all regions because of budget constraints. Nurses are not eligible for housing benefits and top-ups on salary when they transfer to certain locations and only university graduates receive professional allowances; however, nurses with a diploma or degree do receive duty allowances. Yet results from this study suggest that financial incentives may be less important to retention than non-financial incentives, as salary and living conditions (which include items that may be part of government compensation packages) did not remain significant in the multivariate analysis.

Prior studies offer mixed evidence on this point. One South African study found that low salaries were *not* associated with turnover intentions of health workers, including nurses (George et al. 2013). However, systematic reviews and another study in South Africa have concluded that uncompetitive salaries, along with other factors, do have a negative

impact on nurses' retention, suggesting that integrated packages of financial and non-financial incentives are needed to retain health workers (Mokoka et al. 2010; Schmiedeknecht et al. 2015; Willis-Shattuck et al. 2008).

Policy Implications

The Ethiopian government is investing a considerable amount of money in the education of new nurses and other health workers. Results from this study suggest that many of them are dissatisfied with their jobs and want to leave their postings, which would be a major loss for government workforce development schemes and ultimately for the provision of quality health services in the country. Admittedly, changing jobs is not easy and many, or even most, dissatisfied workers do not act on their intentions to quit. For example, a longitudinal study in Senegal found that 59% of midwives said they intended to leave their current jobs, but only 37% actively looked for a new job and actual annual turnover was just 9% (Rouleau et al. 2012). While evidence is limited, actual attrition in Ethiopia is also likely to be less than 10% (Hailemichael et al. 2010). However, even this level of turnover, when it occurs annually, represents a huge cost to the health system. In addition, the literature suggests that turnover intentions are associated with job dissatisfaction, low motivation and poor performance, which potentially undermine productivity and the quality of care (Blaauw et al. 2013; Bonenberger et al. 2014; Franco et al. 2002).

These findings are a clear call to action for Ethiopia's Ministry of Health to create more effective, evidence-based strategies to increase motivation, job satisfaction and retention among nurses. The World Health Organization (2010) and Lehmann et al. (2008) have summarized the experiences of middle- and low-income countries with strategies to attract and retain health workers, particularly in postings to remote and rural areas. They argue that there is no single ideal intervention and suggest developing a broad

human resource management strategy that encompasses both non-financial and financial incentives and addresses living conditions, work environment and professional development opportunities. Our findings support this approach. The Ethiopian Ministry of Health (2014) finalized a comprehensive new human resource management policy in 2014. This policy is designed to expand pre-service education and in-service training for health workers, increase retention and performance and take geographic balance and professional mix into consideration in deployment, among other goals. However, the Ministry of Health has not yet developed an implementation strategy that translates these policy goals into actionable plans for local jurisdictions. These study findings can help in the development and implementation of effective retention strategies.

The findings demonstrate that the current compulsory service requirement does not reduce turnover intentions among nurses; however, they can be used to more closely tailor proposed interventions and incentives to meet the needs of Ethiopian nurses, for example, by targeting financial incentives to the items that are most important to nurses, namely salary, housing, educational facilities for children and transportation. Special attention should be directed to two groups who have a particularly high risk of quitting their jobs but are critical to the long-term performance of the public health system: young nurses who are fulfilling their compulsory service obligation and university-educated nurses.

As professional development opportunities were highly important in nurses' decisions to stay or quit, they may offer a more effective retention strategy. Creating short- and long-term continuing and higher educational opportunities for nurses at local universities affiliated with the clinical sites where they work could help attract, motivate and retain nurses and open up opportunities for advancement in the profession. A hospital in the United States was able to reduce extremely high turnover

among newly graduated nurses with a comparable strategy; new nurses were offered continuing education and mentorship as part of a residency program (Ulrich et al. 2010).

