# Explaining the discrepancies in data on the use of long-acting reversible contraceptives and permanent methods in Bangladesh

## A comparative analysis of surveillance and family planning service statistics

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## Disclaimer

## Key Words

long-acting reversible contraceptives; permanent methods; Bangladesh; family planning.

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## Acronyms

| | |
|---|---|
| ANC | antenatal care |
| BCC | behavior change communication |
| BDHS | Bangladesh Demographic and Health Survey |
| BHFS | Bangladesh Health Facility Survey |
| BKMI | Bangladesh Knowledge Management Initiatives |
| BMMS | Bangladesh Maternal Mortality and Health Care Survey |
| CC | community clinic |
| CCSDP | Clinical Contraception Service Delivery Program |
| CHW | Community Health Worker |
| CHRW | Community Health Research Workers |
| CMWRA | Currently married women of reproductive age |
| CPR | contraceptive prevalence rate |
| DGFP | Directorate General of Family Planning |
| DGHS | Directorate General of Health Services |
| DH | District Hospitals |
| DHS | demographic and health survey |
| DLI | disbursement linked indicator |
| EPI | Expanded Program on Immunization |
| FP | family planning |
| FPW | Family Planning Worker |
| FWA | Family Welfare Assistant |
| FWV | Family Welfare Visitor |
| FP-FSDP | Family Planning-Field Service Delivery Program |

| | |
|---|---|
| FRA | Field Research Assistant |
| HFS | Healthy Fertility Study |
| HSS | health systems strengthening |
| IEC | Information, Education, and Communication |
| IEM | Information, Education, and Motivation |
| IUD | intrauterine device |
| LARC | long-acting reversible contraceptives |
| MCWC | Mother and Child Welfare Center |
| MDG | Millennium Development Goals |
| MH | Mayer Hashi |
| MIS | management information system |
| MMR | maternal mortality ratio |
| MNCH | maternal, newborn, and child health |
| MNCAH | maternal, neonatal, child, and adolescent health |
| MoHFW | Ministry of Health and Family Welfare |
| MO-MCH | Medical Officer – Maternal and Child Health |
| MR | menstrual regulation |
| NGO | non-governmental organization |
| NSV | no-scalpel vasectomy |
| NTC | National Technical Committee |
| OB/GYN | obstetricians/ gynecologists |
| OGSB | Obstetrical and Gynecological Society of Bangladesh |
| OP | operational plan |
| PAC | post-abortion care |
| PIP | project implementation plan |

| | |
|---|---|
| PM | permanent methods |
| PMMU | Program Management and Monitoring Unit |
| PNC | postnatal checkup |
| POP | progesterone only pill |
| PPFP | postpartum family planning |
| SBA | skilled birth attendant |
| SHOPS | Strengthening Health Outcomes through Private Sector |
| SMC | Social Marketing Company |
| TFR | total fertility rate |
| UHC | Upazila Health Complex |
| UHFWC | Union Health and Family Welfare Center |
| UNFPA | United Nations Population Fund |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |

# Acknowledgements

# Executive Summary

**Background:** Bangladesh is one of the countries with a high-performing family planning program. According to the Bangladesh Demographic and Health Survey (BDHS) 2014, contraceptive prevalence rate (CPR) was 62% and the use rate of long-acting reversible contraceptives and permanent methods (LARC and PM) was 8%. These results contradict with the Family Planning Management Information System (FPMIS) of DGFP under the Ministry of Health and Family Welfare. According to the FPMIS, the CPR was 78% and the LARC and PM use rate was 17% in 2014.

This discrepancy between the BDHS and FPMIS is a concern for policy makers who wish to understand the true program performance, plan logistics, and develop strategies to meet the FP needs of Bangladesh. The aim of this study was to compare the LARC and PM use rate in the FPMIS with the use rate obtained from the Matlab Health and Demographic Surveillance System (HDSS) maintained by icddr,b in the Chattogram Division of Bangladesh. Both the FPMIS and Matlab HDSS data collectors visit all currently married women aged 15-49 on every alternate month and record FP use or acceptance. This overlap of data collection provides an opportunity to compare the FPMIS records with those of the Matlab HDSS.

**Research questions:** This study addresses two main research questions:
1. What are the use rates of LARC and PM in the study area in the FPMIS and Matlab HDSS?
2. Is there an inflation/deflation in the numerator/denominator which may distort use rates in the FPMIS?

