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POSTERA CRESCAM LAUDE

CRVS Fellowship report
Evaluation of the 'Kaliganj Model' for proactive birth and death notification and registration

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Suggested citation

Contents

Acronyms and abbreviations

BRIS   Birth Registration Information System

BRN   Birth Registration Number

COD   cause of death

CRVS   Civil Registration and Vital Statistics

D4H   Data for Health

DRN   Death Registration Number

MOHFW   Ministry of Health and Family Welfare

NID   National Identification

ORG   Office of the Registrar General, Birth and Death Registration

SOP   standard operating procedure

UDC   Union Digital Center

VA   verbal autopsy

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Acknowledgements

Summary

Universal registration of births and deaths is legally mandatory in Bangladesh. Although 162.9 million births have been registered in the country so far, the overall situation is still poor. In 2015, only 18.9 per cent of all estimated births and 12.62 per cent of all estimated deaths were registered. Some early initiatives were designed to engage the health and family planning field staff in this registration process to improve the situation, but without success.

As a part of establishing a functional civil registration and vital statistics (CRVS) system in the country, the Kaliganj Model for birth and death registration was implemented from April 2016 to December 2017 in the Kaliganj sub-district. Kapasia, Gazipur district, was added to this pilot program in September 2017. In this model, health and family planning field staff notified local registries at union council of births and deaths using a standard operating procedure. This was coupled with their routine household visits and regular ongoing Expanded Programme on Immunization service delivery to limit the additional workload.

This document reports on research that aimed to understand if and how the Kaliganj Model improved birth and death notification and registration. This report provides policy-makers in the Government of Bangladesh with research findings, insights and recommendations, so they can begin solidifying CRVS in the country.

The research showed that the pilot intervention produced significant positive impacts. Health and family planning staff members were able to notify births and deaths. In Kaliganj, registration completeness of births within 45 days increased from 7.7 per cent in 2015 to 93.7 per cent in 2017, and completeness of death registration within 45 days increased from 21.2 per cent to 70.8 per cent. A similar increase in early registration of births and deaths was seen in Kapasia.

A gap between the number of notifications made by the health and family planning field staffs and the number of registrations made by the registrar offices within 45 days was seen both in Kaliganj and Kapasia. This gap did not exist when a longer time period (i.e. 1 year for both notification and registration of births), was considered. A similar situation prevailed for death registration in these two sub-districts. This gap might be due to a sudden increase in notifications overwhelming the registry offices' capacity to enter data manually, something that can be caught up over time.

To scale up this model across the country and establish a functional CRVS system, it is critically important to establish collaboration and coordination between the Ministry of Health and Family Welfare and other stakeholders. The infrastructure, resources and policy framework of the Office of the Registrar General also need to be strengthened.

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Fellowship report: Evaluation of the Kaliganj Model for proactive birth and death notification and registration

Introduction

Birth registration and death registration are essential for monitoring the performance of civil registration and vital statistics (CRVS) systems.[1] A complete CRVS system is the best data source for births, deaths and causes of death (CODs) – data that decision-makers need to develop effective health policies and programs that align with the Sustainable Development Goals.

> **Birth and death registration became a legal right in Bangladesh as of 2004.**

Bangladesh first established a CRVS system on 2nd July 1873.[2] As the Birth and Death Registration Act 2004 was enacted (and amended in 2013), birth and death registration became an individual legal right. The act also:[3]

■ Made notification of birth and death compulsory within 45 days of the event

■ Provided a list of people and institutions who can notify births and deaths (including public and private sectors)

■ Introduced the concept of unique Birth Registration Numbers (BRNs) and Death Registration Numbers (DRNs)

■ Made birth and death certificates mandatory to access to government services

■ Created a specialised institution – the Office of the Registrar General (ORG) – for national birth and death registration.

> **Bangladesh is making efforts to improve its cause of death data.**

Bangladesh has no institutionalised system for recording COD information, but the country has made strides to improve the quality of COD data through improved medical certification of COD practices. In 2017, the government customised and introduced the World Health Organization International Form of Medical Certificate of Cause of Death and the Startup Mortality List for standardised COD reporting.[4] Verbal autopsy (VA) has also been introduced in selected areas of the country for community deaths (Box 1). A VA interview (with the deceased's family or next of kin) cannot be conducted before the death is registered.[4]

1   University of Melbourne. *The importance of routinely measuring birth and death registration completeness.* CRVS summaries. Melbourne, Australia: University of Melbourne, Civil Registration and Vital Statistics Improvement, and Bloomberg Philanthropies Data for Health Initiative; 2018.

2   Bangladesh Office of the Registrar General.

3   The Government of Bangladesh. (a) Births and Deaths Registration (Union Parishads) Rules, 2006; (b) Births and Deaths Registration (Municipalities) Rules, 2006; (c) Births and Deaths Registration (City Corporations) Rules, 2006; and (d) Births and Deaths Registration (Cantonment Boards) Rules, 2006.

4   Khan MA. *Fellowship report: Assessing the quality of medical certification in Bangladesh – findings from introducing the International Form of Medical Certificate of Cause of Death in four pilot hospitals*. CRVS development series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2019.

> **Box 1: What is verbal autopsy?**
>
> Verbal autopsy (VA) is a method for collecting information about an individual's signs and symptoms before their death from their family or next of kin, and interpreting these to diagnose the likely or most probable cause of death (COD).[5]
>
> The VA process consists of three steps:
>
> 1. Setting up an interview by a trained VA staff member at home (or another appropriate place)
> 2. Conducting a structured interview to collect information on signs and symptoms of illnesses and events that the deceased had before death
> 3. Interpreting the interview data to diagnose the most probable COD (historically, this was done by physicians; however, automated methods are now widely available).[6]

Currently, the Bangladesh Bureau of Statistics periodically conducts censuses and surveys, and produces a wide range of vital statistics. The Ministry of Health and Family Welfare (MOHFW) also conducts Demographic and Health Surveys. The Directorate General of Health Services has a Management Information System Division that also regularly produces vital statistics.

Birth and death notification and registration

Issues with completeness of birth and death registration persist.

As of April 2018, the online Birth Registration Information System (BRIS) held nearly 163 million registered births in Bangladesh – an impressive total considering that the projected population for the country in 2021 is more than 171 million. There are, however, several outstanding issues regarding registrations. In 2015, although close to 12 million births were registered, only 0.61 per cent of these births were registered within the stipulated 45 days and only 4.35 per cent were registered within 1 year.[7]

In terms of registration completeness (Box 2), in 2015, only about 0.5 million births out of an estimated 2.7 million (19 per cent) were registered.4 Registration of deaths in Bangladesh has proved an even greater challenge than that of births. In 2015, for example, only about 12.6 per cent of deaths were registered.

5   de Savigny et al. Integrating community-based verbal autopsy into civil registration and vital statistics (CRVS): system-level considerations. *Global Health Action* 2017; 10:1272882.

6   Senanayake CH. *Fellowship profile: Country-specific adaptation of a SmartVA DHIS2 integration module for Sri Lanka*. CRVS country perspectives. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, the University of Melbourne and Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka; 2019.

7   Bangladesh Office of the Registrar General. *Birth Registration Information System (BRIS) report*. Dhaka, Bangladesh: BORG; 2018.

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Box 2: What is registration completeness and why is it important?

Without reliable vital statistics and resulting completeness estimates, it is impossible to know where to focus improvement measures and potential civil registration and vital statistics (CRVS) interventions. A complete CRVS system is the best and most cost-effective source of routine, timely and detailed data on births, deaths and causes of death. However, globally, around one-third of births and one-half of deaths are not registered. In CRVS systems where not all births and deaths are registered, the accurate measurement of registration completeness should be a core function.[1]

The completeness of registration is defined as the percentage of actual births or deaths in a population that are registered. It is the number of registered births or deaths divided by the actual number of births or deaths in a population.[8]

$$\text{Completeness of birth registration (\%)} = \frac{\text{number of registered births}}{\text{actual number of births}} \times 100$$

Bangladesh has a 'reactive' process for notifying and registering births and deaths.

Bangladesh's process for birth and death registration is currently reactive (Figure 1). When a birth or death occurs, the parents or relatives must collect proof-of-birth or death documents (for example, birth or death declaration certificate) from a health facility, a local government office or health and family planning field staff. They must then apply to register the birth or death online through the BRIS or on paper. There are two separate forms for applying for birth registration (the 'jamani 1' form) and death registration (the 'jamani 4' form). They must then sign and submit a hard copy of the application for registration, along with the supporting documents, to their local registrar's office. After verifying and approving the application, the registrar records the birth or death data in a registry book and uploads the data to the online BRIS. The birth or death certificate is then issued.

8   Fernando L. *Fellowship profile: Improving the quality of birth and death data in Brazil.* CRVS country perspectives. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, the University of Melbourne and Brazil Institute of Geography and Statistics; 2019.