Strengths and Limitations

A particular strength of this study is that it is the first to provide nationally representative information for designing retention strategies for nurses in Ethiopia. The loss of 15% of the intended sample did not reduce the power of the study because a 10% non-response rate was assumed in the calculation of sample size. Nor did it bias the results because the nurses did not refuse to participate; they were simply absent from the facility on the day of interview. A major limitation of the study is that, like similar cross-sectional studies, nurses were asked about their turnover intentions but there was no follow-up in the following year to determine whether they actually left the position. Similarly, nurses were not asked whether they intended to leave the profession, move to another organization or facility, or leave the country.

Conclusions

Half of nurses working in public hospitals and health centres in Ethiopia in 2014 stated their intention to leave their jobs in the next 12 months, suggesting widespread problems with job satisfaction, motivation and retention. Two important groups are at especially high risk of leaving their jobs: young nurses who are fulfilling their compulsory service obligation and university-educated nurses. Retaining these nurses is essential to maintaining a skilled workforce at public sector facilities and therefore should be a priority for the public health system. Reducing attrition among these and other nurses will require non-financial incentives, especially strategies to promote nurses' professional development, along with efforts to bolster compensation.

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Case Study: Using Task Analysis to Determine the Status of Education and Practice of Medical Licentiates for the Provision of Anesthesia in Zambia



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Abstract

Task analysis methodology was used to identify gaps in the education and practice of Medical Licentiates, a cadre of primary care health providers in Zambia, related to the provision of anesthesia. Findings of the analysis indicate that Medical Licentiates who work in facilities where there are no fully qualified anesthesiologists or physicians often feel obligated to provide these services in order to save lives although they lack sufficient formal education or clinical practice opportunities. The government translated the findings into immediate modifications to the education, training and practice of anesthetic tasks by Medical Licentiates by developing an elective course within the pre-service education program and upgrading the certification of Medical Licentiates to a bachelor's degree.

Introduction/Background

Zambia, in sub-Saharan Africa, is one of 57 countries experiencing a critical shortage of human resources for health, with fewer than 23 health workers per 10,000 population, a critical threshold below which a country is unlikely to be able to meet health service coverage needs (Government of the Republic of Zambia 2013; WHO 2010). Recent estimates cite the density of physicians and nurses in Zambia as 0.17 and 0.78 per 1,000 (1.7 and 8.8 per 10,000) respectively (WHO 2014). Health worker shortages are further impacted by regional differences. The physician-to-population ratio in the urban capital of Lusaka is double that of more rural areas (Government of the Republic of Zambia 2011a), which often have high vacancy rates for all health workers (Ferrinho et al. 2011). As a result, the majority of Zambians in rural or remote areas do not have access to health services (Government of the Republic of Zambia 2011b).

Zambia and 25 other sub-Saharan African countries address this imbalance by educating and training a cadre of associate clinicians to fill the gap in medical services (Henry et al. 2015). These providers typically have backgrounds as clinical officers; in Zambia, these associate clinicians are known as Medical Licentiates and provide an array of health services ranging from basic primary care to essential surgical services.

Zambia's first Medical Licentiate program was initiated in 2002 at Chainama College of Health Sciences (CCHS) and, at the time of this case study, it was the only Medical Licentiate education program in Zambia. The three-year program prepares clinical officer generalists to provide medical care, including emergency services, at the district and provincial levels of the health system (Government of the Republic of Zambia 2002). Medical Licentiates are most commonly deployed to high-need areas, often in rural and remote facilities, where they may be the only provider with medical and surgical skills.

The demand for Medical Licentiate services focused attention on the scope of practice and the education necessary to support high-quality care. National pre-service education guidelines for the health professions recommend that the curriculum of studies be reviewed every five years (Government of the Republic of Zambia 2006), but, as of 2010, the Medical Licentiate curriculum had not been updated since 2002 to reflect current evidence-based knowledge and trends in practice. In addition, Medical Licentiates were expressing a general dissatisfaction regarding the lack of precision in the definition of their scope of practice and the perception that the academic credential that they were awarded did not adequately reflect their responsibilities for clinical practice in the workplace.