**Methodology:** The study was conducted in 16 purposively selected villages that are covered by both Matlab HDSS and FPMIS. Family Welfare Assistants (FWAs), the primary data collectors of FPMIS, also record FP method acceptance by currently married women aged 15-49. We matched contraceptive-use data of individual women from the two sources for the period May-June 2017 (which corresponded to a single visiting cycle for both FWAs and HDSS workers). In cases where there were unmatched records, (i.e., cases in which either the names of women were found in only one record but not the other, or in cases where the women's names matched but the contraceptive method did not in the two records), we conducted further investigation to identify the reasons for the discrepancy.

An independent data collection team undertook a field verification of contraceptive use information during the study period among a sample covering: (a) women who were in both the HDSS and FPMIS records and were users of LARC and PM, (b) women who were not in HDSS records but in FPMIS records and vice versa, or (c) women whose family planning method did not match across the two records. The contraceptive information was for the months of May-June 2017.

**Results:** There were 3,056 women in the FPMIS records and 2,802 women in the HDSS in May-June 2017. The LARC and PM use was 13.1% based on FPMIS records, 9.2% based on HDSS records. The FPMIS records which are not updated regularly are more likely to maintain a list of women who are LARC and PM users by ignoring the non-users.

We also found a small number of women to be reluctant to divulge their husband's usage of No-Scalpel Vasectomy (NSV) to the study interviewers. However, this underreporting did not substantially affect the LARC and PM use rate because the NSV use rate was very low.

**Discussion:** The observed higher LARC and PM use rate in FPMIS records than in surveillance indicates a substantial amount of misreporting, particularly over reporting, of LARC and PM use. The primary reason for the misreporting was the maintenance of an improper list of women in the FWA register which continued to

keep non-eligible women (women who had migrated-out, moved beyond reproductive age, or died) with higher than average LARC and PM use and excluded eligible women who had lower use. This resulted in an inflation of LARC and PM use rate in the FPMIS.

**Conclusion:** Data collection system of the FPMIS needs to be improved and monitored to correctly estimate contraceptive use rate, including LARC and PM use. Appropriate corrections will provide the reliable data that is necessary for program planning and policy formulation.

# 1. Introduction

## 1.1 Country Context

Bangladesh has made significant progress in lowering total fertility rates (TFR) from the highs of nearly 7 in the 1970's, to 2.3 in 2014. This drop in fertility was the result of a significant increase in modern contraceptive use, from below 10% in the 1970s to 62% in 2014. This fertility reduction also contributed to improvements in maternal and child health outcomes, including drops in under-five mortality that exceeded the Millennium Development Goals (MDG) and marked decline in maternal mortality (NIPORT et al., 2010; NIPORT et al. 2014; NIPORT et al., 2017).

However, despite these improvements, Bangladesh still faces some challenges: the maternal mortality ratio (MMR) has been stalled since 2010 at about 196 deaths per 100,000 live births (NIPORT et al. 2017), and the modern contraceptive prevalence rate (CPR) has been stalled at around 62% since 2011, with 12% unmet need for family planning in 2014. Furthermore, there remains a large gap between wanted fertility of 1.6 and the TFR of 2.3, while the relative prevalence of long-acting reversible contraceptives and permanent methods LARC and PM) in Bangladesh is also relatively low at about 8%. The BDHS 2014 also showed that 57% of married women of reproductive age wanted no more children, yet only 8% were using LARC and PM (NIPORT et al. 2014).

In order to meet these family planning challenges, the Government of Bangladesh made a number of commitments related to fertility in its Seventh Five Year Plan and Sector Wide Program 2017-2021 and in its Family Planning 2020 commitment: it pledged to reduce the TFR to 2.0, increase the CPR to 75%, and increase the share of LARC and PM from 8.1% to 20% by 2020 (Government of Bangladesh, 2017). Meeting these important commitments requires accurate and periodic data to monitor progress towards these goals, and take corrective action as necessary.

## 1.2 Sources of National Level Data on Family Planning.

The Government of Bangladesh has traditionally relied on two main sources of national data to monitor progress towards fertility and population health goals. One of the robust and reputed of these sources is the periodic (approximately every three years since 1993-1994) Bangladesh Demographic and Health Surveys (BDHSs) led by the NIPORT and funded by USAID. These countrywide surveys assess the status of the goals and outcomes related to population, family planning, and maternal and child health policies and programs in Bangladesh. The last of these BDHSs before the start of this study, found that the use of LARC and PM in Bangladesh was 8.1% in 2014. The LARC and PM use rate reported in the BDH surveys are similar to results from other nationally representative surveys such as the Bangladesh Maternal Mortality and Morbidity Surveys (BMMS) (NIPORT et al, 2010, NIPORT et al., 2014, NIPORT et al. 2016).