Figure 1 Existing birth and death registration at the registrar's office
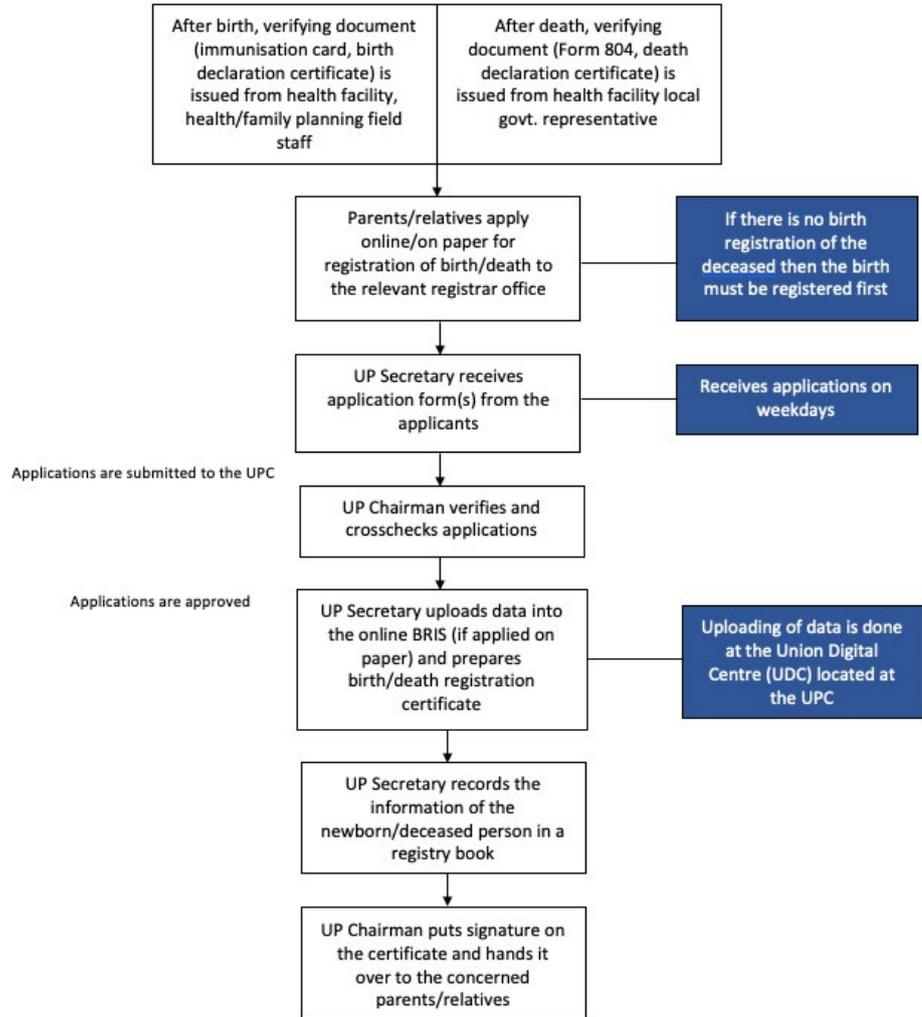
BRIS = Bangladesh Registration Information System; UP = union parishad; UPC = union parishad complex

Bangladesh is working with D4H to develop a more proactive system.

The Government of Bangladesh aimed to improve notification and registration of births and deaths in part by shifting to a more proactive system. As such, the government met with the Bloomberg Philanthropies Data for Health (D4H) Initiative in 2016. Health and family planning field staff could improve registration by engaging in a formal notification process, and a proactive identification and notification model would be developed and piloted in the Kaliganj sub-district. This became the Kaliganj Model.

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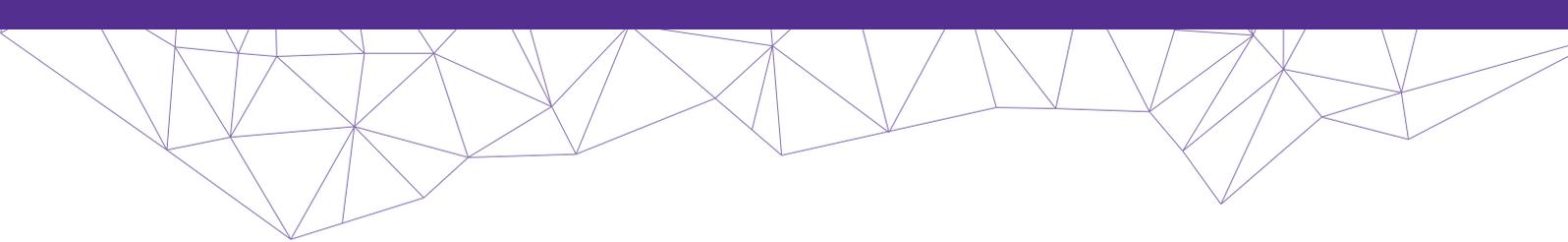
The Kaliganj Model

With support from the Bloomberg D4H Initiative, the Government of Bangladesh piloted the modified birth and death notification and registration processes in Kaliganj sub-district from April 2016 to December 2017. This model was later replicated in 12 other sub-districts and is currently being piloted in these sub-districts.

Three major activities were implemented as part of the Kaliganj Model:

The Kaliganj Model was centred around community sensitisation, orientation, and automated VA training.

1. **Community sensitisation meetings**. At the pilot project's onset, seven community-level meetings were held at each union[9] of the Kaliganj sub-district to sensitise and motivate relevant stakeholders about the importance of birth and death registration, and existing challenges and potential solutions. Parents, local government representatives, field staff, representatives from several government ministries, and sub-district and district-level officials participated in these meetings. Sensitisation meetings were also held at the sub-district level.

2. **Orientation courses.** After the sensitisation meetings, a day-long orientation course was organised for each union. Discussions included the importance of birth and death notification and registration, the existing challenges and potential solutions, and comprehensive orientation about the model. The union parishad[10] chairman, union parishad secretary and all union-level health and family planning staff participated in these courses. The participants were given hands-on training on birth and death registration application forms, the notification process and coordination among different stakeholders.

3. **Training on SmartVA.** Three 4-day training sessions about using SmartVA, or automated VA (Box 3), for community deaths were conducted. Participants included 4 health assistants and family welfare assistants, and 10 supervisors (i.e. assistant health inspectors and family planning inspectors). The participants received hands-on training about death notification and the registration application processes that are required to complete the VA. In the model, death registration is a prerequisite for conducting VA.

> **Box 3: What is automated verbal autopsy?**
>
> SmartVA is an automated verbal autopsy (VA) tool developed by the Institute for Health Metrics and Evaluation, University of Washington. It is a validated questionnaire that is conducted as a 15-25 minute structured interview with family members of the deceased on signs, symptoms and events before death. Data are entered on smartphones or tablets during an interview and sent to a central server. A computer algorithm ('Tariff')[11] then assigns a probable underlying cause of death.

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9 A ward is an administrative division of a city or union that typically elects, and is represented by, one or more councillors. Union is the smallest rural administrative and local government units in Bangladesh. Each union is made up of nine wards. Usually, one village is designated as a ward.

10 A union parishad is formed by directly elected local government representatives, and functions include implementation and management of development activities and projects at the local level.

11 University of Melbourne. *Summary: Improving the quality of mortality statistics in Sri Lanka*. CRVS summaries. Melbourne, Australia: University of Melbourne, Civil Registration and Vital Statistics Improvement, and Bloomberg Philanthropies Data for Health Initiative; 2018.

In the Kaliganj Model, the three steps for the notification and registration process are:

1. **Field assistants receive birth or death notifications (Figure 2)**. Health assistants and family welfare assistants periodically visit every household (every 28 and 45 days, respectively) in their catchment areas to provide health and family planning services. The timing of the visits means that both health assistants and family welfare assistants are aware of any upcoming births. Similarly, they know immediately if a death has occurred in the catchment area. When a child is born, the health or family welfare assistant collects data on the newborn to provide vaccination services and helps parents to fill out the birth registration application form (jamani 1). In the case of a death, the health or family welfare assistant helps the relatives of the deceased fill out the death registration application form (jamani 4). The health or family welfare assistant then submits the completed forms to their supervisor (Step 2).

