DATA QUALITY ASSESMENT REPORT

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Data Quality Assessment of Specific Reproductive Health Indicators in Selected Public Health Facilities in Bangladesh

icddr,b

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Acronyms

ANC	Antenatal Care
CC	Community Clinic
CHCP	Community Health Care Providers
CS	Caesarean Section
DGFP	Directorate General of Family Planning
DGHS	Directorate General of Health Services
DH	District Hospital
DHIS2	District Health Information Software, Version 2
DQA	Data Quality Assessments
DQR	Data Quality Review
EmONC	Emergency Obstetric & Newborn Care
EOC	Emergency Obstetric Care
FP	Family Planning
FWV	Family Welfare Visitors
HMIS	Health Management Information System
HR	Human Resource
icddr,b	International Centre for Diarrhoeal Disease Research, Bangladesh
IIC	Inter Indicator Consistency
IMR	Infant Mortality Rate
IUD	Intrauterine Device
LMIC	Low and Middle-Income Countries
MCH	Medical College Hospital
MCHD	Maternal and Child Health Division
MCH-FP	Maternal and Child Health-Family Planning
MCWC	Maternal and Child Welfare Center
MIS	Management Information System
MMR	Maternal Mortality Ratio
MNCH	Maternal, Newborn and Child Health
MoH&FW	Ministry of Health and Family Welfare
MR	Menstrual Regulation
MRM	Menstrual Regulation with Medication
MVA	Manual Vacuum Aspiration
NVD	Normal Vaginal Delivery
PAC	Post-Abortion Care
PNC	Postnatal Care
PPFP	Postpartum Family Planning
RESP	Research Evaluation Statistics and Planning
RHIS	Routine Health Information System
SD	Standard Deviation
SDG	Sustainable Development Goals
U5MR	Under-5 Mortality Rate
UH&FWC	Union Health & Family Welfare Centre
UHC	Upazila Health Complex
WHO	World Health Organization

Executive Summary

Introduction

World Health Organization (WHO) considers health management information system (HMIS) as one of the core components of health system building blocks and described it as a fundamental element to ensure health system performance. HMIS is essential to evidence-based decision making and its introduction is emphasized in the Sustainable Development Goals (SDGs) as the monitoring tool to track progress of the health system.

Bangladesh has a pluralistic health system with both public and private healthcare facilities. The Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP) are the two different directorates under the Ministry of Health and Family Welfare (MoH&FW) who provide essential health, population, and nutrition services throughout the country. Both directorates have different HMIS system; DGHS adopted DHIS2 where DGFP developed their own online based MIS system.

High-quality HMIS data on maternal and newborn healthcare are essential to identify gaps in the current facility-based management, to develop effective interventions and to track progress. Despite its significance, data from HMIS has numerous challenges such as missing values, inaccuracy, biases, unidentified sources, poor utilization of tools, and absence of standard guidelines, all of which might compromise the quality of data. Hence, it is imperative to conduct regular data quality assessments (DQA) to identify the gaps and the opportunities for improvement.

Vital Strategies, a global public health non-profit organization, works to increase the use of data in public health policymaking. On that account, under the “Data-Driven Policy to Improve Women’s Health” program of Vital Strategies, icddr,b, a Bangladesh-based international health research institution, conducted a DQA in different levels/tiers (primary, secondary and tertiary) of selected public health facilities in the country. The study evaluated HMIS data on women’s health related key indicators, such as, contraceptive methods, menstrual regulation (MR), post-abortion care (PAC), obstetrical complications, and childbirths in Bangladesh, focusing on the data quality dimensions of completeness, accuracy and internal consistency.

Methodology

The DQA was conducted in the following six phases: a) desk review; b) selection of the indicators; c) selection of the health facilities; d) data collection and processing; e) data validation and analysis; and f) stakeholder consultation workshop.

WHO DQA toolkit, guidelines and tools to review the data quality at the facility level was used for the desk review component of the study. Reports and publications on the country’s health care service

delivery system and the data management system of the DGHS and the DGFP was also included in the desk review process. Based on the desk review, two dimensions of data quality evaluation criteria were considered in this DQA: i) Dimension 1: Completeness of data that includes completeness of facility reporting and completeness of indicators; and ii) Dimension 2: Internal consistency of the reported data that includes presence of outliers, inter-indicator consistency (IIC), and consistency between reported data & original records.

Twenty-one indicators related to women's health were selected for the DQA based on the desk review and consultations with the DGHS and DGFP stakeholders. Health facilities of different levels provide different types of services. Therefore, indicators across all levels of health facilities were not the same.

A total of 112 public health facilities of all three levels (48 of which were under the control of DGHS and 64 under DGFP) from eight administrative divisions of Bangladesh were selected for physical data collection using a multi-stage cluster sampling technique. The DGHS facilities included two Medical College Hospitals (MCH), 14 District Hospitals (DH), 16 Upazila Health Complexes (UHC), and 16 Community Clinics (CC). Simultaneously, 16 Maternal and Child Welfare Centers (MCWC), 16 Sadar Clinics, 16 Maternal and Child Health-Family Planning (MCH-FP) units, and 16 Union Health and Family Welfare Centers (UH&FWC) were included from the DGFP facilities.

We obtained data from the health facility register books and the data reported in the HMIS platform for a period of 12 months, from July 2021 to June 2022. Based on the WHO DQA toolkits, paper-based data collection tools were developed to extract data from the health facility registers. In addition, informal discussions with the reporting focal persons from 35 different health facilities were conducted to understand the reporting process and related challenges.

Results

Among the selected 48 facilities from the DGHS and 64 facilities from the DGFP, field data was collected from 40 DGHS facilities and 55 DGFP facilities. The remaining 17 facilities were excluded from field data collection because of either they were non-functioning or do not preserve paper-based reports or found to be reported as a single facility in combination with others.

Dimension 1: Completeness of data

A total of 95 facilities from both the DGHS and the DGFP were considered for analyzing completeness of facility reporting. Overall, 91% of all monthly reports from both the DGHS and the DGFP facilities were submitted in the server, which was above the WHO recommended cut-off value (75%). It was found that 98% of the DGHS facilities and 85% of the DGFP facilities have submitted their monthly reports into their server. Overall completeness rate of indicator data was found to be 90%. Completeness rate was 65% in the DGHS facilities, 10% lower than the WHO recommended cut off value. In the DGHS server, more than one-third (35%) of the values were missing compared to the data collected in hard copies. Medical

College Hospitals had the highest completeness rate and the Upazila Health Complexes had the lowest completeness rate among all the DGHS facilities. Completeness rate of indicator data was found to be 100% in all tiers of the DGFP health facilities. No missing values were found in the DGFP database because of showing the empty cells as zero (0) by default. Therefore, it could not be identified from the DGFP database, if the specific service was unavailable or no one had received the service.

Dimension 2: Internal consistency of reported data

Presence of outliers (significantly distinct value of an indicator compared to other monthly data per facility) within a dataset may not be an error, rather an area that needs further exploration and verification during routine data quality check and visits by the facility managers and/or supervisors. Analysis from the current study revealed that in both DGHS and DGFP database, presence of outliers was within the acceptable limit of WHO cut-off value. Overall, 2.1% outliers were identified among 13,612 reported values of total 86 facilities from both DGHS and DGFP. Among them, 276 (2%) moderate outliers (±2-3 SD from mean of each indicator) were found in 75 facilities and 19 (0.1%) extreme outliers (at least ±3 SD from mean of each indicator) were found in 15 facilities; some of the facilities had both moderate and extreme outliers.

Inter indicator consistency (IIC) was done to see if the summation of the number of normal deliveries, number of caesarean sections (CS) and the number of forceps/vacuum/breech delivery was equal to the summation of the number of live births and the number of still births. IIC was calculated for three tiers of the DGHS facilities except CCs, and all four tiers of the DGFP facilities. Overall, the IIC of the reported data was more than 99% in both DGHS and DGFP facilities, which was significantly higher than the WHO recommended value of difference between predictable indicators (<10%).

Consistency between reported data and the original records was verified for the data available in the databases. Out of 13,612 reported values, overall data accuracy rate was 92%, considering the WHO cut-off value of at least 75% accurate values in the facility reports. Accuracy rate was 94% and 86% in the DGHS and the DGFP facilities, separately. Among the DGHS facilities, under-reporting & over-reporting of data were found to be 3% and 11%, respectively. On the other hand, the DGFP facilities had 2% of under-reporting and 4% of over-reporting of data.

Informal discussion with the reporting focal persons

Although a total of 112 health facilities were visited, only 35 of the focal persons (18 from DGHS and 17 from DGFP facilities) agreed to provide us time and discuss informally the entire reporting process and challenges faced by them. Because we visited the health facilities during working hours when most of the reporting focal persons were busy with their regular office activities. Findings from the informal discussion were as follows:

- A dedicated focal person for reporting was assigned in the sub-district and above level facilities of DGHS except the Community Clinics, where service providers perform this responsibility.

However, the Family Welfare Visitors (FWVs) from all levels of the DGFP facilities were accountable for the monthly reporting; no dedicated reporting focal person was assigned for the task.

- A large portion of the reporting focal person/FWVs/service providers from both DGHS and DGFP facilities have not received any specific training on data entry or on the HMIS reporting system.
- Many of the CCs and the union-level facilities do not have laptop or internet connection; occasionally, the server failed to update the status of submitted data because of unidentified technical issues.
- Duplication of the reporting system, i.e. data collection in hard copies and entering those into the server simultaneously, is a burden, especially when there is scarcity of designated human resources.
- Hardcopies of the reporting forms are not supplied on a regular basis; no budget was allocated to print-out the forms at the local level.

Stakeholder consultation workshop

A stakeholder consultation workshop was conducted with the government stakeholders (from DGHS and DGFP) and representatives from Vital Strategies to share the preliminary findings of the study and to discuss the way forward to address the bottlenecks identified through this DQA.

The DGHS officials acknowledged that due to shortage of reporting focal persons, quality of data may be compromised in some of the health facilities. The MIS unit of DGHS arranges frequent trainings for the reporting focal persons. However, often trained staff are getting transferred to other positions and places and further creating a vacuum. Compared to the initial deployment of DHIS2 in the DGHS facilities, data and reporting quality have improved a lot, however, discrepancies still exist in the DHIS2 data. The DGHS is focusing on these issues and taking initiatives to further improve the overall data reporting system and the quality of data.

The DGFP officials also mentioned about the shortage of human resources (HR) for reporting. To address the dire need of HR, recruitment of new staffs at divisional and district levels has already been approved by the government. It is quite challenging for the service providers of the union level health facilities of DGFP to provide service and maintain MIS reporting simultaneously, but no position for the reporting focal person for these facilities has ever been created. DGFP is currently going through a transition of both paper-based and paperless reporting system. It is expected that by June 2024, they will be able to start the e-MIS in all of their health facilities in the country.

Conclusions

Overall completeness rate for facility reporting from both DGHS and DGFP facilities was above the WHO recommended cut-off value. Missing values has been a major finding in the DGHS server, and completeness of indicator reporting was found to be less than the WHO cut off value. No missing values

were found in the reports submitted by the facilities under DGFP as the MIS server of DGFP shows the empty cells as zero (0) by default. Presence of outliers in all DGHS and DGFP health facilities were within the acceptable limit of WHO cut-off value. Irrespective of the levels, all DGHS and DGFP facilities have maintained data accuracy rate of more than the WHO recommended value. A dedicated focal person for reporting was assigned in most of the DGHS facilities except the CCs; however, the Family Welfare Visitors (FWVs) were accountable for the reporting from the DGFP facilities. Many of the reporting focal persons from DGHS and DGFP lack training on data entry or on the HMIS reporting system.

Recommendations

- Develop a guideline for reporting focal persons specifying the operational definitions of all the indicators to be reported.
- Provide comprehensive training on digital data reporting system and indicators' definitions to all reporting focal persons from the DGHS and the DGFP health facilities.
- Establish a single reporting system, and deploy dedicated reporting focal persons at all levels of health facilities under the DGHS & the DGFP.
- Create a positive culture of data use within the DGHS and the DGFP by establishing routine data quality assessments, routine dialogue and information sharing to help inform health leaders to make data-driven decisions and policies.

Introduction

According to the World Health Organization (WHO), an effective health management information system (HMIS) "ensures the generation, analysis, dissemination, and use of reliable and timely information on health determinants, health system performance, and health status" (1). Throughout the world, strong HMIS are widely acknowledged to play a crucial role in evidence-based decision-making and strengthening health service delivery (2, 3).

HMIS is one of the six core components of the WHO framework for Health Systems Strengthening (HSS). Improving a nation's HMIS is important to produce accurate and reliable health information, which is an essential strategy to support public health reform initiatives in the developing nations (4). Many low- and middle-income countries (LMICs) have introduced national HMIS for collection and management of facility-based data on the provision of healthcare services routinely (5, 6). The Sustainable Development Goals (SDGs) 2030, including other global initiatives, emphasize the importance of regular health information systems in monitoring progress and enabling course correction (7-9).