The second source of nationwide family planning data in Bangladesh comes from within the DGFP. This data comes primarily from visits to households by Family Welfare Assistants (FWAs), who are permanent staff of the DGFP and who are supposed to visit households once every 2 months to record FP acceptance and provide methods and referrals as necessary. The FWAs record this data in special FWA registers, which are then periodically uploaded into DGFP's Family Planning Management Information System (FPMIS).

Unfortunately, there has been large discrepancy between data reported in the FPMIS and the data reported in the BDHS (and other surveys), with the BDHS providing considerably more conservative estimates of family planning indicators than the ones reported by the FPMIS. This creates challenges for decision-makers in the government in understanding the true status of their family planning program.

One potential explanation for the discrepancy is that the current contraceptive practice captured by the BDHS interviewers, and the acceptance rate captured by FWAs, are different measures. For short-term FP methods, for example, the fact that a woman accepts a pill or condom from an FWA, does not mean that she will use it – this may be termed as acceptance rate, but not necessarily a use rate. For LARC and PM, where use rate and acceptance rate are necessarily the same, because of the nature of method, i.e., once a woman decides to have a Tubal Ligation (Tubectomy), for example, she is physiologically using a FP permanent method (PM).  Thus, BDHS and FPMIS should be reporting the similar rates, where LARC and PM use or acceptance is considered. Yet, they do not. The historical discrepancy between the FPMIS and the BDHS on LARC and PM data is presented in Figure 1.

**Figure 1: Percent of currently married women aged 15 – 49 using LARC and PM**
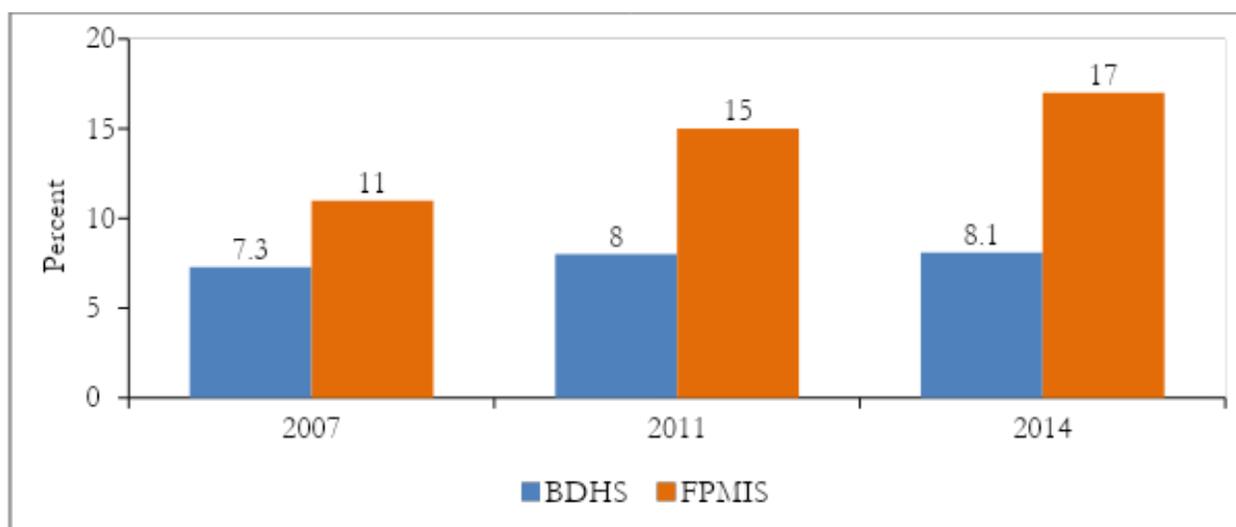


There could be a number of explanations for why these differences between BDHS and the FPMIS exist. For example, the job responsibilities, level of training, community recognition of data collectors, and the methods of data collection for the national surveys and FPMIS, are different. It is thus important to review the comparability of the survey and FPMIS data. We do so in the subsections below.