Figure 2 Birth or death notification process by field assistants
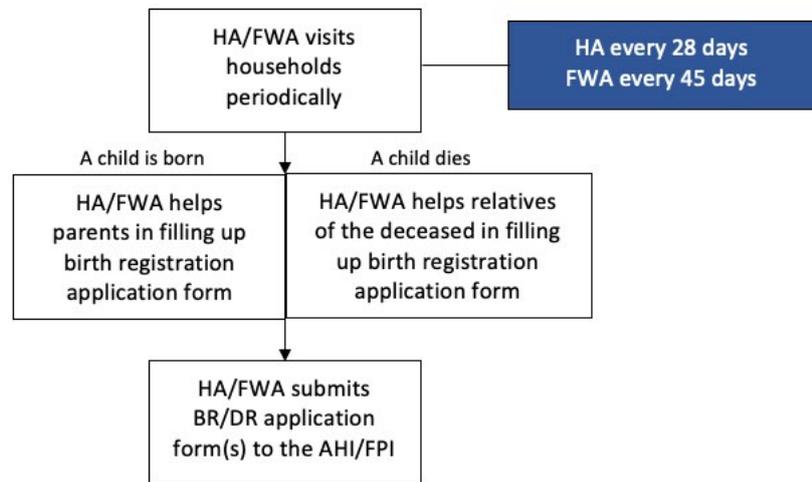
AHI = assistant health inspector; BR = birth registration; DR = death registration; FPI = family planning inspector; FWA = family welfare assistant; HA = health assistant

2. **Field supervisors receive birth or death notifications (Figure 3).** The assistant health inspector or family planning inspector receives a completed birth registration or death registration application form from their health assistant or family welfare assistant. This does create the possibility of the same event being reported more than once. Therefore, the assistant health inspectors and family planning inspectors meet once a week at a community clinic or family welfare centre to crosscheck and verify the information from the application form with the parents or relatives. The assistant health inspector or family planning inspector also de-duplicates the forms. They then submit the forms to the local registrar's office (office of the union parishad chairman) every week.

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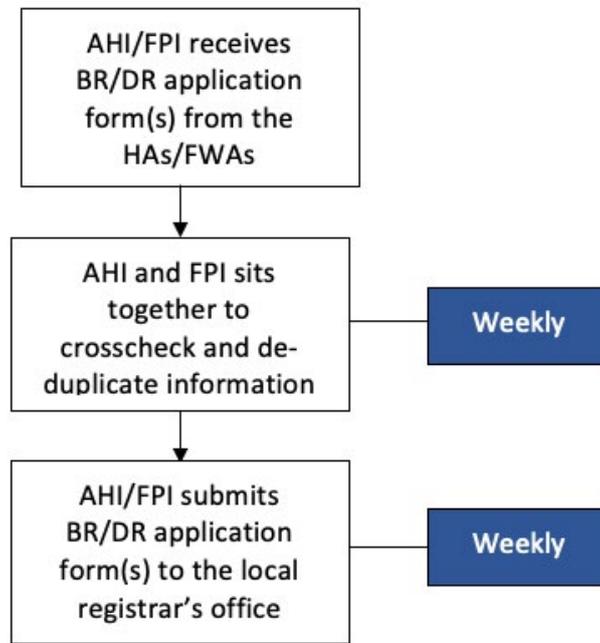**Figure 3 Birth and death notification process by field supervisors**

AHI = assistant health inspector; BR = birth registration; DR = death registration; FPI = family planning inspector; FWA = family welfare assistant; HA = health assistant

3. **Birth or death registration at the registrar's office (Figure 4).** On behalf of the union parishad chairman, the union parishad secretary receives the application form(s) from the assistant health inspector or family planning inspector every week on a specific, mutually agreed day. The union parishad secretary also receives application forms for birth and death registrations throughout the week from those who apply online or in person. The union parishad secretary submits the applications to the union parishad chairman, who verifies and crosschecks the applications by contacting the applicant's parents or relatives over mobile phone, in person or through intermediaries such as the village police. This way, the union parishad chairman also ensures de-duplication of information. Once the application is approved, the union parishad secretary then records the information in a registry book, uploads the data onto the online BRIS, and prepares the birth or death certificates. The data are uploaded from the Union Digital Centre at the Union Parishad Complex.

Figure 4 Birth or death notification process at the registrar's office
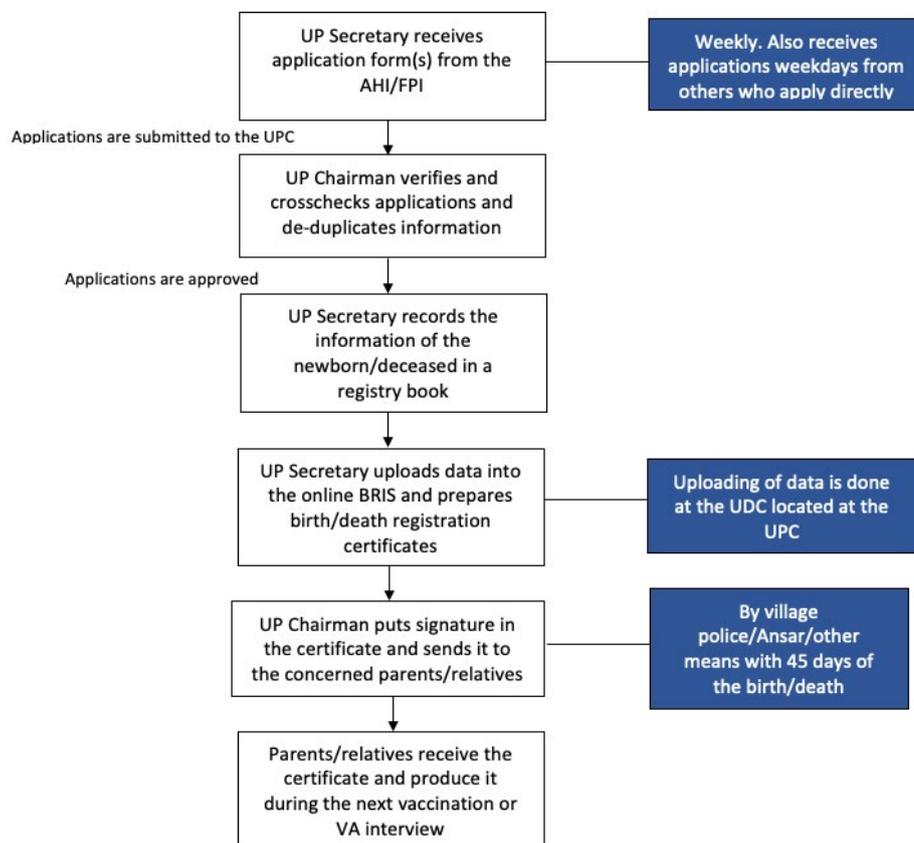
Methods

Aims

This evaluation study aimed to:

- Document the experiences of the local coordinating team, local registrars, and health and family planning field staff involved in the two pilot sub-districts

- Evaluate the effectiveness of the intervention (proactive service delivery under the Kaliganj Model) on birth and death registration in the two pilot sub-districts, and compare the results with a non-intervention sub-district, both within 45 days and between 46 days and 1 year after the intervention

- Calculate completeness of death registration for the two pilot sub-districts before and after the intervention, and for a non-intervention sub-district.

Study design

A mixed methods approach was used to measure the performance of the Kaliganj Model for notification and registration of births and deaths.

Both qualitative and quantitative data were collected. Quantitative data were used to assess the notification and registration situation pre and post-intervention, and to compare the intervention area with non-intervention areas. Qualitative data were used to understand the experiences and challenges for notification and registration.

Study area

The study covered three sub-districts:

- ■ **Kaliganj**, one of five sub-districts in the Gazipur district, is 40 km from the capital city of Dhaka. Kaliganj was selected for piloting because of its proximity to Dhaka and Gazipur cities, making supervision and monitoring easier. Its healthcare system's IT facilities also made implementation of tablet-based VA possible. Most (about 83 per cent) of Kaliganj's population of 265 276 lives in rural areas, and the remaining 17 percent lives in urban areas.[12] Kaliganj's total area is 217.51 km^2.

- ■ **Kapasia**, one of five sub-districts in the Gazipur district, is 70 km from Dhaka city. The Kaliganj Model was introduced here as part of a second of phase piloting in September 2017. Kapasia was chosen because it is also well connected to Dhaka and Gazipur cities. Most (about 96 per cent) of Kapasia's population of 342 162 lives in rural areas, where as the remaining 3.8 per cent live in urban areas.[7] Kapasia's total area is 356.98 km^2.

- ■ **Savar**, one of five sub-districts of the Dhaka district, is 25 km from Dhaka city and is also well connected to Dhaka city. Out of the three sub-districts covered in this evaluation, Savar has the largest population (1 442 885), with most (about 75 per cent) living in rural areas and the remaining 25 per cent in urban areas.[13] Savar's total area is 280.12 km^2. Savar, in which the proactive identification and notification process was not rolled out, was included in this evaluation as a control sub-district.

Kaliganj is the first sub-district where the Bloomberg D4H Initiative piloted VA and the Kaliganj Model (April 2016 to December 2017). The Kaliganj Model was then introduced in Kapasia from September 2017. These two sub-districts were therefore chosen for evaluation in this study. Savar was chosen randomly from nearby sub-districts where there is no such intervention taking place, as a control district to assess the effect of the intervention.