For the past 50 years, the government of Bangladesh has made impressive efforts to provide health and family planning (FP) services to its citizens. Therefore, the country has seen remarkable improvements in a number of health indicators, including the infant mortality rate (IMR), maternal mortality ratio (MMR), under-5 mortality rate (U5MR), and some others (10-14). To improve women's reproductive health, the government introduced emergency obstetric care (EOC) and maternal health voucher scheme (13, 15, 16). Despite the first-rate efforts and rewarding achievements in different indicators, a vast proportion of the Bangladeshi population still does not have access to quality healthcare services (12, 17-20). Half of the childbirths are still occurring at home, putting the mother and newborn at risk of different health hazards (10, 18, 20).

High-quality HMIS data on maternal and newborn healthcare are required to identify gaps in the current facility-based management, develop effective interventions, and track progress (21). Studies from Uganda and Kenya demonstrate that district health information software, version 2 (DHIS2) deployment has enhanced reporting of immunization coverage, antenatal care (ANC) visits, and facility delivery rate (14, 22, 23). Evidence from Laos shows that effective application of DHIS2 on maternal and child health (MNCH) surveillance data improved service delivery (24). Since the implementation, DHIS2 is used in more than 76 nations across the globe to gather and analyze health data (25). Decision-making in health care is aided by the routine health information system (RHIS) (5).

Despite its significance, data from HMIS has numerous challenges such as missing values, inaccuracy, biases, unidentified sources, and poor utilization of tools (26-28). Moreover, inadequate skills, heavy workload, lack of effective monitoring system, and the absence of standard guidelines are some of the difficulties that healthcare workers encounter concerning HMIS tools and indicators (27). All of these might compromise the effectiveness of attaining health goals both at the national and sub-national levels (1). Hence, it is imperative to conduct regular data quality assessments (DQA) in order to identify

potential gaps and opportunities for improvement. Data quality refers to the suitability of data to serve its intended purpose (1); and the DQA examines if the data meets defined standards, such as completeness, accuracy, consistency, and timeliness (28-30).

Vital Strategies, a global public health non-profit organization, was first conceptualized in 2003 in New Delhi, India, with a vision to create an equitable and effective public health systems. To strengthen public health, Vital Strategies, in collaboration with the government, works to redesign and support locally driven, evidence-based policies and practices. In addition, to enhance governments' access to data, Vital Strategies partnerships with the governments across the globe to increase the use of data in public health policymaking – creating scopes for the government to allocate funds and develop policies and programs that will ensure the positive impact on people's health (28).

On that account, under the "Data-Driven Policy to Improve Women's Health" program of Vital Strategies, icddr,b, conducted a DQA to strengthen and increase the capacity of the relevant stakeholders for data-driven management of the sexual and reproductive healthcare service system at the public health facilities in Bangladesh. The study evaluated the quality of reporting of women's health related key indicators, such as, contraceptive methods, menstrual regulation (MR), post-abortion care (PAC), obstetrical complications, and childbirths in Bangladesh HMIS data. This work focused on the data quality dimensions of completeness, accuracy and internal consistency throughout different tiers of the public health facilities under the Ministry of Health and Family Welfare (MoH&FW) in Bangladesh.

Country profile

Bangladesh has a pluralistic health system with both public and private healthcare facilities (19). The Ministry of Health and Family Welfare (MoH&FW) is in charge of coordinating, and regulating health, family planning, and nutrition programs across the country. The Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP) are the two different directorates under the MoH&FW (31). Both of the directorates provide essential health, population, and nutrition services throughout the country and have a strong focus on the rural areas of Bangladesh (31). These two directorates use different Health Management Information System (HMIS) for the health facilities under their authority; DGHS adopted the District Health Information Software 2 (DHIS2), whereas DGFP developed their own online based MIS system to store information. However, the vast majority of private facilities in Bangladesh are not covered by the DGHS MIS (13). Evidence from some African countries also shows the similar scenario, where private health facilities do not report through DHIS2 (14, 32, 33).

The Health Systems Information Project at the University of Oslo in Norway created DHIS2 in 2006 to enhance data gathering and usage (17). In 2009, the MoH&FW in Bangladesh adopted the DHIS2 for improving the quality of routinely collected health data (34). MIS-DGHS deployed the open-source DHIS2 with assistance from the German Gesellschaft für Internationale Zusammenarbeit (GIZ) (35).

Since 2011, the MoH&FW has been using DHIS2 as the country's official health information system. Currently, Bangladesh is one of the largest deployers of DHIS2 in the world (34), that covers data from 75% of the public health facilities in the country (36). As of February 2019, the data reporting rate via DHIS2 was 98% (34).

On the other hand, the Research Evaluation Statistics and Planning (RESP) unit, which was previously a part of the DGFP, was transformed into the Management Information System (MIS) unit (37). There was no consistent method of reporting on the performance of the National Family Planning Program before the establishment of the MIS unit. Since its inception, the MIS has worked to create a regular system of data gathering and reporting on the results of the national programs for family planning, reproductive health, and maternal and child health services (37).

To record primary data, the health facilities in Bangladesh mostly use registers and forms, such as, the delivery register, antenatal care (ANC) register, postnatal care (PNC) register, emergency obstetric & newborn care (EmONC) service register, etc. Thereafter, at the end of each month, all of these data from the facilities are compiled and summarized in the respective national standard forms/reports, such as, delivery services monthly DHIS-2 report, ANC services monthly DHIS-2 report, PNC services monthly DHIS-2 report, EmONC services monthly DHIS-2 report at the DGHS facilities; and MIS-1, MIS-2, MIS-3, and MIS-4 forms at the DGFP facilities by the Nursing Supervisors, Midwives, and the Family Welfare Visitors (FWV) of the respective health facilities. Prior to being electronically recorded into the DHIS2 database of the DGHS, or the MIS of the DGFP, the summary data are examined and approved by the respective facility head.

Study objective

General objective:

- To assess the data quality of reproductive health-related indicators of the health management information systems (HMIS) of Bangladesh.

Specific objectives:

- To assess the completeness of reporting by different levels of health facilities;
- To assess the completeness of indicators' data reported by the facilities;
- To identify the outliers if present in the reported data;
- To evaluate the level of consistency between indicators, if and where applicable;
- To assess the consistency of reported data and the original records.

Team structure

Under the leadership and direct supervision of a project coordinator with significant experiences in FP/MR/Abortion/PAC research and evaluation activities, a team of three medical graduates, one qualitative researcher, and one statistician were actively involved in carrying out the DQA. Each team member was assigned to different activities of the DQA based on their expertise and skill. Additionally,

an administrative officer provided all necessary supports regarding logistics, field visits, organization of the stakeholder meetings and workshops, and budget management.

Along with the team at icddr,b, the government stakeholders actively participated in the DQA activity. Initially, the icddr,b team developed the study methodology and then shared with the key relevant stakeholders from the DGHS and the DGFP for their review and feedback. The methodology was finalized after addressing their feedback. Representatives from the MIS unit of both the directorates (DGHS and DGFP) have visited to several study sites and monitored field data collection. The icddr,b team independently performed the data analysis and drafted the preliminary report. The preliminary findings were shared with the government counterpart for their validation, and subsequently the report was finalized based on the suggestions from the stakeholders from the DGHS and the DGFP. Engagement of government stakeholders ensured high quality of the DQA activity as well as ownership of the government with this study.

Methodology

This activity was initiated to assess the quality of reporting of routine HMIS data on sexual and reproductive healthcare service system in Bangladesh. In order to do so, we retrieved information from individual health facility registers and the national HMIS database. Furthermore, WHO data quality review (DQR) module's analysis guideline has been utilized for developing the report (28-30). Following methods were carried out to conduct this assessment:

A. Desk review;
B. Selection of the indicators;
C. Selection of the health facilities;
D. Data collection and processing;
E. Data validation and analysis;
F. Stakeholder consultation workshop.

A. Desk review

A desk review was conducted using the WHO Data Quality Assurance (DQA) toolkit (29, 30, 38-40), guidelines and tools to review the data quality at the facility level. The toolkit contains three modules, each with specific methods and tools.

- **Module 1: Framework and metrics:** lays out the overarching framework of the DQA and introduces the methodology, metrics and the contents of the toolkit (40).
- **Module 2: Discrete desk review of data quality:** main guidance document for conducting a desk review of data quality (30, 39). The contents of this guidance document apply to both the discrete desk review of data quality and the continuous review of data quality.
- **Module 3: Site assessment of data quality - data verification and system assessment:** involve assessing data quality at health facilities and districts (29, 38).

The desk review also included Bangladesh health system related publications to get a clear understanding of the health care service delivery system and the data management system of both the directorates under the MoH&FW, the Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP). While conducting desk review, we finalized the sexual and reproductive health indicators of women to collect primary data through health facility visit.

Dimensions of data quality

In this assessment, we used the WHO data quality evaluation criteria as a guide (28-30, 39), considering the following two aspects:

- Dimension 1: completeness of data;
- Dimension 2: internal consistency of the reported data.

Dimension 1: Completeness of data

The completeness of data is assessed by measuring whether all the entities which are supposed to report, are actually doing so. This applies to health-facility reporting to districts and to district reporting to the regional or provincial levels. For this DQA, the cutoff for completeness was 75% using WHO standards. We considered the following areas of completeness in this activity:

- **Completeness of facility reporting:** this metric measure facility performance on completeness of reporting (28).
- **Completeness of indicators:** this indicator measures the extent to which facilities that are supposed to report data on the selected core indicators are doing so in reality. This is different from the overall reporting completeness, where completeness of specific data elements are being looked at (28).

Dimension 2: Internal consistency of reported data

Internal consistency refers to verifying the consistency between the source data and what has been reported. In the current assessment we have focused on:

- **Presence of outliers:** this examines whether the value of a data in a series is extreme in relation to the other values in the same series. We considered both extreme outliers and moderate outliers for this DQA.
    - **Extreme outliers**: the monthly unit values that are at least ±3 standard deviation (SD) from the mean (28).
    - **Moderate outliers:** the monthly unit values that are at least ±2 SD but <3 SD from the mean (28).
- **Consistency between indicators:** program indicators which have a predictable relationship are examined to determine whether the expected relationship exists between those indicators. In other words, this process examines whether the observed relationship between the indicators, as depicted in the reported data, is that, which was expected. As per WHO recommendation, number of units with at least ±10% difference was considered as breach of consistency during the analysis (28).
- **Consistency of reported data and original records:** this involves an assessment of the reporting accuracy for selected indicators through the review of source documents from the health facilities. This element of internal consistency is measured by a data verification exercise that requires conduction of hospital record review in a sample of health facilities (28). Objective of this data verification exercise is to measure the extent to which the information in the source documents has been summarized and accurately reported to the next level of reporting (28). This allows for errors that occur in data reporting to be identified, and, for specific indicators, provides an estimate of the degree of inaccuracy in the system at the national level (28)..

  For this data verification, data from the source documents, such as from the registers, tally sheets, patient files, were compared with the data reported through the HMIS. This process

was followed in order to determine the proportion of reported results that can be verified from the source documents. According to the WHO guideline, the reported data should fall within ±10% of the source data (28). In other words, the pairs of data elements were expected to fall within ±10% of each other in value. If the reported value for any indicator was not within ±10% of the source data, then it was considered as inaccurate value and had been classified as over-reporting or under-reporting (28). As per WHO recommendation, less than 25% inaccurate value in a report is acceptable (28).

- **Over-reporting:** when less service delivery was found in the source documents than that was reported by the health facility. In this study, reported values that are found at least 10% greater than the source data, was counted as over-reporting during the analysis (28).
- **Under-reporting:** when more service delivery was found in the source documents than that was reported by the health facility. As per WHO recommendation, if the reported value is at least 10% smaller than the source document, was counted as under-reporting during data analysis of the current study (28).

It is the only dimension of data quality that required additional collection of data from the facility register books. Apart from this one, analysis of all other dimensions of data quality was done using the server data.

B. Selection of the indicators

Based on the findings from literature review, six indicators or data elements related to women's health, which were in line with the program objectives, were primarily selected. The list of indicators was then shared with the key stakeholders from the DGHS and the DGFP in two separate meetings. After rigorous review by the DGHS and DGFP stakeholders and based on their suggestion, 15 more indicators were included in the list. Finally, a total of 21 indicators were considered for this DQA. Health facilities of different levels (primary, secondary, and tertiary) or tiers provide different types of services. Therefore, indicators across all levels of health facilities were not the same. The list of indicators along with the levels and number of facilities that provide specific or relevant services are presented in Table 1.

