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Geographic Information System (GIS) For Midwives: Improving Midwifery Service Delivery

Access to skilled birth attendance will support achieving Sustainable Development Goal (SDG) 3 targets 1 and 2 of reducing the global maternal mortality ratio to less than 70 per 100,000 live births, and ending preventable deaths of newborns and under five children by 2030.

In Uganda, the maternal mortality ratio reduced from 506 in 2000 to 336 per 100,000 live births in 2016.

There are 21,155 registered midwives & nurses in Uganda.

More women in Uganda are delivering at health units, 74.2% deliver with assistance from a skilled birth attendant.

Skilled birth attendance in the hard-to-reach areas in Karamoja region increased from 30% in 2011 to 73% in 2016.

One Midwife in Uganda serves a population of 2000 people, World Health Organization (WHO) recommends 2 health professionals for every 1000 people in order to achieve 80% of skilled birth attendance.

Background

Increasing the availability, accessibility, acceptability and quality of skilled birth attendance remains a critical strategy towards averting maternal and neonatal deaths. It is also aimed at achieving Sustainable Development Goal (SDG) 3 targets 1 and 2 of reducing the global maternal mortality ratio to less than 70 per 100,000 live births and ending preventable deaths of new-borns and under five children respectively by 2030[1]. Without skilled birth attendance, delivery can neither be safe nor referred on time.

In Uganda, the maternal mortality ratio remains high despite a reduction from 506 deaths per 100,000 live births in 2000 to 336 deaths per 100,000 live births in 2016[2]. Related to the high maternal mortality, the neonatal mortality rate did not change from previous years and remains high, estimated at 27 per 1,000 live births according to the 2016 Uganda Demographic and Health Survey (UDHS). The role of skilled birth attendance, mostly through midwifery skills development is crucial to avert the situation.

The midwifery programme in Uganda entails training midwives under the Ministry of Education and Sports (MoES) and these midwives being examined by the Uganda Nurses and Midwives Examination Board (UNMEB). After graduation, the midwives are required to register and acquire practicing licenses from the Uganda Nurses and Midwives Council (UNMC) before they are recruited in service. Recruitment of midwives in service is done by the Health Service Commission at central level and District Service Commissions at district level. The commissions are mandated to appoint, confirm, promote and review the terms and conditions of service in line with the policies, systems and structures of the Ministry of Public Services (MoPS). Midwives in service and those still at school are also encouraged to network and associate to improve the midwifery services in the country.

Currently Uganda has a total of 21,155 midwives registered with the UNMC that are eligible to practice. Although this has contributed to increasing of the positions filled in public health facilities as per the Ministry of Health staffing norms to 75.3%[3], it is an equivalent of 1 midwife for every 2000 population. World Health Organization (WHO) recommends 2.28 health professionals for every 1000 population in order to achieve 80% of skilled birth attendance[4]. Therefore, improving and strengthening the midwifery programme can help bridge the gap and prevent maternal and new-born deaths.

In 2010, UNFPA through Ministry of Health (MoH), Ministry of Education and Sports (MOES) and other partners, and with support from Swedish International Development Agency (SIDA) and UNFPA Global Programmes, including the Maternal Health Thematic Fund (MHTF), designed a comprehensive programme in Uganda based on three Pillars of a strong midwifery programme (Education, Regulation and Association). The aim was to have a well-educated, regulated and supported midwife to provide essential life-saving care required for women and babies.

To date, UNFPA has supported 590 girls from hard-to-reach areas like Karamoja to train as midwives under a bonding scheme, who upon graduating are recruited in their respective districts to reduce on the staffing gap. Support has also been extended to improve the quality of midwifery education by training 60 midwifery tutors to reduce on student to tutor ratio; equipping midwifery skills labs and libraries in 20 midwifery training institutions; updating the midwifery curriculum to conform with International Confederation of Midwives (ICM) and WHO guidelines; introducing the Structured Collaborative Clinical Training; conducting career promotion in secondary schools to inspire girls join midwifery as a career of choice; supporting the Uganda Nurses and Midwives Council (UNMC) to decentralise its regulatory functions to 13 regional centres in order to improve on the registration and license renewal processes; supporting midwives to establish an association to improve on professional development; building capacities of the health workforce to provide quality Sexual and Reproductive Health and Rights (SRHR) services; equipping health facilities and strengthening the policy and legal environment under which midwives and other health workers operate in Uganda.