Study period

Quantitative data were collected from these three sub-districts from 2015 to 2017. In Kaliganj, the project did not actually start until September 2016, although it was approved on paper in April 2016. The impact of the Kaliganj Model, therefore, was measured from September 2016 to December 2017 for this sub-district, whereas the impact of the model in Kapasia was measured from September to December 2017.

12   Bangladesh Bureau of Statistics. *Population and Housing Census 2011*, Community Report – Gazipur. Dhaka: Bangladesh Government Press; 2014.

13   Bangladesh Bureau of Statistics. *Population and Housing Census 2011*, Community Report – Dhaka. Dhaka: Bangladesh Government Press; 2015.

Target population, sampling method and sampling size

Quantitative data were collected on the entire population of the three sub-districts. A clustered sampling method was applied to select respondents for qualitative data collection on the notification process. One assistant health inspector or family planning inspector, and one health assistant or family welfare assistant were randomly chosen from each union and municipality of Kaliganj and Kapasia (18 total) to be interviewed.

To collect qualitative data related to registration, 4 union parishad chairman and 18 union parishad secretaries from all unions of Kaliganj and Kapasia were randomly selected and interviewed. Finally, six sub-district and district-level government officials were interviewed using the key informant interview technique to understand the coordination mechanisms present at both district and sub-district levels.

Data analysis

Various methods of data analysis were used, including frequency distribution, percentage calculation, estimation of births and deaths, completeness of birth and death registration, and pivot tables.

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Results of quantitative analysis

Kaliganj sub-district

Birth notification and registration

<div style="float:left">Birth registration increased dramatically in Kaliganj.</div>

The number of births registered within a single year increased from 480 in 2015 to 5925 in 2017 after the intervention – a more than tenfold increase in registration. The percentage of births registered within the stipulated 45 days also increased from 1.4 per cent to 14.8 per cent post-intervention. The monthly average of birth registrations increased by 111.6 per cent after the intervention.

No pre-intervention data are available for notifications, as model health and family planning field staff were not used to report births and deaths. Post-intervention, these staff reported 8008 births, of which 92.8 per cent were reported within 45 days. There was a large gap between the total number of notifications made by health and planning staff (7429) and the total number of registrations made by the registrar offices within 45 days of the event (4179). Only 56.3 per cent of the reported births were registered within 45 days, but this gap did not exist when a longer time (for example, 1 year for both notification and registration of births) was considered. In this case, the total notifications (8008) is less than the total registrations (8254). Birth registration within 1 year of the event (with regards to the estimated number of births in a year) increased dramatically in 2016 and in 2017.

Death notification and registration

<div style="float:left">Death registration and completeness of death registration increased in Kaliganj.</div>

The total number of deaths registered increased from 526 to 2149 after the intervention. Death registration within 45 days also increased from 282 to 1149, marking a 307.5 per cent per cent increase post-intervention. The monthly average of deaths registered increased from 37 in 2015 to 189 in 2017, a 410.8 per cent increase.

Within the study period, health and family planning field staff reported 1961 deaths, and 91.3 per cent of these were reported within 45 days. A gap was also observed between the number of notifications made by health and family planning field staff (1791) and the number of registrations made by the registrar offices within 45 days (1632). Of the reported deaths, 91.1 percent were registered within 45 days, but the gap did not exist when a longer time (for example, 1 year for both notification and registration of deaths) was considered. In this case, there were fewer notifications (1961) than registrations (2456).

The model intervention had a strong positive effect on death registration completeness. In both cases (that is, for deaths registered within 45 days and within 1 year of the event), astounding increases in completeness were observed after the intervention.

Kapasia sub-district

Birth notification and registration

<div style="float:left">Birth registrations also increased in Kapasia.</div>

The number of births registered within a single year increased from 654 in 2015 to 5367 in 2017 after the intervention –a 720.6 per cent increase in registration. The percentage of births registered within the stipulated 45 days increased from 2.1 per cent to 5.1 per cent, and births registered within 1 year increased from 9.5 per cent to 18.4 per cent post-intervention. The monthly average of birth registration increased by 295.5 per cent after the intervention.

During the study period, health and family planning field staff reported 2520 births, of which 64.9 per cent were reported within 45 days. A major gap was observed between the total number of notifications made by the health and family planning field staff (1630) and the

total number of registrations made by the registrar offices within 45 days of the event (1129), which means that only 69.3 per cent of these reported births were registered. This gap did not exist when a longer time period (for example, 1 year for both notification and registration of births) was considered. In this case, the number of notifications (2520) was less than the number of registrations (4061). The percentage of births registered within 1 year of the event (compared to the estimated number of births in a year) increased dramatically within just 4 months of the intervention.

Death notification and registration

The number of deaths registered increased from 523 before to 1107 after the intervention. Death registration within 45 days increased from 286 to 439, marking a 53.5 per cent increase. The monthly average number of deaths registered increased by 322.5 per cent.

Within the study period, health and family planning field staff reported 587 deaths, of which 69.7 per cent were reported within 45 days. In Kapasia, the registrar offices registered more deaths than the health and family planning field staff within 45 days (439 versus 409). Again, this gap increased when a longer time period for both notification and registration of deaths (1 year) was considered.

Death registration and completeness of death registration also increased.

The model intervention had a strong positive effect on the completeness of death registration. In both cases – that is, for deaths registered within 45 days and within 1 year – a large increase in predicted completeness was observed within just 4 months of the start of the intervention.

Savar sub-district

Birth notification and registration

Savar, the control district, saw no significant changes in birth nor death registration.

No significant changes were observed for birth registrations within 45 days, 1 year or >1 year after the event. The year-to-year changes in percentage of births registered were due to natural trends already present in Savar.

Death notification and registration

As for births, no significant changes were observed for death registrations within 45 days, 1 year or >1 year after the event. The year-to-year changes in percentage of deaths registered were due to natural trends already present in Savar. No significant changes were seen regarding completeness of death registration for either case (that is, for deaths registered within 45 days and within 1 year of the event).

Comparing sub-districts

Birth notification and registration

Early birth registration increased in the intervention sub-districts.

The number of births registered increased during the intervention period in both Kaliganj and Kapasia, and decreased in Savar for unknown reasons (**Table 1**). The intervention had a positive effect on early birth registration (that is, within 1 year of the birth) in Kaliganj and Kapasia (**Figure 5**). During the intervention period, the number of birth registrations within 1 year in Kaliganj was higher than in Kapasia and Savar, although Kaliganj has the smallest population of the three sub-districts.

Table 1 Births registered within 1 year of the event, 2015–2017

Year	Kaliganj	Kapasia	Savar
2015	480	654	2441
2016	3307	673	2582
2017	5925	5367	1836
Total	**9712**	**6694**	**6859**

Figure 5 Comparison of number of births registered in each sub-district, 2015–2017

The intervention increased the number of births registered within 45 days in Kaliganj and Kapasia, whereas Savar remained unchanged (**Figure 6**). Analysis of the average number of births registered with and without the intervention revealed an increase in birth registration in the intervention areas. Finally, during the intervention period, the percentage of births registered (compared with the estimated number of births) increased in Kaliganj in 2016 and continued to increase in 2017. It also increased in Kapasia in 2017, whereas it decreased in Savar during the intervention period.

Figure 6 Comparison of births registered within 45 days in each sub-district, 2015–2017

Death notification and registration

The intervention increased death registrations within 1 year of the death in Kaliganj and Kapasia (Table 2). The intervention had a positive effect on early death registration (that is, within 1 year of the death) in Kaliganj and Kapasia (**Figure 7**). During the intervention period, total death registration in Kaliganj was higher than in Kapasia and Savar, even though Kaliganj has the smallest population of the three sub-districts.