Table 1: List of indicators, and number of the health facilities provide relevant services & expected to report data for the indicators

Indicators/ data elements	Number of facilities							
	Tertiary level	Secondary level		Primary level				
	Division/ district level	District level		Sub-district level			Union level	Village level
	Medical college hospital	District Hospital	MCWC	UHC	Sadar Clinic	MCH-FP	UH&FWC	Community Clinic
Pill	--	--	15	--	12	5	14	9
Condom	--	--	14	--	12	5	14	8
Injectable	--	--	14	--	12	4	14	6
IUD	--	--	15	--	12	4	13	--
Implant	--	--	15	--	12	4	9	--
Tubectomy/Ligation (female)	--	--	15	--	12	4	7	--
Vasectomy (male)	--	--	14	--	12	4	7	--
Manual vacuum aspiration (MVA)	--	--	14	--	11	3	5	--
Menstrual regulation with medication (MRM)	--	--	14	--	10	1	5	--
Post-abortion care (PAC)	--	--	14	--	10	4	5	--
Normal vaginal delivery (NVD)	2	13	15	15	10	2	12	2
Caesarean section (CS)	2	13	14	10	8	1	0	--
Forceps/vacuum/breech delivery	2	13	--	15	--	--	--	--
Livebirth	2	13	15	15	10	2	12	2
Stillbirth	2	13	15	15	10	2	12	2
Pre-eclampsia/ Eclampsia	2	13	15	15	10	2	12	--
Postpartum hemorrhage	2	13	15	15	10	2	12	--
Prolonged/obstructed labour	2	13	--	15	--	--	--	--
Septic abortion	2	13	--	15	--	--	--	--
Postpartum family planning (PPFP)*	2	13	--	15	--	--	--	--
Maternal death	2	13	15	15	10	2	12	2

DGHS health facilities DGFP health facilities

**PPFP is reported under each FP method use in the DGFP facilities but as a separate indicator in the DGHS facilities*

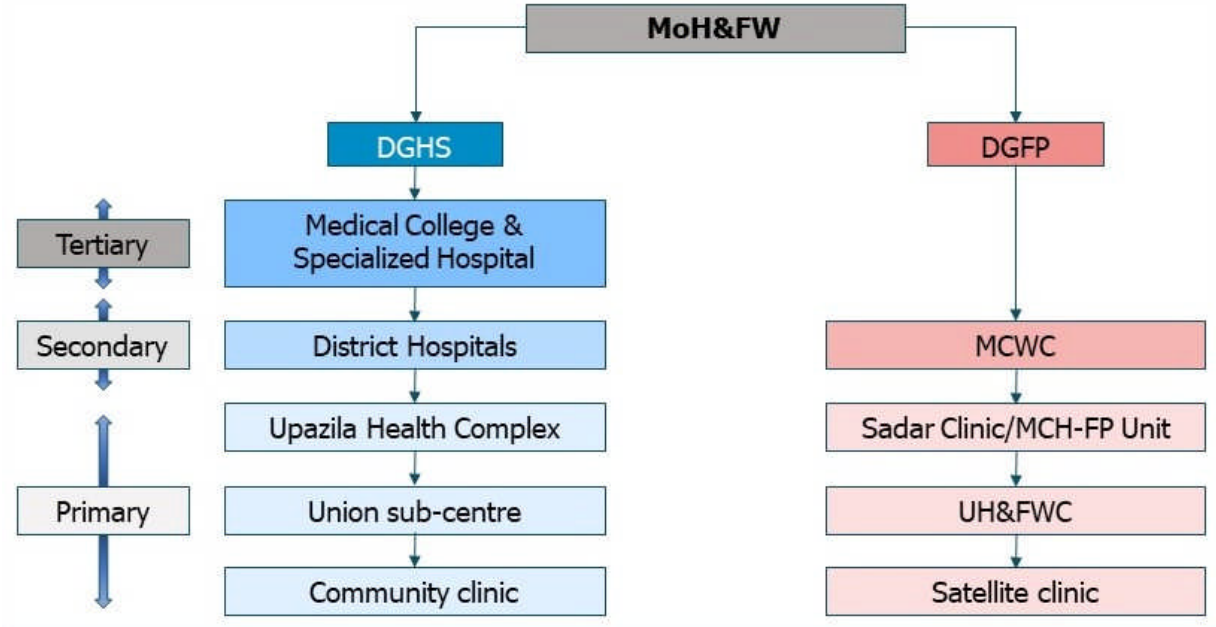
C. Selection of the health facilities

Bangladesh has eight administrative divisions; each division is subsequently divided into a number of districts, which are further divided into upazilas (sub-districts), union councils, and villages. Each division has medical college hospitals, considered as the tertiary level health infrastructure.

There are 64 districts in Bangladesh, overall, with one district hospital (DH) and one Maternal and Child Welfare Center (MCWC) in each district, serving as the secondary level health facilities. The districts have a number of sub-districts or upazilas, functioning as a sub-unit of a district. Each upazila has one Upazila Health Complex (UHC), the first referral health facility at primary level of health care delivery system in the country, along with a Sadar clinic, and a Maternal and Child Health-Family Planning (MCH-FP) unit.

Each upazila is again comprised of numerous unions, the smallest rural administrative and local government unit in Bangladesh. The Union Health & Family Welfare Centers (UH&FWC) and Union Sub-Center were created to offer health services at the union levels. Each union is made up of a number of villages. The lowest tier of healthcare facilities in rural Bangladesh is comprised of community clinics (CC) and satellite clinics, which are located in different villages. Distribution of health facilities in different administrative unit is illustrated in Figure 1.

Figure 1: Organogram of health service delivery system in Bangladesh (35)



To undertake the data quality assessment (DQA) under the current study, we chose health facilities from all of the eight divisions using a multi-stage cluster sampling technique. We considered following inclusion and exclusion criteria during selecting the health facilities:

- **Inclusion criteria:** all levels (primary, secondary, tertiary) of public health facilities providing reproductive healthcare services.
- **Exclusion criteria:** private health facilities, and non-functional public health facilities.

Due to resource and time constraint, representative sample size was not calculated during this study. Initial plan was to select one district from each division, and to select one facility of each tier/level from those districts, and collect data from those health facilities. The primary plan of health facility selection and data collection was shared with the DGHS and DGFP officials in two separate meetings. Based on the meeting discussions and suggestions from the DGHS & DGFP officials, we had to change our initial plan and included two districts from each division in the DQA.

Thus, following simple random sampling, we selected two districts from each division to single out district-level health facilities. Out of 16 selected districts, two districts had medical college hospitals, one in each district, but no district hospitals. The remaining districts had district hospitals only, one in each district, so, a total of 14 district hospitals. On the other hand, all 16 districts had one MCWC in each district. Therefore, cumulatively, from the 16 districts, we selected a total of 32 district-level facilities, including two medical college hospitals and 14 district hospitals from the DGHS, and 16 MCWCs from the DGFP.

Thereafter, we identified 16 upazilas (sub-districts) from the selected districts, one from each district, through simple random sampling. From the selected upazilas, 16 Upazila Health Complexes (UHCs) under the DGHS, and 16 Sadar Clinics & 16 Maternal and Child Health-Family Planning unit (MCH-FP unit) under the DGFP, a total of 48 upazilla level health facilities were included in the list of DQA. Subsequently, through simple random sampling, we selected 16 Union Health and Family Welfare Centers (UH&FWCs) among these upazilas to assess data quality at the union level health facilities. Finally, from each of the union that have been selected in the previous stage, one Community Clinic (CC) was randomly chosen.

Union sub-centers were not considered for this study as findings from the desk review revealed that they do not provide any of the services of interest considered for this DQA. In addition, satellite clinics were not in the sample list because they do not develop a separate monthly report, rather, their activities are being reported along with the respective UH&FWC's report.

Therefore, a total of 112 health facilities, 48 from the DGHS (two medical college hospitals, 14 district hospitals, 16 UHCs, and 16 CCs), and 64 from the DGFP (16 MCWCs, 16 Sadar Clinics, 16 MCH-FP units, and 16 UH&FWCs) were selected for the DQA. The list of the selected health facilities from DGHS and DGFP are shown in Table 2 and Table 3 respectively.

Table 2: List of the DGHS health facilities

Division	District	District level	Upazila level	Community level
		District Hospital/ Medical College Hospital	UHC	Community Clinic
Dhaka	Manikganj	Manikganj 250 Bedded District Hospital	Ghior UHC	Pukhuria CC - Ghior
	Narayanganj	Narayanganj General (Victoria) Hospital	Araihazar UHC	Panchbariya CC - Araihazar
Barishal	Bhola	Bhola 250 Bedded District Sadar Hospital	Daulatkhan UHC	Charkhalifa Kalu Mridha Bari shanglagna CC**
	Patuakhali	Patuakhali 250 Bedded Sadar Hospital	Mirzaganj UHC**	Kakrabunia CC, Mirzaganj**
Khulna	Narail	Narail District Hospital	Lohagara UHC	Lutiya CC, Lohagara
	Jhenaidaha	Jhenaidah 250 Bedded General Hospital	Kaliganj UHC	Bharasimla CC, Kaliganj
Rajshahi	Joypurhat	Joypurhat 250 Bedded District Hospital	Khetlal UHC	Alampur CC, Kheatlal
	Chapai-nawabganj	Chapainawabganj 250 Bedded District Hospital	Shibganj UHC	Candipur CC, Shibganj*
Mymensingh	Sherpur	Sherpur 250 Bedded District Hospital**	Nakla UHC	Danakusha CC, Nakla
	Mymensingh	Mymensingh Medical College Hospital	Bhaluka UHC	Jamirdiya CC, Habirbari*
Rangpur	Lalmonirhat	Lalmonirhat District Hospital	Paatgram UHC	Bangkanda CC, Paatgram
	Rangpur	Rangpur Medical College Hospital	Mithapukur UHC	Rameshbarpara CC, Mithapukur*
Chattogram	Brahmanbaria	Brahmanbaria 250 Bedded District Sadar Hospital	Sarail UHC	Shahbazpur Uttor CC - Sarail
	Khagrachari	Khagrachari District Hospital	Ramgarh UHC	Kagrabil CC, Ramgrah
Sylhet	Habiganj	Habiganj 250 Bedded District Hospital	Ajmiriganj UHC	Abdullahpur CC*
	Sunamganj	Sunamganj 250 Bedded District Sadar Hospital	Tahirpur UHC	Daksinkul CC-Tahirpur

**Not functioning and closed (found during field visit)*
***Do not practice paper-based reporting system*

Table 3: List of the DGFP health facilities

Division	District level		Upazila level		Union level
	District	MCWC	Sadar Clinic	MCH-FP	UH&FWC
Dhaka	Manikganj	Manikganj Sadar MCWC	Ghior Sadar Clinic	MCH-FP Unit, Ghior†	Baliyakhora UH&FWC
	Narayanganj	Narayangonj Sadar MCWC	Araihazar Sadar Clinic	MCH-FP Unit, Araihazar	Duptara UH&FWC
Barisal	Bhola	Bhola Sadar MCWC	Daulatkhan Sadar Clinic	MCH-FP Unit, Daulatkhan*	Charkhalifa UH&FWC
	Patuakhali	Patuakhali Sadar MCWC	Mirzaganj Sadar Clinic	MCH-FP Unit, Mirzaganj	Karabunia UH&FWC
Khulna	Narail	Narail Sadar MCWC	Lohagara Sadar Clinic	MCH-FP Unit, Lohagara†	Dighalia UH&FWC
	Jhenaidaha	Jheniadha MCWC	Kaliganj Sadar Clinic	MCH-FP Unit, Kaliganj†	Simla-Rokonpur UH&FWC
Rajshahi	Joypurhat	Joypurhat Sadar MCWC	Khetlal Sadar Clinic	MCH-FP Unit, Khetlal	Alampur UH&FWC
	Chapai-nawabganj	Nawabgonj Sadar MCWC	Shibganj Sadar Clinic	MCH-FP Unit, Shibganj	Jhilim UH&FWC
Mymensingh	Sherpur	Sherpur Sadar MCWC	Nakla Sadar Clinic	MCH-FP Unit, Nakla†	Nakla UH&FWC
	Mymensingh	Mymensingh Sadar MCWC	Bhaluka Sadar Clinic	MCH-FP Unit, Bhaluka	Habir bari UH&FWC
Rangpur	Lalmonirhat	Lalmonirhat Sadar MCWC	Patgram Sadar Clinic	MCH-FP Unit, Patgram†	Patgram UH&FWC*
	Rangpur	Rangpur Sadar MCWC	Durgapur (Mithapukur) Sadar Clinic	MCH-FP Unit, Mithapukur†	Bara Hajratpur UH&FWC
Chattogram	Brahmanbaria	Brahmanbaria Sadar MCWC	Sarail Sadar Clinic	MCH-FP Unit, Sarail	Aruail UH&FWC
	Khagrachari	Khagrachari Sadar MCWC	Ramgarh Sadar Clinic	MCH-FP Unit, Ramgarh	Patachhara UH&FWC
Sylhet	Habiganj	Habiganj Sadar MCWC	Ajmiriganj Sadar Clinic	MCH-FP Unit, Ajmiriganj†	Shibpasha UH&FWC
	Sunamganj	Durgapasa Sadar MCWC	Tahirpur Sadar Clinic	MCH-FP Unit, Tahirpur	Uttar Sreepur UH&FWC

**Not functioning and closed (found during field visit)*
†conjugated with the Sadar Clinics of the same sub-district & reporting as a single facility

D. Data collection and processing

We obtained data from the health facility register books and the health facility data reported in the HMIS platform for a period of 12 months, from July 2021 to June 2022. Based on the study objectives, we collected women's health and reproductive health-related data from the selected health facilities as well as from the central databases of the DGHS and the DGFP. WHO DQA toolkits lay the basis standardized and holistic approach for data quality assessment. Based on these toolkits, we developed paper-based data collection tools to extract data from the health facility registers.

For data collection, two teams were formed with two experienced researchers in each team, who physically visited the selected health facilities to collect facility reporting data independently. Two days-long training on "Health facility data collection" was conducted to familiarize the researchers with the study objectives and the DQA data collection tools. Before starting the formal data collection from the selected health facilities, field testing of the DQA tool was done in three of the DGHS and three of the DGFP facilities (different from the original sites of data collection) to make any necessary modification in the methodology and the data collection tools based on the findings from the field testing.