Information Gap

The midwifery programme in Uganda continues to grow with support from SIDA, MHTF, Department for International Development (DFID) and European Union (EU) Spotlight Initiative and remarkable improvement in the maternal health indicators in 55 UNFPA focus districts has been noticed. For example, skilled birth attendance in the hard-to-reach Karamoja region increased from 30% in 2011 to 73% in 2016[5]. However, despite all the efforts made, the challenge of absence of an effective system that provides reliable, quality and timely data on tracking/monitoring availability and deployment of midwives to the relevant stakeholders, including ministries and UNMC for better planning was impacting negatively on the successes registered. It was difficult to understand the need for midwives in terms of numbers, location, distribution and compliance with regulatory standards to facilitate effective planning and response. The available information systems were not customized to effectively track midwives in the country right from registration/entry into practice, deployment through to retirement. And neither would the existing information systems ensure easy update of information by UNMC on its members deployed all over the country.

Establishment of a Geographic Information System (GIS)

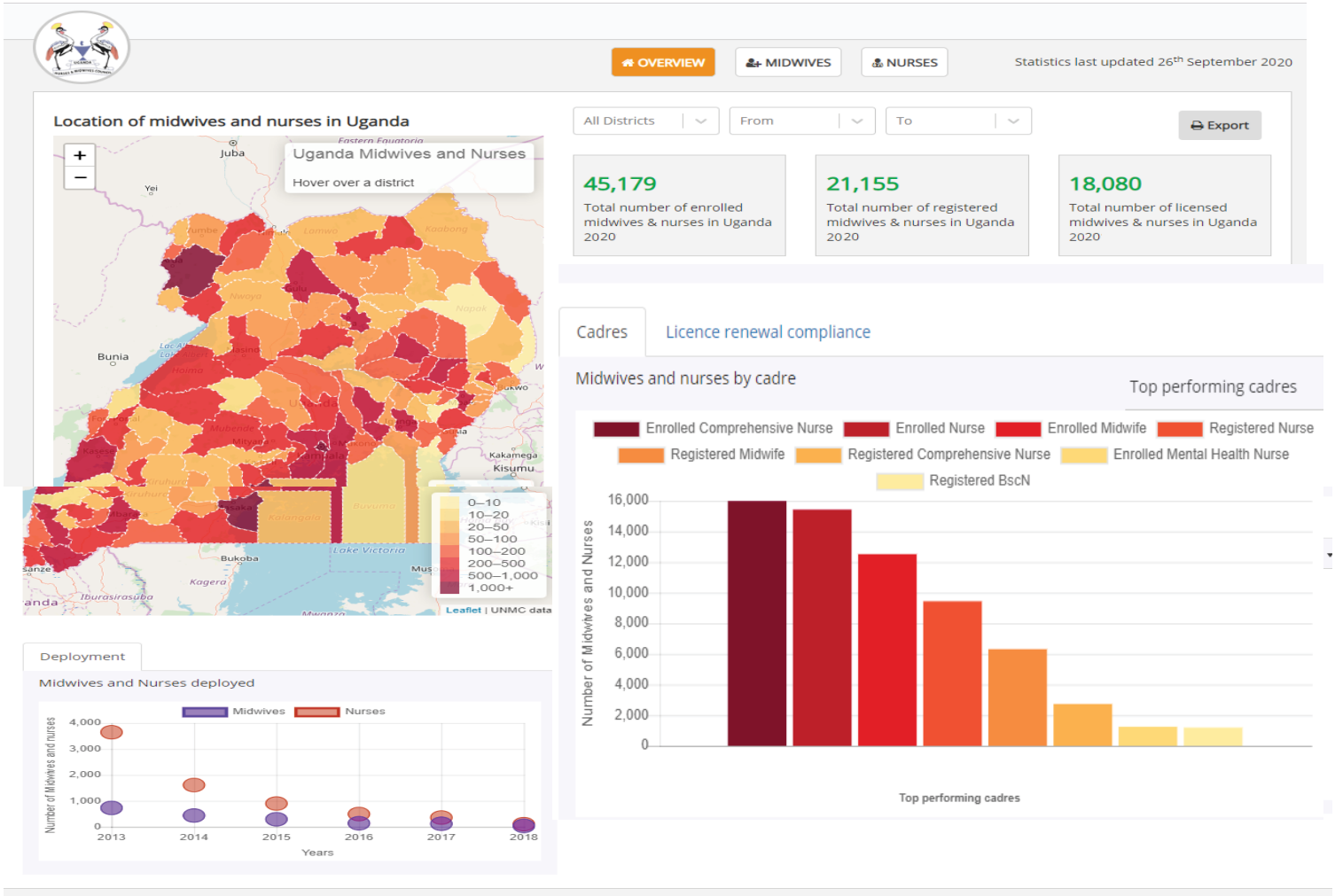
In 2017, UNFPA through MoH, with funding from SIDA and the MHTF, supported UNMC to develop an efficient Geographic Information System (GIS) that would capture, analyze and provide timely data on all midwives and nurses in Uganda. The GIS captures data on: cadres of midwives and nurses: available in the country; the licensure and registration status of midwives and nurses with UNMC; deployment and distribution of midwives and nurses; data on retirement; and production and absorption capacity by the public and private sectors.