## 1.2.1 Job Responsibilities and Training of BDHS and DGFP MIS Data Collectors

The national BDHS survey data collectors collect data on current FP method use based on women's responses. They do not provide any FP methods, they do not counsel the women on the different methods, and are often meeting the women respondents for the very first time. In contrast, FWAs, the primary data collectors for the FPMIS, collect data on FP method acceptance during visits every two months to households in their areas. FWAs are community residents, who also provide pills, condoms, and in some cases, injectables to the women they visit. They also counsel the women on LARC and PM use and are familiar faces to the women in their communities. FWAs thus have a much wider set of responsibilities than BDHS interviewers and are also well-known to the respondents.

In terms of training, BDHS survey data collectors received training on FP methods before the start of the survey. Furthermore, the BDHS surveyor training is often very similar to other training they receive prior to other surveys' data collection. In contrast, FWAs receive much longer training on FP methods, and receive periodic refresher training throughout their careers.

In summary, it may be possible that because of these differences in responsibilities and training of data collection, we see the differences in reported LARC and PM data between the BDHS and FPMIS. The mechanism by which this may occur is discussed in the following subsection.

## 1.2.2 Possible Sources of Error in Data collection and Reporting

Differences or errors in the two data collection methods may contribute to the variations observed. For example, the difference in rates may occur due to inflated reporting on the number of the users of the methods (the numerator of the indicator), or deflated reporting on the number of currently married women of reproductive age (CMWRA)[1] in either source. This difference may be the result of FWAs' not updating their list of CMWRAs frequently, resulting in exclusion of new CMWRAs from the denominator, and LARC and PM user women aged above 49 years not excluded from the numerator, thus inflating the use rate. The number of users (and consequently the LARC and PM use rate) may also be inflated if the dropout cases of implants and IUD are not properly excluded from the list of users. Thus, FPMIS may be reporting a higher rate of LARC and PM use because of inflation of numerator and/or deflation of the denominator, because of errors in data collection. In the case of BDH surveys, the number of LARC and PM users may be deflated because women do not correctly report their adopted method to the survey interviewers, whom they are often meeting for the very first time during interview. This inaccurate reporting by women during the BDHS may also be the result of taboos in disclosing the FP method use, which make it less likely that they report truthfully to complete strangers. Consequently, the BDHS may be underreporting LARC and PM use rates.

## 1.2.3 Consequences of Variations in Reported Family Planning Data

The large difference between BDHS and FPMIS data (Figure 1) over the years is a significant challenge for program implementers and policy makers. As noted previously, Bangladesh has pledged to reach a LARC and PM use rate of 20% by 2020. If the FPMIS is correct, DGFP then almost reached their FP program goals. This then suggests that the current implementation strategy for LARC and PM is functioning well and DGFP can continue the current implementation plan to reach its goal. On the other hand, the BDHS 2014 data (Figure 1) suggests that the government is at a considerable distance from its projected level of LARC and PM use rate of 20% by 2020. The BDHS data then questions about the current strategy for LARC and PM and indicates that changes may be required in program implementation for further improvement of LARC and PM programs. Thus, it is critically important for the Government of Bangladesh to understand the correct LARC and PM use rate, if the country wants to meet its own pledges.

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[1] The number of CMWRA are the denominators used to calculate the LARC/PM use rates

## 1.3 An Opportunity: Family Planning Data from the icddr,b's Matlab Surveillance Area

An alternative and regional source of family planning data in Bangladesh comes from the Matlab health and demographic surveillance system[2] (HDSS) maintained by icddr,b in a rural part of the Chattogram Division in Chandpur and Comilla Districts. The Matlab HDSS covers most of North Matlab Upazila and South Matlab Upazila of Chandpur District and a part of Daudkandi Upazila of Comilla District. The Matlab HDSS has been in operation for nearly 50 years, and relies on regular household visits in two-monthly cycle by icddr,b Community Health and Research Workers (CHRWs), who, amongst other activities, collect FP use data from the individual women using structured tools on tablets. The HDSS is divided into two areas—icddr,b-served area and government-served area.

This HDSS data showed a LARC and PM use rate of 7% in the Matlab area in 2014, while BDHS data indicates that rural Chittagong division had a LARC and PM use rate of 5% (NIPORT et al. 2014). Thus, there was some similarity in the data collected from the BDHS and by icddr,b's Matlab HDSS. However, in rural Chandpur district, where most of the Matlab surveillance area is located, the DGFP reported LARC and PM acceptance of 14% in 2014, which was considerably higher than both the HDSS and BDHS data.