In addition to quantitative data collection, the research team members also conducted informal discussions with the reporting focal persons from each facility to understand the reporting process and challenges related to that. The research team visited the health facilities during working hours when most of the reporting focal persons were busy with their official activities. Although we visited a total of 112 health facilities from both the DGHS and the DGFP, only 35 of the focal persons (18 from the DGHS and 17 from the DGFP facilities) agreed to the informal discussion. The discussion was not recorded electronically, but the interviewer took details note of the key discussion points during the interviews. Verbal consent was taken prior to the discussion, and all key discussion points were anonymously documented by the research team members for any future references.

Data from the field was collected between 13 September 2022 and 10 January 2023. Meanwhile, to obtain data from the DHIS 2 server of the DGHS and the MIS server of the DGFP, the icddr,b team formally communicated with the MIS unit under the DGHS and the DGFP for their data sharing. The dataset from the DHIS 2 server of the DGHS was received on 12 February 2023. Concurrently, the team started downloading data from the MIS server of the DGFP on 12 February 2023 and continued until 19 February 2023.

E. Data validation and analysis

The Project Lead supervised and guided the team members to ensure consistency and quality in data collection. We communicated with the key contact person(s) of the selected health facility ahead of our visit and notified about the visit schedule. The research teams maintained an effective system to ensure data quality. To verify the collected data with the DHIS2 and MIS data, we acquired health facility data reported in the HMIS platform from the MIS unit of the DGHS and the DGFP, respectively.

Hard copies of all the quantitative and qualitative data collected were preserved in a locked cabinet inside the Maternal and Child Health Division (MCHD) of icddr,b. Apart from the DQA team members, no one had access to the collected data.

Quantitative data collected during the health facility visits were entered into an excel datasheet and checked thoroughly for any discrepancy. Data from DHIS2 and MIS were entered into another excel datasheet as well. The data was analyzed using STATA (version 15.0). Descriptive statistics were calculated for each dimension of data quality assurance. Cross tabulations were examined to determine the pattern of different types of facilities under the DGHS and the DGFP for each variable.

The qualitative data from the informal group discussion was recorded on hardcopy after taking consent from the participants, then transcribed in local language, Bangla, and later translated in English.

F. Stakeholder consultation workshop

A stakeholder consultation workshop was organized with the key relevant stakeholders from the DGHS and the DGFP. Preliminary findings from the DQA was shared with the key stakeholders for their validation and to draw recommendations. Gaps identified in the DQA and the way forward has been discussed with the stakeholders through a consultative process.

Ethical approval

The ethical clearance to conduct the data quality assessment (DQA) was obtained from the institutional review board (IRB) of icddr,b.

Results

In this section, findings from the facilities of two different directorates, the DGHS and the DGFP, have been described simultaneously.

Among the selected 48 facilities from the DGHS, four community clinics were found to be not functioning and closed during field visit. Representatives from two CCs, one UHC, and one district hospital mentioned that they do not practice paper-based reporting system in their facilities. Therefore, these eight facilities were excluded from the analysis.

Similarly, out of the selected 64 facilities from the DGFP, one MCH-FP unit and one UH&FWC were found to be not functioning and closed during field visit. Seven MCH-FP units were found to be combined with the Sadar Clinics of the same sub-district and reporting as a single facility. So, these nine facilities were also excluded from the analysis.

Dimension 1: Completeness of data

In this DQA, two aspects of completeness have been analyzed following the WHO guideline: i) Completeness of facility reporting; and ii) Completeness of indicator data.

Completeness of facility reporting

A total of 95 facilities from both the DGHS and the DGFP were considered for analyzing completeness of facility reporting. Overall, 91% of all monthly reports from both the DGHS and the DGFP facilities were submitted in the server. It was found that 98% of the DGHS facilities have submitted their monthly report in the DHIS2; on the contrary, 85% of the DGFP facilities have submitted their monthly reports into the MIS database of DGFP (Table 4).

Directorate General of Health Services (DGHS)

Report submission rate was 100% in all tiers of the DGHS facilities except for community clinic (CC). In the 12 months reporting period, a total of 120 reports were expected from the 10 CCs, i.e., one report per month from each facility, but 108 monthly reports were found in the DHIS2 server. Therefore, completeness of facility reporting for CC was 90%. During the reporting period, out of the expected 480 reports, in total, 468 monthly reports were reported into the DHIS2 which made 98% completeness of facility reporting for the DGHS facilities (Table 4).

Directorate General of Family Planning (DGFP)

Among the four types of DGFP facilities selected for the DQA, it was identified that the MCWCs had the highest report submission rate of 94%, followed by the UH&FWCs (93%). Both the Sadar clinics and the MCH-FP units under the DGFP had 75% report submission rate (Table 4).

Table 4: Completeness of facility reporting by facility type

Completeness of facility reporting (WHO recommended cut off value is 75%)					
Facility type	**Number of facilities**	**Expected number of reports**	**Report submitted**	**Report not submitted**	**% of report submitted**
DGHS	**40**	**480**	**468**	**12**	**98%**
MCH	2	24	24	0	100%
DH	13	156	156	0	100%
UHC	15	180	180	0	100%
CC	10	120	108	12	90%
DGFP	**55**	**660**	**564**	**96**	**85%**
MCWC	16	192	180	12	94%
Sadar Clinic	16	192	144	48	75%
MCH-FP Unit	8	96	72	24	75%
UH&FWC	15	180	168	12	93%
Total	**95**	**1140**	**1032**	**108**	**91%**

Completeness of indicator data

Completeness of indicator data was measured for those months, when monthly reports were submitted in the DHIS2 database of the DGHS, and MIS database of the DGFP. Overall completeness rate was found to be 90% (Table-5). In the DGFP facilities, completeness rate was 100%, and in the DGHS facilities it was 65%, which was 10% lower than the WHO recommended cut off value, i.e. 75% (Table 5).

Directorate General of Health Services (DGHS)

The average completeness rate for indicator data is 65% for the DGHS facilities. The analysis was done for 39 facilities where 4,270 records were expected; of which 35% had missing values. Among the four tiers of the health facilities under the DGHS, Medical College Hospitals (MCH) have the highest rate (91%) of completeness of indicator data. However, there were only two MCHs, the smallest number among the four tiers of health facilities. All indicators in MCHs have a completeness rate more than 75% except two: i) Number of forceps/vacuum/breech delivery, and ii) Number of postpartum FP method was used. These two indicators have completeness rate of 71% and 63% respectively (Annex: Table 1.2).

Overall, the District hospitals (13) submitted their reports with a 77% completeness rate which was higher than the WHO recommended cut off value (Table-5). Among those, five have completeness rate lower than the WHO cut off value.

The completeness rate of district hospital data shows that the following three indicators have lower completeness rate than WHO recommended cut off value of 75%: i) forceps/vacuum/breech delivery (46%); ii) septic abortion cases (25%); and iii) maternal deaths (27%) (Annex: Table 1.4).

Though the number of Upazila Health Complexes (UHCs) were highest (15) among the four tiers of the DGHS facilities, completeness rate was found to be the lowest (50%) in those facilities. In the UHCs, nearly half (965 of the 1918 expected records) of the records were found missing (Table 5). At UHCs, only two indicators, number of NVD and number of live births, have completeness rate of more than 75% (Annex: Table- 1.6); all the remaining indicators have lower completeness rate.

Table 5: Completeness of indicator data by facility type

Completeness of indicator data (WHO recommended cut off value is 75%)						
Facility type	**Number of facilities**	**Number of records submitted with values**	**Number of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**
DGHS	**39**	**2764**	**1506**	**4270**	**65%***	**35%**
MCH	2	241	23	264	91%	9%
DH	13	1320	396	1716	77%	23%
UHC	15	953	965	1918	50%*	50%
CC	9	250	122	372	67%*	33%
DGFP	**47**	**10848**	**0**	**10848**	**100%**	**0%**
MCWC	15	4032	0	4032	100%	0%
Sadar Clinic	12	3060	0	3060	100%	0%
MCH-FP Unit	6	924	0	924	100%	0%
UH&FWC	14	2832	0	2832	100%	0%
Total	**86**	**13612**	**1506**	**15118**	**90%**	**10%**

** Completeness is lower than the WHO accepted standards*

Two indicators, forceps/vacuum/breech delivery, and cases with septic abortion, have very low completeness rate of 12% & 19% respectively (Annex: Table 1.6). Completeness rate of 'maternal death' was found to be zero (0) for the UHC during the assessment period (Annex: Table 1.6). Detailed analysis on "Completeness of indicator data" is shown in the Annex section (Table 1.1- Table 1.8).

According to the reports submitted in DHIS2, in the community clinics, average completeness rate for indicator data was lower than the cut off value (67%) (Annex: Table- 1.6). Out of nine Community Clinics, only five was able to maintain the standard level of completeness.

Directorate General of Family Planning (DGFP)

In the MIS database of the DGFP, all the missing values were replaced by '0' (zero). Therefore, the completeness rate was found to be 100% for all tiers of the DGFP health facilities (Table 5).

It was identified that none of the service providers and/or the reporting focal persons from any of the DGHS and/or the DGFP facilities had any documents regarding standard operational definition of the indicators.

Dimension 2: Internal consistency of reported data

In this DQA, three aspects of internal consistency have been analyzed following the WHO guideline: i) Presence of outliers; ii) Consistency between indicators; and iii) Consistency of reported data and original records.

Presence of outliers

Outliers were identified among the non-missing reported values of the DHIS2 of the DGHS and the MIS of the DGFP. Reports from 86 facilities were considered for outlier analysis. Overall, 2.1% outliers were found among 13,612 reported values (Table 6). Among them, 276 (2%) moderate outliers were found in 75 facilities and 19 (0.1%) extreme outliers were found in 15 facilities (Table 6). Some of these facilities overlapped with each other, i.e. some of them have both moderate and extreme outliers.

Directorate General of Health Services (DGHS)

Out of 2,764 records from the DGHS facilities, 2.5% outliers were identified. Among them, 2.3% were moderate outliers, found in 63 facilities, and 0.2% were extreme outliers, found in 5 facilities. Among different tiers of the DGHS health facilities, outliers ranged from 2.1% to 4%. The UHCs had the lowest percentage of outliers (2.1%), followed by the district hospitals (2.3%) and the medical college hospitals (3.3%). The Community clinics (CCs) had the highest (4%) outliers. Extreme outliers were found in the district hospitals and in the CCs (Table 6).

Table 6: Presence of outliers in the monthly report by facility type

Outliers (WHO recommendation: Moderate outlier: ±2-3 SD from mean; Extreme outlier: at least ±3 SD from mean)							
Facility Type	**Number of facilities**	**Number of moderate outliers (% of values with moderate outliers)**	**Number of facilities with moderate outliers**	**Number of extreme outliers (% of values with extreme outliers)**	**Number of facilities with extreme outliers**	**Total number of outliers (% of values with outliers)**	**Total records (missing values excluded)**
DGHS	**39**	**63 (2.3%)**	**30**	**5 (0.2%)**	**4**	**68 (2.5%)**	**2764**
MCH	2	8 (3.3%)	2	0 (0%)	0	8 (3.3%)	241
DH	13	28 (2.1%)	11	2 (0.2%)	2	30 (2.3%)	1320
UHC	15	20 (2.1%)	13	0 (0%)	0	20 (2.1%)	953
CC	9	7 (2.8%)	4	3 (1.2%)	2	10 (4.0%)	250
DGFP	**47**	**213 (2%)**	**45**	**14 (0.1%)**	**11**	**227 (2.1%)**	**10848**
MCWC	15	82 (2.0%)	15	10 (0.2%)	7	92 (2.3%)	4032
Sadar Clinic	12	63 (2.1%)	11	1 (0.03%)	1	64 (2.1%)	3060
MCH-FP Unit	6	21 (2.3%)	5	1 (0.1%)	1	22 (2.4%)	924
UH&FWC	14	47 (1.7%)	14	2 (0.1%)	2	49 (1.7%)	2832
Total	**86**	**276 (2%)**	**75**	**19 (0.1%)**	**15**	**295 (2.1%)**	**13612**

Figure 2: Presence of an outlier for "X" indicator in "Y" district hospital

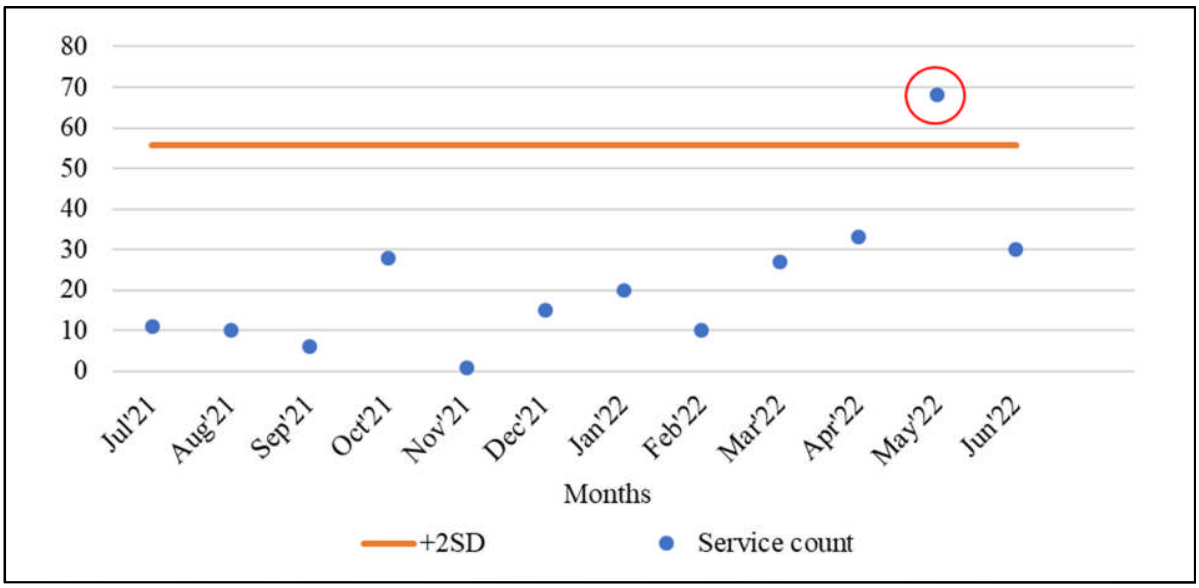


Figure 2 illustrates an example of the presence of moderate outlier through a scatter plot diagram which is showing monthly service count data of "X" indicator at "Y" district hospital . In this particular example, service count was ranging from 1 to 33 except for May 2022 (Red circled), where the count was higher than the usual trend of that service provided at the "Y" district hospital. This value was more than 2SD of the average service count for this facility, therefore, was identified as a moderate outlier.