Stakeholders (educators, representatives of the Ministry of Health, Medical Licentiate providers, representatives of the professional association and technical assistance agencies) convened a consensus-building meeting to determine a way forward. A task analysis was unanimously supported and endorsed as a way to identify gaps in education and practice for the Medical Licentiate cadre. This case study examines selected findings related to the provision of anesthesia extracted from the larger task analysis study that focuses on the full scope of work of Medical Licentiates. This case study also describes subsequent government and stakeholder responses to identified gaps in education and practice in this limited domain.

Intervention

Task analysis is an evidence-based research methodology used to systematically assess the knowledge, skills and professional behaviours of health workers (Althouse 2000; Hart et al. 2015). The list of knowledge, skills and behaviours related to Medical Licentiates provision of anesthesia was identified through a review of the cadre's existing curriculum, job description and national practice guidelines issued by the Ministry of Health and through a review of the literature addressing evidence of quality and safety of associate clinicians' practice of anesthesia skills (Bergstrom 2015; Henry et al. 2015). The list was edited and verified by an expert panel knowledgeable about Medical Licentiate education and practice.

Human subjects research approval for the task analysis study was received from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. Permission to conduct the study was granted by Chainama Hills College Hospital Administration and the Zambia Ministry of Health.

Methodology

Convenience sampling targeted the 116 Medical Licentiates currently working in public and private health facilities in Zambia

identified through a review of Ministry of Health deployment records and Medical Licentiate Association records. A total of 57 Medical Licentiates working in eight of the nine provinces of Zambia were interviewed, representing 49% of the national Medical Licentiate population.

This study used self-administered data collection tools modified from task analysis studies previously employed in Mozambique and Liberia (Dgedge et al. 2014; Udaya et al. 2011). Participants documented their practice experience with respect to performance of each of three types of anesthesia: local, general and spinal. Respondents also provided additional information by responding to open-ended questions about their role in the performance of anesthesia.

All tools were self-administered in the presence of the interviewer, who was available to answer and clarify any questions. The anesthesia component of the larger task analysis tool (408 items covering the full scope of Medical Licentiate practice) required approximately five to 10 minutes for completion. Medical Licentiate survey respondents provided three responses for each type of anesthesia: the frequency at which the type of anesthesia is performed, where the respondent had received theoretical education for performance of each of the three types of anesthesia and where the respondent had received clinical practice for performance of each of the three types of anesthesia.

Frequency data were analyzed using CSPRO software, SPSS and MS Excel. Thematic analysis was used for qualitative data.

Results

Almost all ($n = 56$; 98.2%) Medical Licentiate respondents reported that in their pre-service education they received theory content for the provision of local anesthesia, with slightly fewer receiving formal pre-service clinical practice to perform spinal ($n = 50$, 92.6%) and general ($n = 49$, 89.1%) anesthesia. The numbers of Medical Licentiates who had not

received pre-service clinical practice for any of the three skills could not be reported as data were incomplete.

Table 1 depicts the frequency at which Medical Licentiates performed each of the three types of anesthetic techniques. Local anesthesia was the type most often administered by respondents (49.1%) who reported performing the task at least one time per week. Spinal anesthesia was least likely to be performed weekly (14%), and general anesthesia was performed weekly by 28.1% of the respondents.

Table 1. Frequency at which Medical Licentiates performed anesthesia tasks (N = 57)

Frequency of Performance	Local n (%) *	Spinal n (%)	General n (%)
Daily	13 (23.6)	1 (1.8)	2 (3.5)
Weekly	27 (49.1)	8 (14.0)	16 (28.1)
Monthly	7 (12.7)	15 (26.3)	5 (8.8)
Rarely	5 (9.1)	6 (10.5)	9 (15.8)
Never	3 (5.5)	27 (47.4)	25 (43.9)
Not done in the setting	1 (1.8)	13 (22.8)	8 (14.0)
Done by another worker	2 (3.5)	14 (24.5)	17 (29.8)
Total	55	57	57

* Missing data = 2.

A number of respondents reported that they never administer spinal ($n = 13$, 22.8%) or general anesthesia ($n = 8$, 14.0%) because it was not done in that setting. Similarly, 14 (24.5%) and 17 (29.8%) respectively did not provide these services because another worker performs the task.