Table 2 Death registrations within 1 year of the event, 2015–2017

Year	Kaliganj	Kapasia	Savar
2015	371	48	660
2016	685	217	669
2017	2056	1408	862
Total	**3112**	**1673**	**2191**

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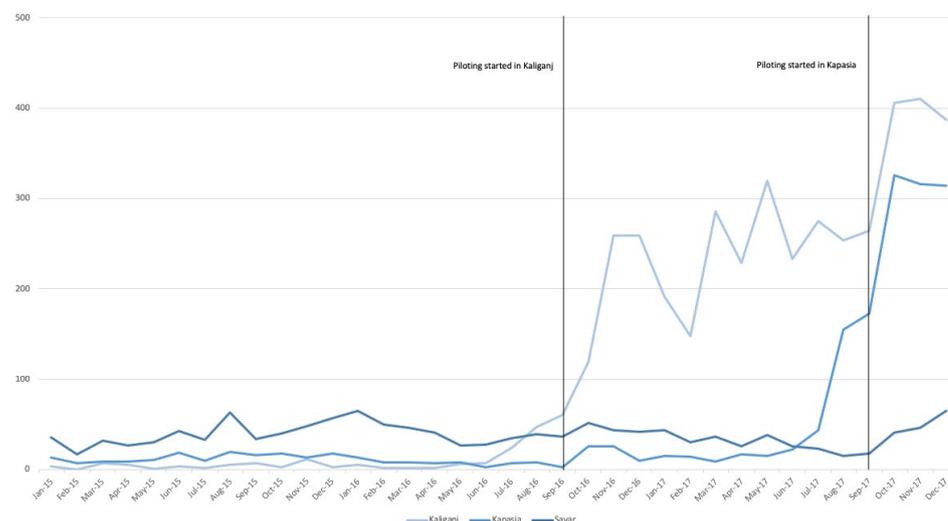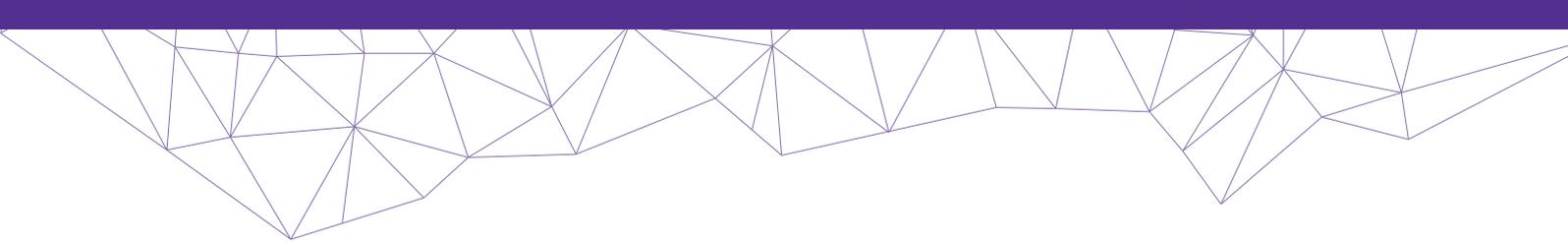
Figure 7 Comparison of number of deaths registered in each sub-district, 2015–2017
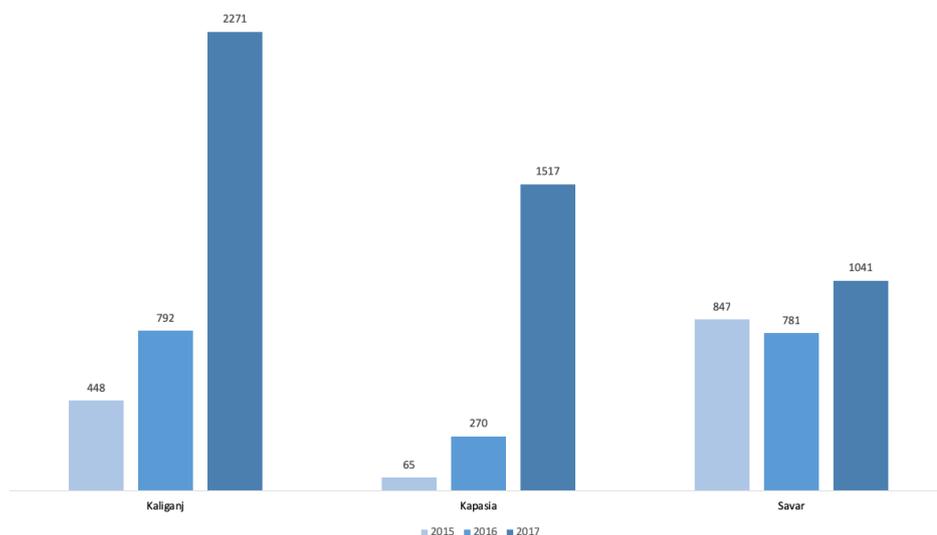
As with births, the intervention increased the number of deaths registered within 45 days in Kaliganj and Kapasia, whereas Savar remained unchanged (**Figure 8**). Analysis of the average number of deaths registered with and without the intervention revealed an increase in death registration in the intervention areas. The Kaliganj Model had a positive effect on the completeness of death registration in both Kaliganj and Kapasia. For deaths registered within 45 days and also within 1 year of the event, a large increase in completeness was found for both the sub-districts, whereas there were no significant changes observed in Savar (**Figures 9 & 10**). As seen in **Figure 10**, completeness of death registration within 45 days increased by 20.6 per cent from 2016 to 2017 in Kapasia and by 50.7 per cent from 2016 to 2017 in Kaliganj.

Figure 8 Deaths registered within 45 days in each sub-district, 2015–2017
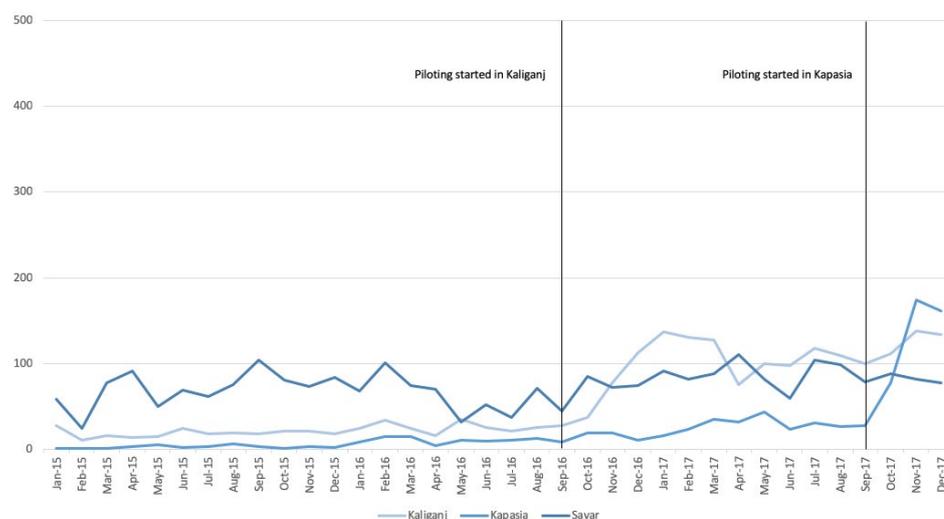
Figure 9 Completeness of death registration within 1 year in each sub-district, 2015–2017
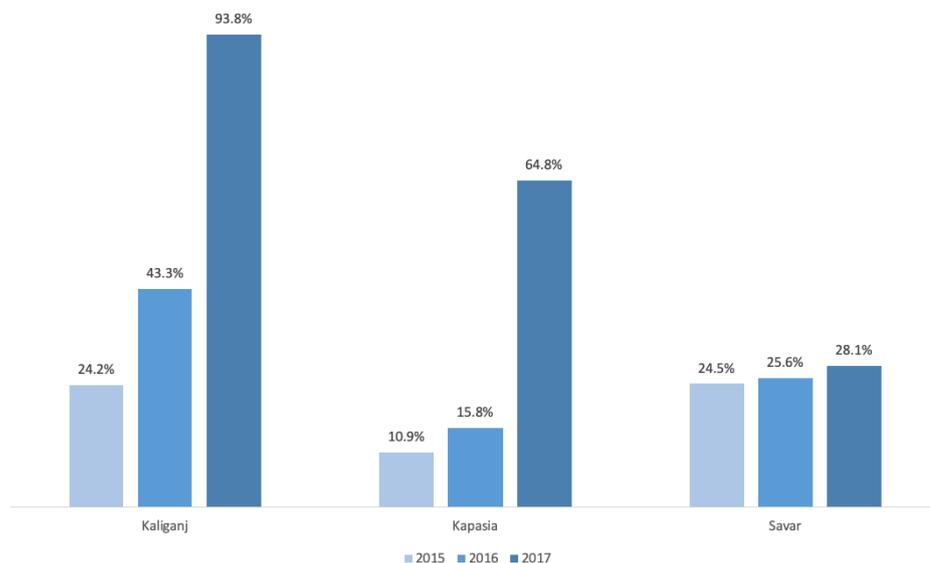
Kaliganj: 2015 24.2%, 2016 43.3%, 2017 93.8%
Kapasia: 2015 10.9%, 2016 15.8%, 2017 64.8%
Savar: 2015 24.5%, 2016 25.6%, 2017 28.1%

■ 2015   ■ 2016   ■ 2017

Figure 10 Completeness of death registration within 45 days in each sub-district, 2015–2017

Kaliganj: 2015 17.2%, 2016 29.4%, 2017 80.1%
Kapasia: 2015 10.5%, 2016 13.6%, 2017 34.2%
Savar: 2015 22.4%, 2016 24.2%, 2017 26.2%