Directorate General of Family Planning (DGFP)

Out of 10,848 records from the DGFP facilities, 2.1% were outliers; of which 2% were moderate outliers identified from 45 facilities and 0.1% were extreme outliers found in 11 facilities. The UH&FWCs had the lowest (1.7%) outliers, while the Sadar clinics, the MCWCs and the MCH-FP units had 2.1%, 2.3% and 2.4% of outliers, respectively. Extreme outliers were found in all types of facilities (Table 6). An example is given below to illustrate the presence of extreme outliers using a scatter plot diagram (Figure 3).

Figure 3: An outlier present for a "X" indicator in "Y" UH&FWC

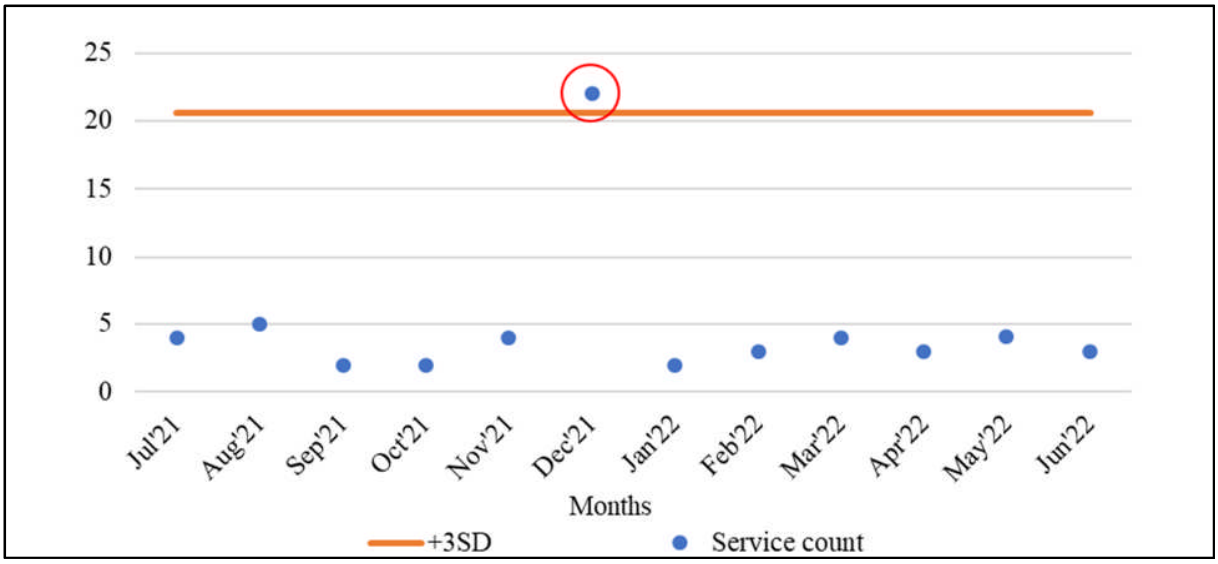


Figure 3 showing monthly service count data of "X" indicator at "Y" UH&FWC. In this particular example, service count was ranging from 2 to 5 in each month except for December 2021 (Red circled), when the count was higher than the usual trend of that service provided at "Y" UH&FWC. This value was more than 3SD of the average service count for this facility, therefore, was considered as an extreme outlier.

Consistency between indicators

The analysis of consistency between indicators or inter indicator consistency (IIC) was done to see if the summation of the number of normal deliveries, number of caesarean sections (C/S) and the number of forceps/vacuum/breech delivery was equal to the summation of the number of live births and the number of still births.

Less than 10% differences between these values were accepted as consistent between indicators as per WHO recommendation. However, for the DGFP facilities, the "Number of forceps/vacuum/breech delivery" was not considered during data analysis, because none of the DGFP facilities was found to be reporting "Forceps/vacuum/ breech delivery" in their monthly reporting form, the MIS-3 form, though there is a specific space for this indicator in the existing reporting form.

IIC was calculated for three tiers of the DGHS facilities, including, Medical College Hospitals (MCHs), District Hospitals, and the Upazila Health Complexes (UHCs), and all four tiers of the DGFP facilities, including, MCWCs, Sadar clinics, MCH-FP units, and the UH&FWCs. Considering 10% cut off value, overall, for both the DGHS and the DGFP facilities, 99% inter-indicator consistency was found (Table 7).

Directorate General of Health Services (DGHS)

Considering 10% cut-off point, the medical college hospitals fulfilled 100% of inter indicator consistency. District hospitals and the Upazila Health Complexes had 99% and 98% inter indicator consistency, respectively (Table 7).

Directorate General of Family Planning (DGFP)

The MCH-FP units under the DGFP had 100% inter indicator consistency rate, while, the rest three tiers of the DGFP facilities including, MCWC, Sadar Clinics, and UH&FWCs had 99% of inter indicator consistency rate (Table 7).

Table 7: Inter indicator consistency by facility type

Inter indicator consistency (IIC) **(IIC rate: % of facilities where the relationship between predictable indicators is <10%)**					
Facility Type	**Number of facilities**	**Number of records with consistency**	**Number of records without consistency**	**Total records**	**Inter indicator consistency (IIC) rate**
DGHS	**30**	**355**	**5**	**360**	**99%**
MCH	2	24	0	24	100%
DH	13	153	3	156	98%
UHC	15	178	2	180	99%
CC	-	-	-	-	-
DGFP	**47**	**560**	**4**	**564**	**99%**
MCWC	15	178	2	180	99%
Sadar Clinic	12	143	1	144	99%
MCH-FP Unit	6	72	0	72	100%
UH&FWC	14	167	1	168	99%
Total	**77**	**915**	**9**	**924**	**99%**

Consistency of reported data and original records

Consistency between reported data and the original records was verified for the data available in the databases. Out of 13,612 reported values, overall data accuracy rate was 92%, taking the cut-off value of 10% into account which implies, server data and source data falls within 10% of each in value. WHO recommends to have at least 75% accurate values in the facility reports. Accuracy rate was higher among the DGFP facilities (94%) compared to the DGHS facilities (86%). Among the DGHS facilities, under-reporting & over-reporting of data were found to be 3% and 11%, respectively. On the other hand, the DGFP facilities had 2% of under-reporting and 4% of over-reporting of data (Table 8).

Table 8: Accuracy, under-reporting & over-reporting by facility type

Accuracy, under-reporting & over-reporting (Accuracy: Difference between source data and server data is <10% of the source data Under-reporting: Server data is ≤10% of source data Over-reporting: Server data is ≥ 10% of source data)								
Facility Type	**No. of facilities**	**No. of accurate records**	**Accuracy rate**	**No. of underreported records**	**% of under-reported records**	**No. of overreported records**	**% of over-reported records**	**Total records (missing values excluded)**
DGHS	**39**	**2371**	**86%**	**88**	**3%**	**305**	**11%**	**2764**
MCH	2	181	75%	28	12%	32	13%	241
DH	13	1151	87%	26	2%	143	11%	1320
UHC	15	810	85%	23	2%	120	13%	953
CC	9	229	92%	11	4%	10	4%	250
DGFP	**47**	**10148**	**94%**	**267**	**2%**	**433**	**4%**	**10848**
MCWC	15	3760	93%	115	3%	157	4%	4032
Sadar Clinic	12	2816	92%	80	3%	164	5%	3060
MCH-FP Unit	6	883	96%	22	2%	19	2%	924
UH&FWC	14	2689	95%	50	2%	93	3%	2832
Total	**86**	**12519**	**92%**	**355**	**3%**	**738**	**5%**	**13612**

Directorate General of Health Services (DGHS)

Among different tiers of the DGHS facilities, facilities of lowest tier, the Community Clinics (CCs), had the highest accuracy rate with 92% accurate records. On the other hand, Medical College Hospitals, the highest-level facility under the DGHS, had the lowest data accuracy rate of 75%.

Among the two medical college hospitals (MCHs), one has 20% lower accuracy than WHO cut off value (75%) with 21% under-reporting and 24% over-reporting (Annex: Table- 2.1). Indicator segregated

analysis among all indicators of medical college data revealed least accuracy (53%) for the indicator, 'No. of postpartum FP method use' (Annex: Table- 2.2).

District hospitals had a higher accuracy rate of 87% than medical college hospitals (Table 8). Among the 13 district hospitals visited, two have accuracy rate of 42% and 36% respectively, lower than the WHO recommended cut off value (Annex: Table 2.3). 'Number of cases with septic abortion' and 'Number of maternal deaths' have the lowest accuracy rate (77% and 71% respectively), among all the indicators (Annex: Table- 2.4).

Upazila Health Complexes have maintained 85% accuracy rate which is lower than the district hospitals, but higher than medical college hospitals. All the indicators of UHCs had higher accuracy rate than the WHO standard (75%) (Annex: Table- 2.6).

Details analysis on "Consistency of reported data and original records" of the DGHS are attached in the Annex section (Table 2.1 – Table 2.8).

Directorate General of Family Planning (DGFP)

DGFP facilities of all tiers have maintained more than 90% accuracy rate except one MCWC that couldn't maintain the accuracy rate recommended by WHO (Annex: Table- 3.1, 3.3, 3.5 & 3.7). Indicator specific analysis revealed that none of the indicators have lower accuracy rate than WHO recommended cut off value (Annex: Tables 3.2, 3.4, 3.6 & 3.8).

The MCH-FP units of the DGFP facilities had the highest accuracy rate of 96%, followed by the UH&FWCs (95%), MCWCs (93%) and the Sadar Clinics (92%) (Table-8). Details information on "Consistency of reported data and original records" from the DGFP facilities are attached in the Annex section (Table 3.1 – Table 3.8).

Findings from informal discussion with reporting focal person

Challenges faced by the health facility staff

Lack of training

Lack of proper training on reporting data in the HMIS is a significant issue, as mentioned by most of the staff from both the DGHS and the DGFP facilities. Majority of the reporting focal persons did not receive any basic training in data entry or HMIS reporting. Consequently, it is challenging for the Community Healthcare Providers, Health Inspectors, and Assistant Health Inspectors to comprehend certain variables while reporting.

> *"There was no institutional training on reporting and data entry for CHCP (Community Healthcare Provider), HI (Health Inspector), AHI (Assistant Health Inspector) which is causing persistent problems in reporting."*

Moreover, occasionally, when any report was submitted, the HMIS server failed to update the status because of unidentified technical issue.

> *"Server needs to be updated regularly. We need the system to provide a notice alert so that we can determine whether the form has been submitted or not."*

Lack of proper instruments

Most of the community clinics and union-level facilities do not have a laptop or internet connection for reporting. Focal persons from some of the facilities reported they received a laptop for data entry but it got damaged after some days and no further action was taken to repair/replace the laptop from the authority.

> *"The laptop that was provided for reporting was damaged one year ago. We were given new laptop but it also got damaged soon. This happened in all other facilities in our district.*"

Lack of drug supply

Few of the community clinics reported that they had to stop offering their essential services because of unavailability of drugs. The community health care providers (CHCPs) claimed that they informed the appropriate authority about the issue, but it was still unresolved at the time of facility visit by the research team members.

Poor infrastructure and human resources shortage

Due to inadequate number of labour room, a few facilities claimed that their number of delivery services were reduced. Furthermore, service providers had no interest in staying in the isolated, remote places for an extended period of time.

> *"As the road communication is very poor, the service providers do not feel interested in coming here."*

In addition, there is a lack of human resources at different tiers of healthcare facilities. Lack of an anesthesiologist, according to the facility officials, caused caesarean section delivery services to be interrupted. Likewise, some facilities had no midwives to perform delivery services. A number of Union

Health and Family Welfare Centers (UH&FWCs) also reported having vacant Medical Officer (MO) positions.

Lack of service related training

Staff from some of the DGFP facilities claimed that they had not been trained on MR/PAC. Besides, a few facilities do not provide injectable treatments because no training is given regarding this.

