Creating a New Digital Health System in Bangladesh by Building Interoperability between the Country's Family Planning Service Statistics System and the DHIS2

By **Mohammad Golam Kibria,[1] Nibras-Ar-Rakib,[2] Md. Humayun Kabir, Gabriela Escudero[3]**
[1]Sustaining Technical and Analytic Resources, Public Health Institute; [2]icddr,b; [3]MEASURE Evaluation

Introduction

The government of Bangladesh is prioritizing the management of comprehensive digital health information and is increasingly generating high-quality data for planning and decision-making purposes, which ultimately leads to better health outcomes. The Directorate General of Family Planning (DGFP), under the Ministry of Health and Family Welfare, has collected subdistrict-level family planning (FP) service statistics (SS) in electronic form for more than 10 years. However, this SS system lacked an interactive visual interface, which hindered data analysis and the use of data for decision making. To resolve this issue and maximize the effective use of the copious data collected through the SS system, with technical assistance from implementing partners (IPs), the DGFP created an innovative interoperability mechanism between the SS and the country's District Health Information Software, version 2 (DHIS2) platform.

Background

According to the National Health Strategic Plan (2017–2022), the DGFP planned to adopt a standard global tool for the management of its family planning service statistics . All family planning data collection tools would be integrated under the DHIS2. However, the DGFP struggled to integrate its vertical data management systems, such as the SS, the electronic management information system (eMIS), and the logistics management information system (LMIS), in one national management information system (MIS) for FP—that is, to create a dedicated FP–DHIS2. The DGFP also did not have the technical or financial capacity to roll out the DHIS2 nationally. Moreover, questions were raised by DGFP managers at the district level about why it should be done, given that the SS already collected aggregate-level data. In consultation with technical partners, the DGFP decided to develop a mechanism to integrate the existing, stand-alone nationwide SS with the DHIS2 so that summary SS data would be available through the DHIS2 for the purposes of indicator reporting and decision making.

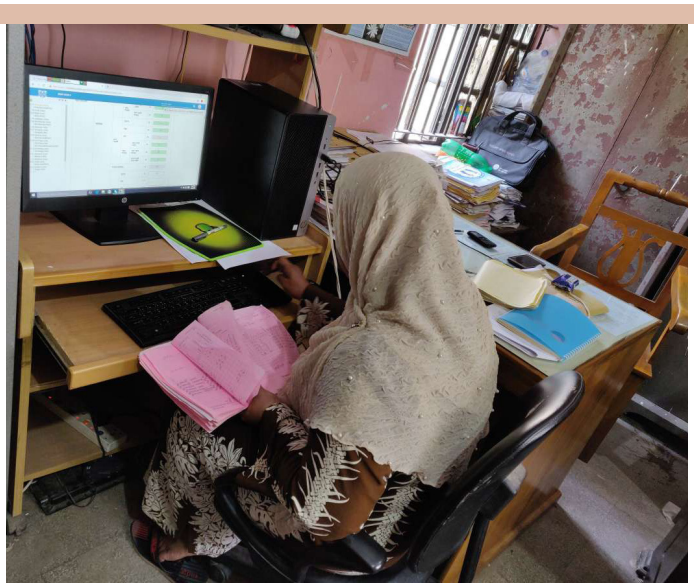
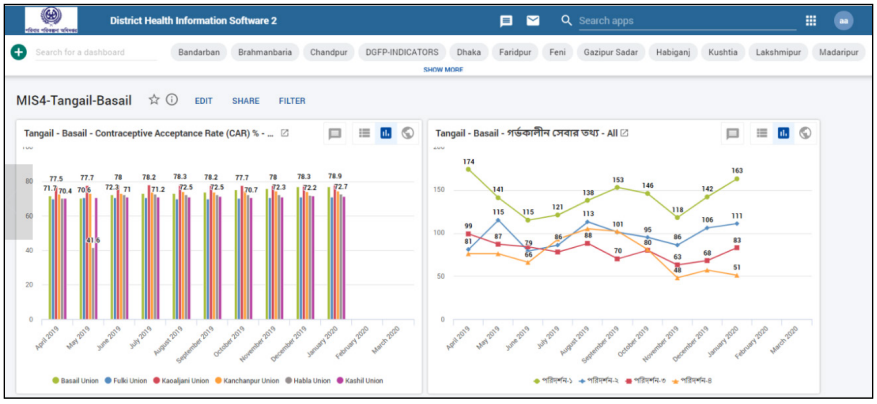


Photo: Nibras-Ar Rakib, icddr,b.

SS: The SS is a proprietary software developed by the DGFP that collects and stores aggregated summary data on family planning, nutrition, maternal and child health, immunization, logistics, and supplies on a monthly basis from a wide range of health systems covered by the DGFP.

DHIS2: DHIS2 is an open source platform that collects and stores subnational-level aggregated summary data on a monthly basis and generates reports.

Interoperability is the ability of different information systems to communicate, exchange data, and use the information that has been exchanged. Interoperability is not just a buzzword. It is a holistic concept deeply embedded in the efficient implementation efforts of digital health initiatives in low- and middle-income countries.



Screenshot of Bangladesh's DHIS2 dashboard

Developing Interoperability for the SS and DHIS2

IPs funded by the United States Agency for International Development—MEASURE Evaluation, icddr,b, and the MaMoni Maternal and Newborn Care Strengthening Project—are supporting the DGFP to implement this comprehensive digitization effort, known as the electronic Management Information System (eMIS) initiative. The IPs are supporting the implementation of the DHIS2 in certain districts, in collaboration with the United Nations Population Fund and the DGFP. First, the IPs reviewed the architecture of the existing SS and provided technical solutions to integrate SS data with the DHIS2. Next, the IP technical experts prepared a metadata dictionary, a data model (Entity-Attribute-Value), and a master facility list. Interoperability is ensured through a standard web application programming interface using hypertext transfer protocol (HTTP), which enables the smooth flow of data from the SS to the DHIS2. The Extract-Transform-Load process enables the generation of the dashboard in the DHIS2. The DHIS2 is now gradually replacing the SS in 16 (out of 64) districts.

Photo: Nibras-Ar Rakib, icddr,b.

Results

With this new interoperability, 241 data points from the SS are pushed to the DHIS2, enabling the accurate calculation of 29 key metrics in the DHIS2 dashboard. The new system also has a Data Analyzer module, which allows users to create their own dashboard. DGFP management are able to review the data daily and provide feedback to district managers on reporting timeliness, completeness, and input on indicator performance, thus improving data governance. The automatic entry of SS data in the DHIS2 reduces the burden of data entry for users of the data, decreases reporting time, promotes better data analysis and use (because of the ability to drill down to the lowest administrative level), and decreases software management costs. This interoperability has prompted a shift to greater self-reliance by the DGFP. As a result, the directorate has hired a dedicated DHIS2 programmer; created a pool of master trainers who will train district and subdistrict managers, statisticians, and family planning assistants; formed a central committee to oversee digital development; and established a national DGFP data warehouse.

Conclusion

Interoperability fosters efficiency, data transparency, and accountability. With coordinated efforts and smart investments in technological innovations, the DGFP can leverage resources from its existing data systems and promote a culture of data use through the application of new tools.

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