■ 2015   ■ 2016   ■ 2017
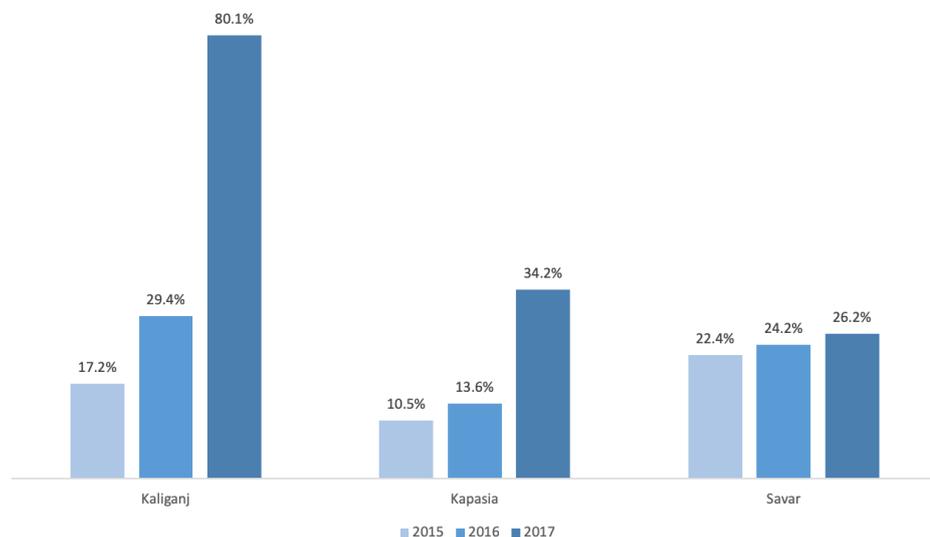
In all three sub-districts, most birth registrations were delayed whereas death registered were not.

All three sub-districts had one common feature. If the model intervention period is not considered, then most birth registrations were delayed whereas most deaths were registered within a few months of the event. For example, from January 2015 to June 2016, the percentages of births registered within 45 days (out of the total births registered) were 0.6 per cent in Kaliganj, 1.0 per cent in Kapasia and 0.7 per cent in Savar. In comparison, the percentages of deaths registered within 45 days (out of the total number of deaths registered) during this same time period were 53.7 per cent in Kaliganj, 52.8 per cent in Kapasia and 52.1 per cent in Savar.
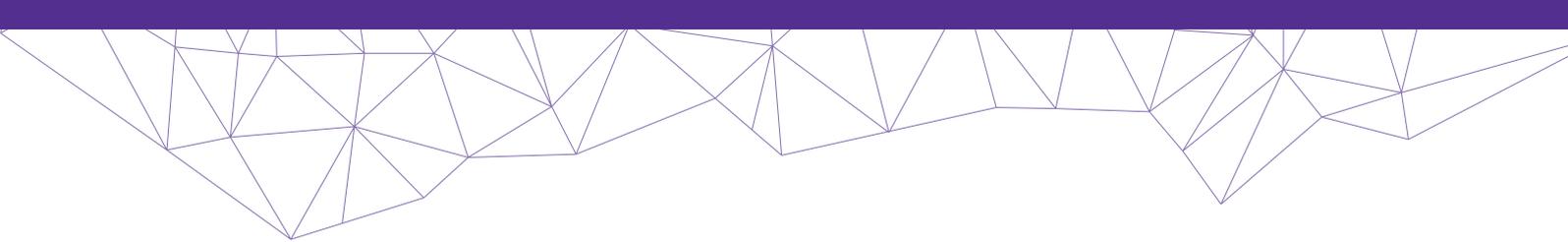
Results of quantitative analysis

Health and family planning staff, and the union parishad chairmen and secretaries were interviewed. Their responses are summarised in the next two sections.

Health and family planning field staff

The following points summarise the responses from health and family planning field staff:

- All the respondents were
  - oriented or trained on birth and death application forms and notification and registration processes
  - familiar with the Kaliganj Model of birth and death notification and registration
  - aware of the standard operating procedure (SOP) for the field staff, and believed that the SOP was useful.

- Although most respondents (29 out of 36) knew about the circular of 2014 issued by the MOHFW, three assistant health inspectors and four health assistants did not.

- All the respondents were aware of the importance of birth and death registration, although their specific responses varied. They were more specific when addressing the importance of death registration than birth registration.

> Health and family planning field staff were generally aware of birth and death notification and registration processes and importance.

- Responses about the importance of birth registration varied, from identifying the correct date of birth and getting an identity to population control and planning for development.

- Respondents felt that death registration mainly helps to
  - complete VAs
  - distribute wealth and properties to heirs
  - identify CODs.

- Respondents were asked why they were not involved in birth and death notification before the Kaliganj Model. The reasons are, from most to least important:
  - their authority did not instruct them
  - there was no process for them to get involved in birth and death notification
  - they did not know that they should report
  - they did not have enough logistical support.

In addition, the health and family planning field staff involved in birth and death notification were faced with two major types of challenges:

- Challenges during initial months, which included
  - unavailability of the National Identity (NID) card or birth certificate of the parents or deceased person
  - lack of cooperation from registrar office staff.

- Continuing challenges, which included
  - poor internet speed at the Union Digital Centers (UDCs)
  - poor capacity of the BRIS server
  - unwillingness of the parents or relatives to pay registration fees

- movement of pregnant women to their child's father's residence to give birth
- delays in parents naming the newborn
- delays in death registration if the death is a police case
- unavailability of birth certificate of the deceased
- unwillingness of parents to do early birth registration
- lack of human resources at the union parishads
- poor communication infrastructure.

These challenges were largely a result of parents and relatives being generally uneducated and unaware of the importance of birth and death registration. Parents and relatives were also unaware of the need for an NID or relevant certificates to access certain services.

Union parishad chairmen and secretaries

The following points summarise the responses from union parishad chairmen and secretaries:

- Most of the respondents (13 out of 17) were trained on birth and death application forms, notification and registration process.

- All but one of the union parishad secretaries from Kapasia were familiar with the Kaliganj Model of birth and death notification and registration.

- Most respondents (15 out of 17) knew about the circular of 2014 issued by the MOHFW.

- All respondents acknowledged that engaging the health and family planning field staff for birth and death notifications was an effective and successful initiative. The reasons for this effectiveness were that

  - the union parishad is short on human resources, so engaging the health assistants and family welfare assistants helped support the union parishad

  - village police are less educated and often they cannot collect information correctly

  - health assistants and family welfare assistants provide various health services to mothers and children, so they are best placed to collect information

- All respondents were aware of the importance of birth and death registration. Their responses were similar to those of the health and family planning field staff.

- They believed that birth registration is important because

  - it is a citizen's legal right

  - a birth certificate is the first proof of identity of a person

  - it is the first time the state recognises that a person exists.

- They also stated that birth registration is necessary to

  - get enrolled at school at the appropriate age

  - gain access to different services such as receiving a NID, passport, marriage registration, various licences, marriage registration, land mutation and bank accounts

  - prove inheritance rights

  - prevent child marriage and child labour

> Union parishad chairmen and secretaries were generally aware of birth and death notification and registration processes and importance.

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- calculate the correct age of a person, and estimate population, birth rate and so on of a country
- identify a person's name, gender and so on.
- ■ Respondents noted that death registration is important for
  - inheritance of the wealth of the deceased by the heir(s)
  - determination of the age of the deceased and estimation of population death rates
  - updating the voter list (decedents are deleted)
  - accessing various services such as land mutation, family pension, insurance policy claims and withdrawal of money from a bank account.

Some respondents (5 of 17) believed that health and family planning field staff were involved in birth and death notification before implementation of the Kaliganj Model but that their involvement was irregular. The remaining respondents replied that there was no instruction given to the health staff from their superiors.

The respondents described the challenges of registering births and deaths within 45 days. These included:

- ■ Parents being unaware of the importance of birth and death registration
- ■ Applications lacking identity documents, NID cards, parents' birth certificates, and proof of birth or death
- ■ The health assistants and family welfare assistants not signing the applications
- ■ The BRIS server being very slow
- ■ Fake or wrong information being given intentionally
- ■ Parents not getting the Expanded Programme on Immunization (EPI) card within 45 days, so they apply for birth registration late
- ■ Parents taking time to name their child
- ■ Some applications not being submitted on time (that is, submitted after 45 days)
- ■ Most applications having errors and incorrect information on them
- ■ Parents wanting to change information about the baby even after registration
- ■ Parents not wanting to pay the registration cost.

Union parishad chairmen and secretaries reported several challenges regarding verification, record management and certificate issuance during the registration process, and grouped them into behavioural and institutional challenges. Behavioural challenges included:

- ■ Lack of awareness of registration-related costs (applicants did not submit late fees or data entry fees)
- ■ Difficulty of verification if the applicants were not the parents

Union parishad chairmen and secretaries reported a number of behavioural and institutional challenges during the registration process.