Review of responses to the open-ended (qualitative) data revealed that Medical Licentiates, in common, felt unprepared to perform any of these types of anesthesia. Respondents stated that they sometimes found themselves in situations where they felt compelled to administer anesthesia despite feeling unprepared to do so. Nearly all

reported that although their pre-service education included theoretical content, many had not received formal clinical practice, particularly for spinal and general anesthesia, either during their formal education or during their internship. At the time of the study, theoretical content for local, spinal and general anesthesia was taught within surgery and obstetrics coursework rather than as a stand-alone course. All Medical Licentiates were expected to be proficient in, at the minimum, the provision of local anesthesia (Government of the Republic of Zambia 2002). However, opportunities for clinical practice of the two higher-order skills were dependent on the interest of the individual student and the availability of preceptors with anesthesia skills during both their formal education and internship.

Respondents noted that the shortage of clinical preceptors limited access to appropriate supervision, which in turn adversely affected practice opportunities:

Students are taught theory but are not allowed to practice [during pre-service education and internship]. It would be better if they are allowed to practice what they learn.

Medical Licentiates noted the need to provide anesthesia services due to the lack of fully qualified anesthetists in their facilities:

Local and regional anesthesia were only theoretically taught in surgery course. There are no anesthetists in the hospital. So we could use training in it [anesthesia].

Some respondents described the pressure to provide services even though they did not feel adequately prepared:

[Education for anesthesia] is not done adequately. [However] MLs are called to perform anesthetic services.

Discussion

The objective of this task analysis was to describe the work of practicing Medical Licentiates in Zambia and to identify gaps that should be addressed with curriculum revision. Medical Licentiate practice of anesthesia tasks in the workplace was high, despite the lack of emphasis in the curriculum and practice opportunities, which were largely dependent on individual Medical Licentiate interests and the availability of preceptors. This may be attributed to the fact that even though some Medical Licentiates lacked sufficient formal education or clinical practice opportunity, Medical Licentiates felt obligated to provide these services in order to save lives. This interpretation would be consistent with the findings of Ferrinho et al. (2012) in their study of the general health workforce in Zambia. Many Medical Licentiates work in facilities where there are no anesthesiologists or physicians to administer and manage anesthesia services, which likely contributed to the response category of “not done in this setting.” This is typical for most health facilities in Zambia given the existing shortage of health providers.

Task analysis identified gaps in Medical Licentiates’ theoretical education and clinical practice opportunities to acquire the knowledge and skills to acquire competency in the performance of anesthesia tasks. A meeting to disseminate the preliminary results of this study was held with major stakeholders and led to immediate high-level decisions on the training of Medical Licentiates for performance of anesthesia functions. The Ministry of Health supported immediate educational changes, which included a strengthened curriculum and development of elective courses, including a separate anesthesia course. The separate course provides curricular emphasis on anesthesia content as well as increased opportunities for practice during the formal Medical Licentiate education program. Plans for updated skills labs, strengthening practice sites and faculty development at CCHS were included in the

National Training Operational Plan (Government of the Republic of Zambia 2013). The Medical Licentiate qualification was upgraded from a diploma to a bachelor’s degree in keeping with the model of other countries in the region. The Medical Licentiate bachelor’s degree program was initiated in 2013.

Anesthesia is an essential service required for surgical treatment (LeBrun et al. 2014; WHO 2015) and education and training of anesthesia personnel is a cornerstone for providing surgical services. Bergstrom (2015) and Henry et al. (2015) describe the critical need for surgical task shifting in low- and middle-income countries and report the evidence that associate clinicians provide these services with outcomes that are comparable to medical doctors.

This case study provides additional attention to the important role that Medical Licentiates can play in ensuring the provision of anesthesia services in Zambia, and can serve as a model for other countries that use similar cadres of associate clinician personnel to provide essential health services. Development and support of training programs in anesthesia are paramount factors in the provision of available, safe and cost-effective care (Dubowitz and Evans 2012; LeBrun et al. 2014; Sachidanand et al. 2014).

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