Fortunately, there is overlap between the HDSS surveillance area and the DGFP operational area, with both DGFP staff and HDSS staff collecting family planning data from the same area. This common operational area thus provides an opportunity to compare FPMIS data and the HDSS data to assess the accuracy of the family planning data reported in FPMIS. Comparing the data between the FPMIS and HDSS, would also allow for the identification of the challenges of reporting data for both the FPMIS and HDSS.

## 1.4 Research Question

This study addresses two main research questions:

1. What are the use rates of LARC and PM in the study area in the FP-MIS and Matlab HDSS?
2. Is there an inflation and deflation in the numerator/denominator which may distort use rates in the FPMIS?

The primary research objective was to estimate LARC and PM use rates in 16 villages (served by 10 FWAs) of Daudkandi and Matlab North U        pazilas by verifying the FPMIS data with surveillance record. The secondary research objective was to explore the reasons for mismatch between FPMIS and surveillance data. The methods and procedures used in addressing the research questions and objectives are presented in the following section.

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[2]Matlab surveillance is divided into two areas – icddr,b service area where icddr,b provides maternal and child health, and family planning services; and government service area where usual government services are available. In the icddr,b service area, government services are also available, and thus government field workers also conduct their usual responsibilities.

## 2. Method

## 2.1 Design

### 2.1.1 Study Site and Population

This comparative study is based on data on family planning use of couples residing in 3 villages in North Matlab Upazila (sub-district) of Chandpur District and 13 villages in the Daudkandi Upazila under Comilla District, during the time period May-June 2017. The selected villages are in icddr,b's Matlab HDSS area where icddr,b CHRWs routinely collect health and demographic information, including FP use. The 16 (3+13) villages were selected because they also had active FWAs, who routinely help deliver maternal and child health and family planning (MCH-FP) services to the villagers. FWAs also record relevant data and report them to FPMIS. The fact that these villages had active FWAs, meant that FPMIS data collected from these villages could be directly compared to HDSS records woman by woman. There were 10 active FWAs in the 16 villages selected for the study. The study population was CMWRA who live in the selected 16 villages. It should be noted that the main responsibility of the icddr,b CHRWs is to collect data on selected demographic, health, and family planning indicators. However, they provide information on the sources of health services if asked by the villagers. Both FWAs and CHRWAs are females and local residents.

### 2.1.2 Initial Data Capture

The initial data used for this study was captured by two types of workers: FWAs who work for DGFP, and CHRWs, who work for the Matlab HDSS of icddr,b. Amongst their other responsibilities, FWAs are supposed to visit each household in their catchment area once every two months and provide FP information and deliver pills, condoms, and injectables-refill doses, and record FP methods acceptance in their FWA registers. The data from these FWA registers are then uploaded into the FPMIS. CHRWs also visit the households every two months to record health and demographic events, including FP method use, in their Galaxy Tabs and upload the events to their central database. Though CHRWs collect data on FP method use and FWAs on FP method acceptance, acceptance and use of LARC and PM is the same, due to the nature of LARC and PM. Thus, data collected by FWAs and CHRWs are comparable, and were compared for this study.

## 2.2 Sampling

Sample size was calculated to achieve the objective of estimating the LARC and PM use rate through verification of FPMIS data with surveillance and survey data. True use rate of LARC and PM was unknown but could be estimated by appropriately sampling the population in the 16 villages. The minimum required sample size to estimate prior use rate of 7% with 95% confidence limits for different margins of error is shown in Table 1. Considering time and money, we assumed a relative margin of error of 15%, 95% confidence level, and a 20% non-response rate, leading to a required sample size of 2,835. According to HDSS, there were around 3,000 CMWRAs in the selected 16 villages, and since this was only marginally larger than the required sample size, all CMWRAs in these villages were included in the study.

**Table 1: Sample sizes for estimating LARC and PM use rate of 7% with 95% confidence interval for different margin of errors**

| Margin of error | Sample size for 20% non-response (n) |
|---|---|
| 10% of 7.0 | 6,380 |
| 15% of 7.0 | 2,835 |
| 20% of 7.0 | 1,595 |
| 25% of 7.0 | 1,021 |

We also estimated the sample size required to test for statistically significant difference in use rates, i.e., a FPMIS rate of 13.7% and HDSS rate of 7%. The sample size required testing a statistically significant difference in use rates with a 90% power and 95% level of confidence was 697 (including a 20% non-response). This sample size was much smaller than the required sample size (n=2,835) for estimation of the use rate and much smaller than the final sample size selected for this study of 3,000.