> *"Most of us here* need training *on both MR/PAC and* adolescent health *services".*

Budget allocation

Representatives from many of the facilities reported about the challenges regarding reporting due to inadequate funding. According to them, there is no budget allocation to print-out the reporting forms locally, and the higher authority does not supply hardcopies of the reporting forms to the facilities on a regular basis.

Duplication of reporting

To report to the HMIS server, at first, the data entry person from each facility collect data into the hardcopies (in different forms and/or registers), then enter that data (hardcopy information) into the HMIS server. Most of the data entry staff think this duplication of reporting is a burden for them, especially when there is scarcity of designated human resources.

> *"Reporting is done both in online and through hardcopy in the Upazila Health Complexes; this is a burden."*

Stakeholder consultation workshop

A stakeholder consultation workshop took place at Dhaka, the capital city of Bangladesh, on 03 August, 2023. Thirty-six (36) people from four different organizations including the DGHS (12), the DGFP (13), Vital Strategies (04), and icddr,b (07) participated in the workshop.

The research team at icddr,b shared the preliminary findings of the DQA with the key stakeholders through a PowerPoint presentation. Following the presentation, an open discussion took place and the workshop participants expressed their opinions on the findings of the DQA. The stakeholders also discussed about the way forward to address the bottlenecks found in the DQA conducted by icddr,b.

The DGHS officials acknowledged that due to shortage of manpower, particularly statisticians (reporting focal person in the DGHS facilities), quality of data may be compromised in some facilities. The MIS unit of the DGHS arranges frequent trainings for the reporting focal persons. However, often

trained staff are getting transferred to different positions and places, which is further creating a vacuum. Therefore, other staff, such as, Senior staff nurse or other untrained staff, are performing the responsibility of the reporting focal person, and that is hampering the quality of reporting. In the medical college hospitals, generally there is a shortage of reporting focal person. Stakeholders also added that gap in coordination is happening in the medical college hospitals, because, in practice, the person who is receiving training, are not entering the data. Compared to the initial deployment of DHIS2 in the DGHS facilities, data and reporting quality have improved a lot, however, discrepancies still exist in the DHIS2 data. The DGHS is focusing on these issues and taking initiatives to improve data quality and reporting of data.

The DGFP officials also mentioned about the shortage of human resources (HR) for reporting. To address the dire need of HR, recruitment of new staffs at divisional and district levels has already been approved by the government. Though no position for reporting focal person has ever been created for the union level facilities under the DGFP, it was identified from the workshop participants that it is quite challenging for the service providers to do both, providing service to the patients and maintaining MIS reporting simultaneously. The DGFP officials think that there is a scope for them to take initiatives to create a post for reporting focal person in the UH&FWCs. They also mentioned that the tabs which have been provided to their facility staffs for reporting, needs to be replaced, and logistic and supply chain management unit of the directorate is working on this. Considering the government's vision "Smart Bangladesh by 2041", the DGFP is trying to deploy paperless e-MIS system which has already been started in 44 districts of the country. Therefore, DGFP is going through a transitional period where paper-based and paperless, both systems are co-existing. It is expected that by June 2024, the DGFP will be able to start e-MIS in all the districts of Bangladesh.

Discussion

According to the WHO guideline, the first dimension of any data quality assessment (DQA) is completeness and timeliness of the reporting. Timeliness of data is generally assessed by measuring whether the entities who submitted the reports did so before a predefined deadline. However, we could not report 'timeliness' in this DQA, because the date of monthly report submission of each facility from the DHIS2 of the Directorate General of Health Services (DGHS) and the MIS of the Directorate General of Family Planning (DGFP) was not possible to extract.

It was identified that the overall completeness rate for facility reporting from both the DGHS and the DGFP facilities was above the cut-off value. However, monthly reports of nine facilities, including eight DGFP facilities and one DGHS facility, were not found in the server of the respective directorate, which indicates that none of these facilities are submitting their monthly reports to their authority.

In the current study, missing values has been a major finding from the facilities under the DGHS. More than one-third of the records were missing in the reports submitted by the DGHS facilities, which does not comply with the WHO cut-off value for the completeness of indicator data. Findings showed that the rate of completeness was higher at the tertiary and secondary level health facilities under the DGHS, such as, the Medical College Hospitals and the District Hospitals, but not satisfactory at the sub-district and lower level facilities.

Overall indicator specific completeness rate of medical college hospitals is well above the WHO cut off value. However, completeness of three indicators, including, forceps/vacuum/breech delivery, septic abortion and postpartum FP method (PPFP) use is lower than all other indicators and WHO recommended cut off value as well. On average, the district hospitals have higher completeness rate than the WHO standard but lower than the medical college hospitals.

District hospital data shows that data of three indicators, including, forceps/vacuum/breech delivery, septic abortion, and maternal deaths have lower completeness rate than WHO recommended cut off value.

Findings from the current study also identified that all the Upazila health complexes (UHCs) have lower rate of completeness than the WHO recommended cut off value and only two indicators - normal vaginal delivery (NVD) and live births, have completeness rates more than the WHO cut off. All the other indicators have lower completeness rate than the threshold level, of which forceps/vacuum/breech delivery and septic abortion, have lowest rate of completeness. None of the UHCs have reported any maternal death during the assessment period.

No missing values were found in the reports submitted by the facilities under the Directorate General of Family Planning (DGFP). If any service is not available, the cells against those can be reported as 'Not available (N/A)' in the server. However, it was identified during data analysis of this study that if there is

no data in any cell, the MIS server of DGFP shows that as zero (0) by default, irrespective of the service availability in that particular facility. Therefore, it was not possible to identify if the specific service was unavailable in a particular facility, or no women have received those services. This can be the reason of finding of no missing values in the DGFP facilities' reports, which might be misleading for the district and national level managers and the policy makers for making any decision.

None of the Upazila Health Complexes (UHCs) and/or the Union Health and Family Welfare Centers (UH&FWCs) have reported any maternal death, although, in total, 8,853 live births took place in the UHCs during the reporting time period. This finding suggests further exploration in the reporting system by the respective health facilities.

Presence of outliers within a dataset may not be an error, rather an area that needs further exploration and verification during routine data quality check and supervision visits by the facility managers and/or supervisors. Analysis from the current study revealed that presence of outliers was within the acceptable limit of WHO cut-off value.

This study findings identified that on an average, consistency between indicators, known as the inter indicator consistency, of the reported data was more than 99% in the facilities of both the directorates, the DGHS and the DGFP.

Irrespective of facility level (primary/secondary/tertiary) from the DGHS and the DGFP, on average facilities of all tiers have maintained accuracy rates more than WHO's recommended threshold level. However, one of the medical colleges has a lower accuracy rate than the WHO standard. Indicator segregated analysis of medical colleges data revealed that among all the indicators, the least accurate indicator was found to be postpartum family planning (PPFP) method use.

District hospitals have higher accuracy rate than the medical college hospitals. However, two of the District hospitals have the accuracy rate lower than that of all other district hospitals and WHO recommended cut off value as well. Septic abortion and maternal death are the two indicators with the lowest rate of accuracy among all the indicators.

Though the UHCs have maintained an accuracy rate well above the threshold level of WHO's standard, the accuracy rate for PPFP method use was lowest among all indicators and just above the standard threshold. None of the UHCs have reported maternal death during the assessment period.

DGFP facilities of all tiers were able to maintain the standard rate of accuracy, except one MCWC, which couldn't maintain the accuracy rate recommended by WHO. Indicator specific analysis revealed that none of the indicators have lower accuracy rate than the recommended cut off value by WHO.

During data collection, it was identified that a dedicated focal person for reporting was assigned in the sub-district and above level facilities of DGHS; while the service providers from the CCs were responsible for their monthly reporting. One of the DGHS officials mentioned in the stakeholder consultation workshop that, according to government operational plan, only a few services are being provided in the community clinics (CCs), therefore, community health care providers (CHCPs) has to work as a service provider and reporting focal person concurrently. However, the structure was different in the DGFP facilities, where a particular cadre of service providers, the Family Welfare Visitors (FWVs), from all levels of facilities were accountable for the monthly reporting. Nevertheless, the reporting focal persons from several DGHS and DGFP health facilities mentioned that they never have received any specific training on the data reporting system.

Recommendations

- Establish a single reporting system, and deploy dedicated reporting focal persons at all levels of health facilities under the DGHS & the DGFP.

- Develop a guideline, specifying the operational definitions of all the indicators to be reported and distribute among the service providers and the reporting focal persons of all the health facilities under the DGHS and the DGFP.

- Provide comprehensive training on digital data reporting system and indicators' definitions to all reporting focal persons from the DGHS and the DGFP health facilities.

- Ensure availability of functioning laptops and/or internet connection across all levels of the DGHS & the DGFP health facilities for timely reporting.

- Take initiative to input real time data instead of reporting zero (0) by default in the DGFP database.

- Arrange specific sensitization and training program for the reporting focal person of the Upazila health complex (UHC) to overcome their lowest rate of completeness of indicator reporting.

- Conduct sensitization program for the reporting focal persons from most of the facilities under the DGHS and the DGFP to report two important indicators, forceps/vacuum/breech delivery and septic abortion cases accurately.

- Create a positive culture of data use within the DGHS and the DGFP by establishing routine data quality assessments, and routine dialogue and information sharing to help inform health leaders for making data-driven decisions and policies.

Annex

Table-1.1: Completeness of indicators by facilities (Medical College Hospital)

Completeness of indicators by facilities (Medical College Hospital)							
Facility Names	**No. of indicators**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
Mymensingh Medical College & Hospital	11	117	15	132	89%	11%	
Rangpur Medical College & Hospital	11	124	8	132	94%	6%	
Total		**241**	**23**	**264**	**91%**	**9%**	

Table-1.2: Completeness of indicators by indicators (Medical College Hospital)

Completeness of indicators by indicators (Medical College Hospital)							
Indicators/Data Elements	**No. of facilities**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
No. of NVD	2	24	0	24	100%	0%	
No. of C/S	2	24	0	24	100%	0%	
No. of forceps/ vacuum/ breech delivery	2	17	7	24	71%	29%	
No. of Live births	2	24	0	24	100%	0%	
No. of still birth	2	24	0	24	100%	0%	
No. of cases with Pre-Eclampsia/Eclampsia	2	24	0	24	100%	0%	
No. of cases with Postpartum hemorrhage	2	24	0	24	100%	0%	
No. of cases with Prolonged/obstructed labor	2	22	2	24	92%	8%	
No. of cases with septic abortion	2	20	4	24	83%	17%	
No. of postpartum FP method was used	2	15	9	24	63%	38%	
No. of maternal deaths	2	23	1	24	96%	4%	
Total		**241**	**23**	**264**	**91%**	**9%**	

Table-1.3: Completeness of indicators by facilities (District Hospital)

Completeness of indicators by facilities (District Hospital)							
Facility Names	**No. of indicators**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
Bhola 250 Bedded District Sadar Hospital	11	116	16	132	88%	12%	
Brahmanbaria 250 Bedded District Sadar Hospital	11	112	20	132	85%	15%	
Chapainawabganj 250 Bedded District Hospital	11	93	39	132	70%	30%	
Habiganj 250 Bedded District Hospital	11	115	17	132	87%	13%	
Jhenaidah 250 Bedded General Hospital	11	100	32	132	76%	24%	
Joypurhat 250 Bedded District Hospital	11	76	56	132	58%	42%	
Khagrachari District Hospital	11	116	16	132	88%	12%	
Lalmonirhat District Hospital	11	85	47	132	64%	36%	
Manikganj 250 Bedded District Hospital	11	106	26	132	80%	20%	
Narail District Hospital	11	84	48	132	64%	36%	
Narayanganj General (Victoria) Hospital	11	95	37	132	72%	28%	
Patuakhali 250 Bedded Sadar Hospital	11	118	14	132	89%	11%	
Sunamganj 250 Bedded District Sadar Hospital	11	104	28	132	79%	21%	
Total		**1320**	**396**	**1716**	**77%**	**23%**	

Table-1.4: Completeness of indicators by indicators (District Hospital)

Completeness of indicators by indicators (District Hospital)							
Indicators/Data Elements	**No. of facilities**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
No. of NVD	13	156	0	156	100%	0%	
No. of C/S	13	153	3	156	98%	2%	
No. of forceps/ vacuum/ breech delivery	13	72	84	156	46%	54%	
No. of Live births	13	155	1	156	99%	1%	
No. of still birth	13	142	14	156	91%	9%	
No. of cases with Pre-Eclampsia/Eclampsia	13	143	13	156	92%	8%	
No. of cases with Postpartum hemorrhage	13	135	21	156	87%	13%	
No. of cases with Prolonged/obstructed labor	13	151	5	156	97%	3%	
No. of cases with septic abortion	13	39	117	156	25%	75%	
No. of postpartum FP method was used	13	132	24	156	85%	15%	
No. of maternal deaths	13	42	114	156	27%	73%	
Total		**1320**	**396**	**1716**	**77%**	**23%**	

Table-1.5: Completeness of indicators by facilities (Upazila Health Complex)