- ■ Pressure from teachers on students to lower their official age
- ■ Delayed and cumbersome registration because of submission of fake identification such as EPI cards, NIDs and birth certificates
- ■ Challenging and time-consuming verification and crosschecking of information because application forms often included vague information
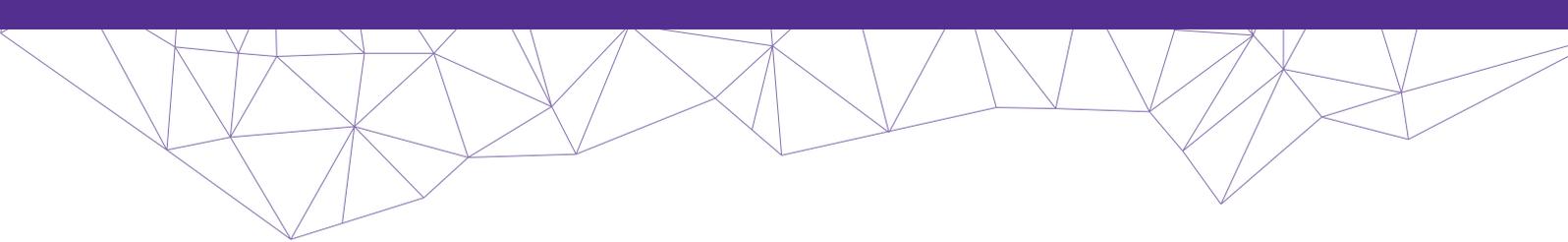
- ■ Reluctance of village police to distribute the certificates
- ■ Reluctance of union parishad members to crosscheck and sign the applications.

Institutional challenges included:

- ■ Lack of human resources at the union parishads; union parishad secretaries were always overwhelmed with duties and responsibilities
- ■ Lack of BRIS server capacity; data entry during the day was nearly impossible, so it had to be done at night
- ■ Slow internet speeds
- ■ Load shedding of electricity
- ■ Unavailability of old data in the BRIS, making it difficult to issue duplicate certificates
- ■ Lack of logistical and communications support for village police.

The respondents suggested a wide variety of solutions to overcome the existing challenges, including:

- ■ Increase union parishad staff numbers
- ■ Provide combined training to health and family planning staff, union parishad chairmen and secretaries so all staff are aware of their own and mutual duties and responsibilities
- ■ Ensure that applications are filled in correctly
- ■ Ensure that schools provide authentic birth certificates
- ■ Improve and increase the BRIS server's capacity
- ■ Set up a division-wide server instead of one single server
- ■ Improve internet speed
- ■ Engage upazila nirbahi officers to correct certificates
- ■ Hold awareness-building campaigns
- ■ Engage ORG to send official letters to union parishad chairmen and members, and the village police asking them to support these initiatives
- ■ Ask the health assistants and family planning inspectors to send notifications online
- ■ Appoint a district-wide officer whose sole responsibility is birth and death registration.

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Discussion

The data showed that the Kaliganj Model intervention brought about encouraging and positive impacts on early registration and completeness of registration in the piloting areas of Kaliganj and Kapasia.

A change in management process

Official instructions (for example, circulars or office orders) are not enough to improve the system. The instructions or decisions must be followed by appropriate actions through a proper change management process. Kotter's 8 step change model[14] was used during the piloting period in Kaliganj and later in Kapasia. The process included:

Official instructions must be complemented by a proper change management process to improve the notification and registration process.

- Training relevant office personnel about the necessary changes to create a sense of urgency, create change leaders and form clear visions
- Providing the appropriate tools and equipment to remove obstacles
- Making adaptations based on experience, to make the new changes permanent and feasible
- Ensuring regular and continuous monitoring and supervision of actions, so the new actions become an integral part of the organisational culture.

In Kaliganj and Kapasia, the health and family planning field staff, their supervisors, the union parishad chairmen and members, and other union parishad staff were sensitised, oriented and trained. As a result, these staff recognised the importance of the Kaliganj Model, and demonstrated a clear awareness about the importance of birth and death notification and registration. They were trained on SOPs. Continuous monitoring and supervision, and necessary adaptations, were also implemented.

During the piloting period, some contextual adaptations were made, including the following:

- The upazila nirbahi officer of Kaliganj had regular coordination meetings every two weeks with the health and family planning field staff and the registrar's office staff, which in turn created a habit of inter-agency coordination and solved some initial inertia issues.
- UDC, a privately owned data entry company, enters the data in the BRIS and prints certificates. UDC charges a fee for these services, creating delays in registration. A union parishad chairman resolved this through agreed understandings between the registrar's office and UDC.

Institutionalising notifications

Some issues in the notification system remain.

The Kaliganj Model demonstrated a health system can be effectively and efficiently engaged in the process of births and deaths notification. This engagement significantly increased both notification and registration of births and deaths, as evident in the findings. However, this engagement process needs to be further modified. For example, the system cannot recognise duplicated notifications. This creates the extra challenge of having to crosscheck the applications.

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14   Kotter JP. *Leading change*. Massachusetts: Harvard Business Review Press; 2012.

Notification and registration gap

A major gap was observed both in Kaliganj and Kapasia regarding the number of birth notifications and registrations. Health and family planning field staff made more birth notifications (within 45 days of the birth) than the registrar's offices registered. A similar gap was also seen for death notifications and registrations in Kaliganj. This gap was due to several sociocultural and institutional issues, such as:

- ■ Lack of cooperation from the registrar's offices

- ■ Unavailability of NID cards or birth certificates of parents or deceased person

- ■ Lateness of applications (that is, submitted after 45 days)

- ■ Reluctance of the health or family welfare assistant or union parishad member to certify the application.

These issues, which appeared during the initial phase of piloting, were addressed and minimised through various mechanisms, and continuous monitoring and supervision.
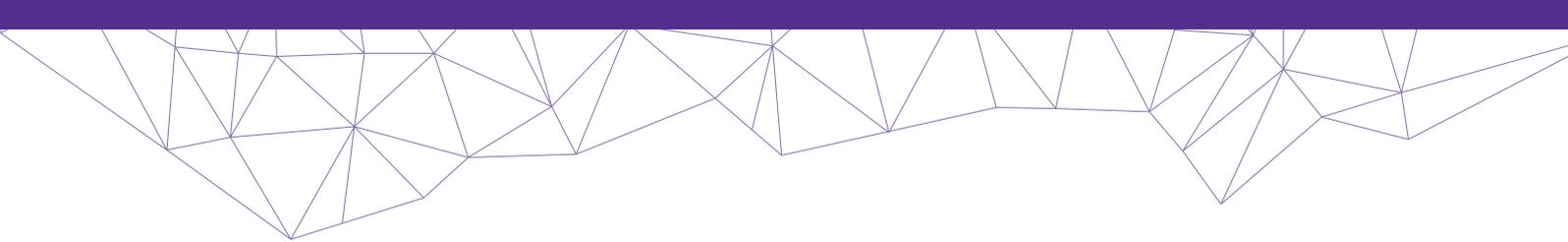
However, other reasons continue to impair the process of registration within 45 days. Interestingly, this gap did not exist when longer periods for registration was considered. This meant that the registrar's offices eventually closed the gap, and registration numbers surpassed notification numbers. This could be because of:

- ■ An increased number of notifications and applications submitted directly by people other than the health and family planning assistants

- ■ Longer registration times that enabled the registrar's offices to deal with challenges such as

  - poor internet speed

  - poor capacity of the BRIS server

  - lack of union parishad human resources (doing registrations at night)

  - delays in naming the newborn

  - parent's unwillingness to register

  - non-availability of birth certificates of the deceased.

Interestingly, in Kapasia, there are fewer death notifications than registrations. One probable reason is that death notification is more complex and requires more documents, such as birth certificates, to be attached with the application. These birth certificates are often not available. Moreover, it is not culturally appropriate to request registration from the family of the deceased soon after the death.

The aspect of time should be considered. The stipulated 45 days for registration may be too short to complete registration. Given the behavioural and institutional challenges described, 45 days may make it impossible to meet the benchmark. Several other countries have a longer time for registration. In Australia and New Zealand, for example, birth or death registration is mandatory within 60 days, whereas in Sri Lanka and Ireland, the timeframe is 90 days. The Kaliganj and Kapasia registrar's offices, however, are bound by the Birth and Death Registration Act of 2004 and its subsequent rules, which stipulate 45 days for reporting or notification.