The system is managed by different personnel who include; (1) The System Administrator responsible for ensuring that system security procedures are enforced and for keeping the system maintained and functioning. (2) The Data Operations Manager (ETR Manager) is responsible for managing all system data and for ensuring that data in the system are complete, correct and up to date. (3) The Registration Supervisor is a high-level data entry focal person responsible for issuing registrations and licenses to health professionals. (4) The Records Officer (SPNO/PNO) of a Regional Referral Hospital) is a data entry person who is responsible for entering and updating records of students entering training programmes and for maintaining general information about health professionals.

Inputs into the system is done on a daily basis and data is generated as and when it is needed. The data is used by decision makers for planning and informing health workforce policies, by researchers and nurses and midwives in public and private practice for planning purposes.

Having been piloted in three Northern Uganda districts of Gulu, Lamwo and Kitgum, the system has been scaled up to 25 additional districts of Abim, Arua, Moroto, Kaabong, Mbale, Lira, Yumbe, Soroti, Apac, Ngora, Amuria, Agago, Amudat, Kween, Bundibugyo, Napak, Nakapiripirit, Luwero, Nakaseke, Kabale, Mbarara, Kotido, Kiryandongo, Kabarole and Jinja.

The GIS dashboard at a glance



Results from utilization of the GIS

With just a roll out and utilization of the GIS in 28 districts of Uganda, the system has generated a number of notable benefits to the UNMC and the health care system as a whole. These include:

- Increased compliance with renewal of practicing licenses, from 35% in 2014 to 74% in 2019 (refer to the graph above).
- Increased compliance with registration, from 54% in 2014 to 70% in 2019.
- The GIS is also helping participating districts in their human resources projections for midwives and nurses based on service needs. In Gulu for example, the Senior Principal Nursing Officer uses the GIS dashboard for reporting on the status of nurses and midwives in the region on their deployment and licensure compliance. She uses it to present to the District Health Service Commission, in collaboration with the Assistant District Health Officer/MCH which facilitates monitoring of staffing gaps, and planning for recruitment and deployment in the district.
- The GIS has helped in the identification and real time reporting of the newly qualified nurses and midwives in the districts, and labor market.
- GIS has further enabled increases in revenue to UNMC through timely payments of registration and license fees by members, which in turn has enabled the Council to implement its business plan. The Council indicates that its revenue has increased by 60% since the introduction of the GIS.
- Increased protection of the population from unsafe midwifery services by unqualified midwives has been realized.
- To enable employers conduct due diligence, UNMC is now in better position to publish information on registered and licensed midwives and nurses in local print and online media at http://unmc.ug using updated data from the GIS.

Recommendations

- It has been demonstrated that the GIS is an effective tool for provision of timely data on midwives and nurses for evidence based planning and decision making. More support is needed for UNMC to scale up the GIS from the current 28 districts to the entire country in order to improve execution of its oversight role of regulation of midwifery and nursing professions.
- Due to the need for further system enhancements, to meet other information requirements on midwives and nurses, more support is needed for UNMC to upgrade the system to include additional features like tracking continuous profession development uptake.
- Currently the training of midwives and nurses in Uganda is not based on need. To enhance need-based training, support is needed to link GIS with key line sectors such as Ministry of Education and Sports to improve planning for training midwives and nurses. This will enable the MoES to focus on critical programmes that are required on the market based on the service delivery needs of MoH and Ministry of Public Service.
- Scale up and linkage of GIS with Ministry of Public Service would inform plans for revising the staffing structure, schemes of service and remuneration rates.
- In addition, linkage of the system with other bodies that are responsible for managing midwifery programmes in Uganda such as the Health Service Commission, and the UNMEB; among others would facilitate evidence based planning and effective implementation of programmes in their areas of focus.
- When scaled up with additional enhancements that enable access to GIS by the public, the system can increase public health safety since the public would be able to obtain critical information on the qualified midwives and nurses.

Conclusion

GIS is instrumental in supporting effective, appropriate and timely response to nursing and midwifery needs for Uganda, in the quest for universal health coverage. It also has the ability to provide the much needed real time evidence for policy and decision making in terms of training, regulation, and deployment. Furthermore, it has the ability to bring together various sectors in order to improve coherence on policies that directly affect the profession through linkages between the regulatory bodies (UNMC and other Midwifery bodies), Education Sector, employers (Health Sector, Public Service and other ministries).

[1]Health Sector Development Plan 2015/16 - 2019/20, [2]Uganda Demographic Health Survey, 2016
[3]Human Resource for Health Audit report, 2016, [4]Global Strategy on Human Resource for Health: Workforce 2030
[5]Uganda demographicHealth Survey, 2016

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