Completeness of indicators by facilities (Upazila Health Complex)							
Facility Names	**No. of indicators**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
Daulatkhan UHC	10	51	69	120	43%	58%	C/S Unavailable
Sarail UHC	11	50	82	132	38%	62%	
Shibganj UHC	11	92	40	132	70%	30%	
Ajmiriganj UHC	10	83	37	120	69%	31%	C/S Unavailable
Kaliganj UHC	11	39	93	132	30%	70%	
Khetlal UHC	11	73	59	132	55%	45%	
Ramgarh UHC	11	49	83	132	37%	63%	
Patgram UHC	11	72	60	132	55%	45%	
Ghior UHC	10	41	79	120	34%	66%	C/S Unavailable
Bhaluka UHC	11	54	78	132	41%	59%	
Lohagara UHC	10	52	68	120	43%	57%	C/S Unavailable
Araihazar UHC	11	85	47	132	64%	36%	
Mithapukur UHC	11	73	59	132	55%	45%	
Nakhla UHC	10	69	51	120	58%	43%	C/S Unavailable
Tahirpur UHC	11	70	62	132	53%	47%	
Total		**953**	**967**	**1920**	**50%**	**50%**	

Table-1.6: Completeness of indicators by indicators (Upazila Health Complex)

Completeness of indicators by indicators (UHC)							
Indicators/Data Elements	**No. of facilities**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
No. of NVD	15	180	0	180	100%	0%	
No. of C/S	10	61	59	120	51%	49%	C/S service was not available in five health facilities. Therefore, expected records were 120 (10*12).
No. of forceps/ vacuum/ breech delivery	15	22	158	180	12%	88%	
No. of Live births	15	180	0	180	100%	0%	
No. of still birth	15	64	116	180	36%	64%	
No. of cases with Pre-Eclampsia/Eclampsia	15	82	98	180	46%	54%	
No. of cases with Postpartum hemorrhage	15	102	78	180	57%	43%	
No. of cases with Prolonged/obstructed labor	15	104	76	180	58%	42%	
No. of cases with septic abortion	15	34	146	180	19%	81%	
No. of postpartum FP method was used	15	124	56	180	69%	31%	
No. of maternal deaths	15	0	180	180	0%	100%	
Total		**953**	**967**	**1920**	**50%**	**50%**	

Table-1.7: Completeness of indicators by facilities (Community Clinic)

Completeness of indicators by facilities (Community Clinic)							
Facility Names	**No. of indicators**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
Alampur CC, Kheatlal	2	20	4	24	83%	17%	Pill and Condom services were available
Bangkanda CC, Patgram	-	-	-	-	-	-	None of the services of interest were available
Bharasimla CC, Kaliganj	3	32	4	36	89%	11%	Pill, Condom and Injectable services were available
Daksinkul CC, Tahirpur	6	31	41	72	43%	57%	Condom service was not available
Danakusha CC, Nakla	3	14	22	36	39%	61%	Pill, Condom and Injectable services were available
Kagrabil CC, Ramgarh	2	24	0	24	100%	0%	Pill and Condom services were available
Lutiya CC, Lohagara	7	60	24	84	71%	29%	All the services of interest were available
Panchbariya CC, Araihazar	3	36	0	36	100%	0%	Pill, Condom & Injectable services were available
Pukhuria CC, Ghior	2	19	5	24	79%	21%	Pill and Condom services were available
Shahbazpur Uttor CC, Sarail	3	14	22	36	39%	61%	Pill, Condom and Injectable services were available
Total		**250**	**122**	**372**	**67%**	**33%**	

Table-1.8: Completeness of indicators by indicators (CC)

Completeness of indicators by indicators (CC)							
Indicator/ Data Elements	**No. of facilities**	**No. of records submitted with values**	**No. of records with missing values**	**Expected total records**	**Completeness rate**	**% of missing values**	**Remarks**
Pill	9	101	7	108	94%	6%	Service was not available in one CC. So, total facility was 9 and expected number of records were 108 (9 facilities*12 months)
Condom	8	68	28	96	71%	29%	Service was not available in two CCs. So, total facility was 8 and expected number of records were 96 (8 facilities*12 months)
Injectable	6	44	28	72	61%	39%	Service was not available in four CCs. So, total facility was 6 and expected number of records were 72 (6 facilities*12 months)
No. of NVD	2	20	4	24	83%	17%	Service was available in two CCs. So, total facility was 2 and expected number of records were 24 (2 facilities*12 months)
No. of Live births	2	17	7	24	71%	29%	NVD service was available in two CCs. So, 'Live birth', 'Still birth', and 'Maternal death' records could be found in those two facilities. Hence, total facility was 2 and expected number of records were 24 (2 facilities*12 months)
No. of still birth	2	0	24	24	0%	100%	NVD service was available in two CCs. So, 'Live birth', 'Still birth', and 'Maternal death' records could be found in those two facilities. Hence, total facility was 2 and expected number of records were 24 (2 facilities*12 months)
No. of maternal deaths	2	0	24	24	0%	100%	NVD service was available in two CCs. So, 'Live birth', 'Still birth', and 'Maternal death' records could be found in those two facilities. Hence, total facility was 2 and expected number of records were 24 (2 facilities*12 months)
Total		**250**	**122**	**372**	**67%**	**33%**	

Table-2.1: Accuracy, under-reporting & over-reporting by facilities (±10%) (Medical College Hospital)

Accuracy, under-reporting & over-reporting by facilities (±10%) (Medical College Hospital)								
Facility Name	**No. of indicators**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Mymensingh Medical College Hospital	11	113	97%	2	2%	2	2%	117
Rangpur Medical College Hospital	11	68	55%	26	21%	30	24%	124
Total		**181**	**75%**	**28**	**12%**	**32**	**13%**	**241**

Table-2.2: Accuracy, under-reporting & over-reporting by indicators (±10%) (Medical College Hospital)

Accuracy, under-reporting & over-reporting by indicators (±10%) (Medical College Hospital)								
Indicators/Data Elements	**No. of facilities**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
No. of NVD	2	19	79%	2	8%	3	13%	24
No. of C/S	2	17	71%	3	13%	4	17%	24
No. of forceps/vacuum/ breech delivery	2	17	100%	0	0%	0	0%	17
No. of Live births	2	21	88%	1	4%	2	8%	24
No. of still births	2	16	67%	4	17%	4	17%	24
No. of cases with Pre-eclampsia/ Eclampsia	2	18	75%	3	13%	3	13%	24
No. of cases with Postpartum hemorrhage	2	18	75%	3	13%	3	13%	24
No. of cases with Prolonged/obstructed labor	2	14	64%	4	18%	4	18%	22
No. of cases with septic abortion	2	15	75%	3	15%	2	10%	20
No. of postpartum FP method use	2	8	53%	4	27%	3	20%	15
No. of maternal deaths	2	18	78%	1	4%	4	17%	23
Total		**181**	**75%**	**28**	**12%**	**32**	**13%**	**241**

Table-2.3: Accuracy, under-reporting & over-reporting by facilities (±10%) (District Hospital)

Accuracy, under-reporting & over-reporting by facilities (±10%) (District Hospital)								
Facility Name	**No. of indicators**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Bhola 250 Bedded District Sadar Hospital	11	115	99%	0	0%	1	1%	116
Brahmanbaria 250 Bedded District Sadar Hospital	11	107	96%	3	3%	2	2%	112
Chapainawabganj 250 Bedded District Hospital	11	71	76%	14	15%	8	9%	93
Habiganj 250 Bedded District Hospital	11	114	99%	0	0%	1	1%	115
Jhenaidah 250 Bedded General Hospital	11	94	94%	0	0%	6	6%	100
Joypurhat 250 Bedded District Hospital	11	32	42%	2	3%	42	55%	76
Khagrachari District Hospital	11	115	99%	0	0%	1	1%	116
Lalmonirhat District Hospital	11	85	100%	0	0%	0	0%	85
Manikganj 250 Bedded District Hospital	11	106	100%	0	0%	0	0%	106
Narail District Hospital	11	65	77%	6	7%	13	15%	84
Narayanganj General (Victoria) Hospital	11	95	100%	0	0%	0	0%	95
Patuakhali 250 Bedded Sadar Hospital	11	115	97%	0	0%	3	3%	118
Sunamganj 250 Bedded District Sadar Hospital	11	37	36%	1	1%	66	63%	104
Total		**1151**	**87%**	**26**	**2%**	**143**	**11%**	**1320**

Table-2.4: Accuracy, under-reporting & over-reporting by indicators (±10%) (District Hospital)

Accuracy, under-reporting & over-reporting by indicators (±10%) (District Hospital)								
Indicators/Data Elements	**No. of facilities**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
No. of NVD	13	139	89%	6	4%	11	7%	156
No. of C/S	13	134	88%	4	3%	15	10%	153
No. of forceps/ vacuum/ breech delivery	13	72	100%	0	0%	0	0%	72
No. of Live births	13	135	87%	6	4%	14	9%	155
No. of still birth	13	127	89%	2	1%	13	9%	142
No. of cases with Pre-eclampsia/ Eclampsia	13	125	87%	2	1%	16	11%	143
No. of cases with Postpartum hemorrhage	13	123	91%	0	0%	12	9%	135
No. of cases with Prolonged/obstructed labor	13	128	85%	2	1%	21	14%	151
No. of cases with septic abortion	13	30	77%	0	0%	9	23%	39
No. of postpartum FP method was used	13	108	82%	4	3%	20	15%	132
No. of maternal deaths	13	30	71%	0	0%	12	29%	42
Total		**1151**	**87%**	**26**	**2%**	**143**	**11%**	**1320**

Table-2.5: Accuracy, under-reporting & over-reporting by facilities (±10%) (Upazila Health Complex)

Accuracy, under-reporting & over-reporting by facilities (±10%) (Upazila Health Complex)								
Facility Name	**No. of indicators**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Daulatkhan UHC	10	51	100%	0	0%	0	0%	51
Sarail UHC	11	26	52%	1	2%	23	46%	50
Shibganj UHC	11	83	90%	0	0%	9	10%	92
Ajmiriganj UHC	10	76	92%	1	1%	6	7%	83
Kaliganj UHC	11	31	79%	6	15%	2	5%	39
Khetlal UHC	11	69	95%	1	1%	3	4%	73
Ramgarh UHC	11	49	100%	0	0%	0	0%	49
Patgram UHC	11	32	44%	0	0%	40	56%	72
Ghior UHC	10	41	100%	0	0%	0	0%	41
Bhaluka UHC	11	51	94%	0	0%	3	6%	54
Lohagara UHC	10	48	92%	0	0%	4	8%	52
Araihazar UHC	11	77	91%	0	0%	8	9%	85
Mithapukur UHC	11	56	77%	2	3%	15	21%	73
Nakhla UHC	10	55	80%	12	17%	2	3%	69
Tahirpur UHC	11	65	93%	0	0%	5	7%	70
Total		**810**	**85%**	**23**	**2%**	**120**	**13%**	**953**

Table-2.6: Accuracy, under-reporting & over-reporting by indicators (±10%) (Upazila Health Complex)

Accuracy, under-reporting & over-reporting by indicators (±10%) (Upazila Health Complex)								
Indicators/Data Elements	**No. of facilities**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
No. of NVD	15	161	89%	3	2%	16	9%	180
No. of C/S	10	53	87%	0	0%	8	13%	61
No. of forceps/ vacuum/ breech delivery	15	22	100%	0	0%	0	0%	22
No. of Live births	15	156	87%	4	2%	20	11%	180
No. of still birth	15	49	77%	0	0%	15	23%	64
No. of cases with Pre-eclampsia/Eclampsia	15	68	83%	1	1%	13	16%	82
No. of cases with Postpartum hemorrhage	15	87	85%	1	1%	14	14%	102
No. of cases with Prolonged/obstructed labor	15	91	88%	0	0%	13	13%	104
No. of cases with septic abortion	15	29	85%	0	0%	5	15%	34
No. of postpartum FP method was used	15	94	76%	14	11%	16	13%	124
No. of maternal deaths	-	-	-	-	-	-	-	-
Total		**810**	**85%**	**23**	**2%**	**120**	**13%**	**953**

Table-2.7: Accuracy, under-reporting & over-reporting by facilities (±10%) (Community Clinic)

Accuracy, under-reporting & over-reporting by facilities (±10%) (CC)								
Facility Names	**No. of indicators**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Alampur CC, Kheatlal	2	20	100%	0	0%	0	0%	20
Bangkanda CC, Patgram	-	-	-	-	-	-	-	-
Bharasimla CC, kaliganj	3	29	91%	1	3%	2	6%	32
Daksinkul CC, tahirpur	6	31	100%	0	0%	0	0%	31
Danakusha CC, Nakla	3	14	100%	0	0%	0	0%	14
Kagrabil CC, Ramgrah	2	22	92%	0	0%	2	8%	24
Lutiya CC, lohagara	7	48	80%	9	15%	3	5%	60
Panchbariya CC, Araihazar	3	36	100%	0	0%	0	0%	36
Pukhuria CC, Ghior	2	18	95%	0	0%	1	5%	19
Shahbazpur Uttor CC, sarail	3	11	79%	1	7%	2	14%	14
Total		**229**	**92%**	**11**	**4%**	**10**	**4%**	**250**

Table-2.8: Accuracy, under-reporting & over-reporting by indicators (±10%) (Community Clinic)