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Attitudes towards civil registration

Behaviours and attitudes towards birth and death registration in Bangladeshi society play a significant role in early birth registration and completeness of death registration. These aspects include:

- **Low levels of education.** People have poor knowledge about the processes and requirements for registration. They do not attach required documents of proof with applications, and do not want to pay late fees or data entry costs. They are also unaware of the 'bigger picture', in that early registration is significant for proper health planning and decision-making. As such, people tend to register births or deaths only when it becomes a necessity.

- **Lack of incentive.** Since birth and death registration is not linked with any immediate necessities (except legal compulsion), people are not incentivised to register early or at all. They may also be unaware that birth registration is a legal obligation and right for their newborn.

- **Adherence to tradition.** Especially in rural areas, children are generally born in their maternal grandmother's house. Expecting mothers usually stay at their parents' house from the later months of pregnancy to about 2 months after the birth. This cultural norm makes early registration challenging. Another tradition is that parents may take their time to name the newborn, and do not want to register the birth before a name is chosen. In this case, after the birth the parents seek suggestions for names from their parents, relatives and religious leaders, making the name-choosing process a time-consuming one.

- **Information manipulation.** Due to various sociocultural norms,[15] people tend to manipulate information, particularly information related to birth registration. Undue influence on the registrars to manipulate registration information is a common phenomenon in Bangladesh. People often provide fake or vague information, want to change their names or dates of births or deaths even after registration, and submit fake documents of proof to manipulate data. This practice impedes the information verification process, making timely registration a challenge.

> Lack of education and incentive as well as social and traditional norms may act as barriers to registration.

Institutional challenges

Several institutional challenges inhibit early registration and completeness of registration. These include:
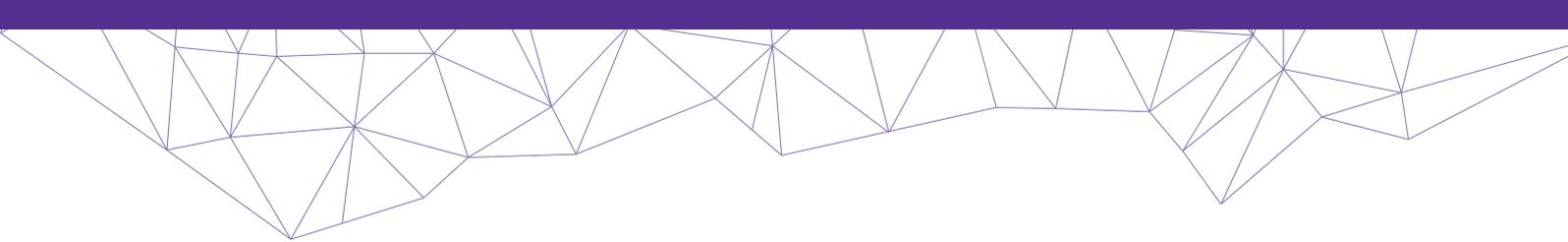
- **Inadequate information and communications technology (ICT) infrastructure.** Although Bangladesh has impressive mobile internet coverage, fixed broadband coverage is very low, especially in rural areas. This has resulted in unreliable and slow internet speeds in the registrar's offices in sub-districts and rural areas. Because slow speeds prevent data entry into the online BRIS, registration cannot always be completed. During daytime working hours, internet speeds are even slower, making the issue worse. Moreover, not all union parishad secretaries have the computer literacy to comfortably complete the ICT-based registration process, forcing them to rely on the UDC. This creates another working layer that causes delay.

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15   Norms may include preferences for certain jobs that are limited to certain age groups, legal requirements and education levels, causing people to manipulate their ages.

- **Inefficient BRIS.** BRIS is a standalone system built in 2010. It has several limitations in capacity, information verification and processing, report generation, interoperability and availability of old data. Unfortunately, during daytime working hours, the BRIS server cannot process data entry and verification requests from across the country. The union parishads have to use the system at night. During the past few years, the BRIS has occasionally stopped working and been shut down automatically, compounding the dismal conditions of registration ICT. The BRIS also does not have a built-in notification process. The system is focused on birth registration, although death registration can also be done. It does not show any online reports on death registrations, and one cannot directly verify death registration-related information using the BRIS.

- **The ORG is only 2 years old.** The ORG became permanent after the completion of the Birth and Death Registration Project 2001–2015. Building a robust and functioning CRVS system in Bangladesh will require an effective and efficient ORG. Unfortunately, the current ORG lacks managerial and technical personnel, including key staff like a database manager, system analyst and network engineer. UNICEF staff are currently supporting the ORG's ICT infrastructure, as the ORG lacks the technological environment necessary for its functions.

- **Scaffolding issues.** Several scaffolding issues hinder birth and death registration. Among them is the lack of consistent and continuous electricity in rural areas, which affects online registration, internet connectivity, data entry and office management. This challenge is complex and does not have a straightforward solution. The lack of human resources at the union parishads is another major challenge. Recently, the government appointed accountants and office assistants at the union parishads, although too few. The village police also need logistical and communications support to distribute certificates. Inter-agency and interpersonal miscommunication and lack of cooperation also present challenges.

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Recommendations

This report makes six recommendations to improve the birth and death notification and registration process in Bangladesh.

Recommendation 1. To scale up the Kaliganj Model across the country, the registrar's offices and the health services offices at all levels should receive extensive training. Topics should include the importance of birth and death notification and registration, and the existing challenges and probable solutions. The participants should receive hands-on training on birth and death registration application forms, the notification process, and how to coordinate the process among the different stakeholders.

Recommendation 2. The Government of Bangladesh should focus on developing the ORG into a fully functional and effective organisation within next 2 years. The following activities should be implemented immediately:

- Revise the existing organisational chart to incorporate more technical, managerial and monitoring personnel. As the respondents suggested, a district-level officer with adequate office support to monitor and supervise birth and death registration activities at the field level would be helpful.

- Prioritise the capacity-building of ORG staff to make these staff specialists in birth and death notification and registration.

- Allocate the ORG an adequate budget, with appropriate delegated financial power so that it can independently execute its plans and allocate expenditures on its own. This will enable the ORG to plan and respond to issues in a timely manner.

- Equip the ORG with its own ICT infrastructure.

- Provide further legal and policy support to make the ORG an adaptable organisation with interoperability with other CRVS agencies.

Recommendation 3. The upcoming Birth and Death Registration System (BDRS) should be free from the limitations of the existing BRIS. For example, the BDRS should:

- Allow a variety of agencies to submit notifications, both online and offline, so that different notifiers can complete notifications easily.

- Allow notifiers to notify using a mobile phone and the unstructured supplementary service data code, if there is no internet or computer access, and make digital notification mandatory. Only registered notifiers with a BDRS account will be able to notify this way. Even a non-agency person who wants to report a birth or death must have a BDRS account. Once an agency makes a notification, it should be treated as final unless or until the modification or revision of information is absolutely necessary.

- Uniquely identify each reported birth or death with a birth notification number (BNN) or death notification number (DNN). This BNN or DNN will automatically be turned into the respective BRN of DRN after successful registration. Before registration, the BNN or DNN can be used as reference to prevent data manipulation and to prevent duplication of birth and death registrations.

- To make this digital notification process efficient and effective, train the staff of all relevant agencies on the online notification in particular and the registration process in general. Trainees should include the registrars' offices and their staff, health assistants, family welfare assistants, nurses, teachers, physicians, nongovernment organisation workers and religious leaders.

- Reward the top-performing notifiers from each union every month (to be done by the ORG).

Recommendation 4. To improve service delivery, each registrar's office should host a registration week every month. During this week, the registrar's offices should focus on providing services for birth and death registration. The ORG should develop an SOP and fund the registrar's offices every year as part of its budget. The ORG should reward the top-performing registry officers from each sub-district every year.

Recommendation 5. There should be country-wide awareness-building campaigns on early birth and death registrations for the public throughout the year for at least next 2 years. These should be complemented by community sensitisation meetings in each union to sensitise and motivate relevant stakeholders such as parents, religious leaders, local elites, teachers and local government representatives on the importance of birth and death registration, existing challenges, and solutions to overcome the challenges. Electronic and print media should be an integral part of these campaigns.

Recommendation 6. Given its focus on birth registration, the ORG should start to focus more heavily on death registration, especially given that sociopolitical issues arise as a result of incomplete death registration. A notable example is the problem of 'ghost voters' faced by the Election Commission of Bangladesh. Accurate birth and death registration will also be important for developing population registries, such as the one the Bangladesh Bureau of Statistics is developing based on its ongoing National Household Database survey. Also, death registration is crucial for the production of accurate and timely vital statistics and should be a priority for the ORG.

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CRVS country overview: Bangladesh. CRVS summaries.

CRVS systems need well-functioning civil registry offices. CRVS summaries.

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Topic 2: CRVS governance and architecture.

Topic 3: CRVS processes.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Courses

https://crvsgateway.info/courses

Enterprise architecture/business process mapping for countries.

Estimating the completeness of birth and death registration.

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:

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