Accuracy, under-reporting & over-reporting by indicators (±10%) (Community Clinic)								
Indicators/Data Elements	**No. of facilities**	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Pill	9	91	90%	6	6%	4	4%	101
Condom	8	63	93%	1	1%	4	6%	68
Injectable	6	38	86%	4	9%	2	5%	44
No. of NVDs	2	20	100%	0	0%	0	0%	20
No. of live births	2	17	100%	0	0%	0	0%	17
No. of still birth	2	-	-	-	-	-	-	-
No. of maternal deaths	2	-	-	-	-	-	-	-
Total		**229**	**92%**	**11**	**4%**	**10**	**4%**	**250**

Table-3.1: Accuracy, under-reporting & over-reporting by facility (±10%) (Maternal & Child Welfare Centre)

Accuracy, under-reporting & over-reporting by facility (±10%) (Maternal & Child Welfare Centre)							
Facility Name	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Bhola MCWC	273	99%	2	1%	1	0%	276
Brahmanbaria MCWC	175	97%	4	2%	1	1%	180
Chapainawabganj MCWC	263	95%	3	1%	10	4%	276
Habiganj MCWC	275	100%	1	0%	0	0%	276
Jhenaidaha MCWC	264	96%	6	2%	6	2%	276
Joypurhat MCWC	244	88%	18	7%	14	5%	276
Khagrachari MCWC	266	96%	3	1%	7	3%	276
Lalmonirhat MCWC	246	89%	13	5%	17	6%	276
Manikganj MCWC	238	86%	17	6%	21	8%	276
Mymensingh MCWC	261	95%	11	4%	4	1%	276
Narail MCWC	264	96%	5	2%	7	3%	276
Patuakhali MCWC	270	98%	2	1%	4	1%	276
Rangpur MCWC	271	98%	2	1%	3	1%	276
Sherpur MCWC	191	72%	19	7%	54	20%	264
Sunamganj MCWC	259	94%	9	3%	8	3%	276
Total	**3760**	**93%**	**115**	**3%**	**157**	**4%**	**4032**

Table-3.2: Accuracy, under-reporting & over-reporting by indicator (±10%) (Maternal & Child Welfare Centre)

Accuracy, under-reporting & over-reporting by indicator (±10%) (MCWC)							
Indicator/Data element	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Pills (Regular)	165	92%	4	2%	11	6%	180
Pills (Post-partum)	164	91%	5	3%	11	6%	180
Condoms (Regular)	152	90%	3	2%	13	8%	168
Condoms (Post-partum)	154	92%	6	4%	8	5%	168
Injectables (Regular)	137	82%	6	4%	25	15%	168
Injectables (Post-partum)	140	83%	22	13%	6	4%	168
IUD (Regular)	169	94%	3	2%	8	4%	180
IUD (Post-partum)	164	91%	8	4%	8	4%	180
Implants (Regular)	170	94%	6	3%	4	2%	180
Implants (Post-partum)	161	89%	13	7%	6	3%	180
Tubectomy/ Ligation (female) (Regular)	178	99%	1	1%	1	1%	180
Tubectomy/ Ligation (female) (Post-partum)	163	91%	4	2%	13	7%	180
Vasectomy (male)	163	97%	2	1%	3	2%	168
No. of women received MVA services	162	96%	2	1%	4	2%	168
No. of women received MRM services	163	97%	3	2%	2	1%	168
No. of Post Abortion Care	155	92%	12	7%	1	1%	168
No. of NVD	176	98%	1	1%	3	2%	180
No. of C/S	163	97%	0	0%	5	3%	168
No. of Live births	171	95%	1	1%	8	4%	180
No. of still birth	168	93%	11	6%	1	1%	180
No. of cases with Pre-Eclampsia/Eclampsia	168	93%	1	1%	11	6%	180
No. of cases with Postpartum hemorrhage	175	97%	1	1%	4	2%	180
No. of maternal deaths	179	99%	0	0%	1	1%	180
Total	**3760**	**93%**	**115**	**3%**	**157**	**4%**	**4032**

Table-3.3: Accuracy, under-reporting & over-reporting by facility (±10%) (Sadar Clinic)

Accuracy, under-reporting & over-reporting by facility (±10%) (Sadar Clinic)							
Facility Name	**Number of accurate records**	**Accuracy rate**	**No. of underreported records**	**% of underreported records**	**No. of overreported records**	**% of overreported records**	**Total records (missing values excluded)**
Araihazar Sadar Clinic	228	90%	11	4%	13	5%	252
Azmiriganj Sadar Clinic	252	91%	3	1%	21	8%	276
Bhaluka Sadar Clinic	211	76%	6	2%	59	21%	276
Daulatkhan Sadar Clinic	269	97%	3	1%	4	1%	276
Ghior Sadar Clinic	274	99%	0	0%	2	1%	276
Kaliganj Sadar Clinic	235	85%	12	4%	29	11%	276
Khetlal Sadar Clinic	170	94%	2	1%	8	4%	180
Nakla Sadar Clinic	217	82%	30	11%	17	6%	264
Ramgarh Sadar Clinic	265	96%	7	3%	4	1%	276
Sarail Sadar Clinic	153	98%	1	1%	2	1%	156
Shibganj Sadar Clinic	273	99%	2	1%	1	0%	276
Tahirpur Sadar Clinic	269	97%	3	1%	4	1%	276
Total	**2816**	**92%**	**80**	**3%**	**164**	**5%**	**3060**

Table-3.4: Accuracy, under-reporting & over-reporting by indicator (±10%) (Sadar Clinic)

Accuracy, under-reporting & over-reporting by indicator (±10%) (Sadar Clinic)							
Indicator/Data Element	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Pills (Regular)	117	81%	2	1%	25	17%	144
Pills (Post-partum)	130	90%	2	1%	12	8%	144
Condoms (Regular)	116	81%	4	3%	24	17%	144
Condoms (Post-partum)	136	94%	5	3%	3	2%	144
Injectables (Regular)	114	79%	8	6%	22	15%	144
Injectables (Post-partum)	133	92%	2	1%	9	6%	144
IUD (Regular)	122	85%	4	3%	18	13%	144
IUD (Post-partum)	138	96%	0	0%	6	4%	144
Implants (Regular)	131	91%	8	6%	5	3%	144
Implants (Post-partum)	132	92%	5	3%	7	5%	144
Tubectomy/ Ligation (female) (Regular)	138	96%	3	2%	3	2%	144
Tubectomy/ Ligation (female) (Post-partum)	121	84%	11	8%	12	8%	144
Vasectomy (male)	140	97%	1	1%	3	2%	144
No. of women received MVA services	129	98%	1	1%	2	2%	132
No. of women received MRM services	117	98%	2	2%	1	1%	120
No. of Post Abortion Care	113	94%	6	5%	1	1%	120
No. of NVD	110	92%	6	5%	4	3%	120
No. of C/S	93	97%	3	3%	0	0%	96
No. of Live births	111	93%	5	4%	4	3%	120
No. of still birth	120	100%	0	0%	0	0%	120
No. of cases with Pre-Eclampsia/Eclampsia	116	97%	2	2%	2	2%	120
No. of cases with Postpartum hemorrhage	119	99%	0	0%	1	1%	120
No. of maternal deaths	120	100%	0	0%	0	0%	120
Total	**2816**	**92%**	**80**	**3%**	**164**	**5%**	**3060**

Table-3.5: Accuracy, under-reporting & over-reporting by facility (±10%) (MCH-FP Units)

Accuracy, under-reporting & over-reporting by facility (±10%) (MCH-FP Unit)							
Facility Name	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Araihazar MCH-FP Unit	237	94%	11	4%	4	2%	252
Bhaluka MCH-FP Unit	174	97%	1	1%	5	3%	180
Khetlal MCH-FP Unit	47	98%	1	2%	0	0%	48
Mirzagannj MCH-FP Unit	167	93%	5	3%	8	4%	180
Sarail MCH-FP Unit	11	92%	1	8%	0	0%	12
Shibganj MCH-FP Unit	247	98%	3	1%	2	1%	252
Total	**883**	**96%**	**22**	**2%**	**19**	**2%**	**924**

Table-3.6: Accuracy, under-reporting & over-reporting by indicator (±10%) (MCH-FP Unit)

Accuracy, under-reporting & over-reporting by indicator (±10%) (MCH-FP Unit)							
Indicator/Data Element	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Pills (Regular)	59	98%	1	2%	0	0%	60
Pills (Post-partum)	57	95%	1	2%	2	3%	60
Condoms (Regular)	55	92%	1	2%	4	7%	60
Condoms (Post-partum)	56	93%	2	3%	2	3%	60
Injectables (Regular)	43	90%	4	8%	1	2%	48
Injectables (Post-partum)	43	90%	1	2%	4	8%	48
IUD (Regular)	45	94%	1	2%	2	4%	48
IUD (Post-partum)	47	98%	0	0%	1	2%	48
Implants (Regular)	47	98%	0	0%	1	2%	48
Implants (Post-partum)	48	100%	0	0%	0	0%	48
Tubectomy/ Ligation (female) (Regular)	48	100%	0	0%	0	0%	48
Tubectomy/ Ligation (female) (Post-partum)	47	98%	0	0%	1	2%	48
Vasectomy (male)	48	100%	0	0%	0	0%	48
No. of women received MVA services	33	92%	2	6%	1	3%	36
No. of women received MRM services	10	83%	2	17%	0	0%	12
No. of Post Abortion Care	41	85%	7	15%	0	0%	48
No. of NVD	24	100%	0	0%	0	0%	24
No. of C/S	12	100%	0	0%	0	0%	12
No. of Live births	24	100%	0	0%	0	0%	24
No. of still birth	24	100%	0	0%	0	0%	24
No. of cases with Pre-Eclampsia/Eclampsia	24	100%	0	0%	0	0%	24
No. of cases with Postpartum hemorrhage	24	100%	0	0%	0	0%	24
No. of maternal deaths	24	100%	0	0%	0	0%	24
Total	**883**	**96%**	**22**	**2%**	**19**	**2%**	**924**

Table-3.7: Accuracy, under-reporting & over-reporting by facility (±10%) (Union Health and Family Welfare Centre)

Accuracy, under-reporting & over-reporting by facility (±10%) (UH&FWC)							
Facility Name	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Alampur, UH&FWC	166	99%	0	0%	2	1%	168
Aruail, UH&FWC	146	87%	5	3%	17	10%	168
Baliakhora, UH&FWC	224	98%	2	1%	2	1%	228
Bara Hajratpur, UH&FWC	254	96%	7	3%	3	1%	264
Char Kalifa, UH&FWC	189	98%	3	2%	0	0%	192
Dighalia, UH&FWC	147	94%	2	1%	7	4%	156
Duptara, UH&FWC	164	98%	1	1%	3	2%	168
Haribari, UH&FWC	219	96%	4	2%	5	2%	228
Karabunia, UH&FWC	217	95%	5	2%	6	3%	228
Nakla, UH&FWC	133	79%	8	5%	27	16%	168
Patachhara, UH&FWC	150	96%	3	2%	3	2%	156
Shibpasha, UH&FWC	262	99%	1	0%	1	0%	264
Simla-Rokonpur, UH&FWC	163	91%	4	2%	13	7%	180
Uttar Sreepur, UH&FWC	255	97%	5	2%	4	2%	264
Total	**2689**	**95%**	**50**	**2%**	**93**	**3%**	**2832**

Table-3.8: Accuracy, under-reporting & over-reporting by indicator (±10%) (UH&FWC)

Accuracy, under-reporting & over-reporting by indicator (±10%) (UH&FWC)							
Indicator/Data Element	**No. of accurate records**	**Accuracy rate**	**No. of under reported records**	**% of under reported records**	**No. of over reported records**	**% of over reported records**	**Total records (missing values excluded)**
Pills (Regular)	144	86%	5	3%	19	11%	168
Pills (Post-partum)	148	88%	7	4%	13	8%	168
Condoms (Regular)	152	90%	3	2%	13	8%	168
Condoms (Post-partum)	152	90%	10	6%	6	4%	168
Injectables (Regular)	140	83%	9	5%	19	11%	168
Injectables (Post-partum)	157	93%	6	4%	5	3%	168
IUD (Regular)	148	95%	2	1%	6	4%	156
IUD (Post-partum)	153	98%	3	2%	0	0%	156
Implants (Regular)	108	100%	0	0%	0	0%	108
Implants (Post-partum)	108	100%	0	0%	0	0%	108
Tubectomy/ Ligation (female) (Regular)	84	100%	0	0%	0	0%	84
Tubectomy/ Ligation (female) (Post-partum)	83	99%	1	1%	0	0%	84
Vasectomy (male)	84	100%	0	0%	0	0%	84
No. of women received MVA services	59	98%	0	0%	1	2%	60
No. of women received MRM services	60	100%	0	0%	0	0%	60
No. of Post Abortion Care	59	98%	0	0%	1	2%	60
No. of NVD	140	97%	2	1%	2	1%	144
No. of C/S	--	--	--	--	--	--	--
No. of Live births	138	96%	1	1%	5	3%	144
No. of still birth	142	99%	1	1%	1	1%	144
No. of cases with Pre-Eclampsia/Eclampsia	142	99%	0	0%	2	1%	144
No. of cases with Postpartum hemorrhage	144	100%	0	0%	0	0%	144
No. of maternal deaths	144	100%	0	0%	0	0%	144
Total	**2689**	**95%**	**50**	**2%**	**93**	**3%**	**2832**

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