## 2.3 Data Matching and Collection

*Data matching and field verification workers for the study.* Eight female data matching and field verification workers that were either college graduates or post-graduate students were recruited for the study. They were given a three-day training, with additional two-day field orientation, on data matching and interviewing CMWRAs on family planning.

*Data Matching.* We matched data on CMWRAs, their husbands, and the FP method use between the HDSS records and FWA registers of the selected villages. For all the unmatched cases, a structured questionnaire was then used for a face-to-face interview to establish their use of FP method during May-June 2017.

One male Field Research Assistant (FRA) helped the data collectors in locating the women from whom data were collected. Two data entry personnel entered the data in Galaxy Tabs. Data entry software was developed based on the questionnaire used for data collection.

### 2.3.1 Procedure for matching the CMWRAs between the data sources:

**Step 1**: FWA registers from the 10 FWAs were photocopied in the last week of August 2017. The registers contained a list of CMWRAs with their names, husband's name, mobile number, and FP method use or acceptance, in all the previous months of 2017.

**Step 2**: A list of CMWRAs with their husband's name and FP method use during the period May-June 2017 was prepared from the HDSS database for matching with those from the FWA registers.

**Step 3**: Data matching and field verification workers matched the names of the CMWRAs, their husbands, and FP method use/acceptance for the period of May-June 2017, across the FWA registers and the HDSS list of CMWRAs for each household.  CMWRAs in the two lists were found not to match for three different reasons: (a) FP method use/acceptance was different in FWA register and HDSS record for the same

CMWRA, (b) CMWRAs were found in FWAs registers only, or (c) the CMWRAs were found in the HDSS database only.

In matching the names of the women and their husbands, the study workers also took help from CHRW's as some women who were known by more than one name and different names were occasionally reported in the HDSS record and the FWA's register. For example, a woman with the full name of Rukhsana Akter might be listed in the FWA register as "Rukhsana", while HDSS may have recorded her as "Akter". For all unmatched names of the women and their husbands, the study field verification workers crossed checked with CHRWs. In cases where confusion arose, the CHRW's rechecked the different names with the household over the phone and confirmed the women's names.

The project field verification workers then visited the unmatched CMWRAs with a structured questionnaire to record the reasons for the discrepancy in records between the HDSS and FWA registers. FWA registers had mobile numbers of all CMWRAs and project data collectors were able to call unmatched CMWRAs on their mobile phones to obtain the addresses of CMWRAs who were not in HDSS. In case of a failure to reach over the phone, interviewers tried to locate them in the village by their names and their husbands' name.

## 2.3.2. Field Verification and Data Collection

The data collection involved two types of activities:
- Field verification of the three categories of unmatched cases [(a) FP method use was different in FWA register and HDSS record for the same CMWRA, (b) CMWRAs were found in FWAs registers only, or (c) the CMWRAs were found in the HDSS database only] mentioned in Step 3 in previous Section 2.3.1. All women who were matched across the two records for both name and method were treated as true method users (LARC and PM or other short-acting methods).
- An independent field verification was made of those women who were found to use a LARC and PM during May-June 2017 in the matching activity described above. Each of the LARC and PM users was interviewed face-to-face by a project field verification worker. The LARC and PM use status was known by the project investigators but not by the data collectors/interviewers. The house-to-house field verification was done during September 2017-January 2018.

## 2.3.3 Estimation of LARC and PM use rate:

The true LARC and PM use rate can be found by: (a) identifying all women aged 15-49 in the 16 study villages and (b) the users of LARC and PM among the identified women, and by dividing the users by the number of women. We designated the numbers of women as $N_{11}$, $N_{21}$, $N_{12}$, and $N_{22}$, corresponding numbers of users as $n_{11}$, $n_{21}$, $n_{12}$, and $n_{22}$, and the rates as $r_{11}$, $r_{21}$, $r_{12}$, and $r_{22}$ as shown in the table below. Thus, LARC and PM use rate $= (n_{11} + n_{21} + n_{12} + n_{22}) \div (N_{11} + N_{21} + N_{12} + N_{22})$ x 100.

**Table 2: Variables used to calculate LARC and PM use rate**

| Number of women | | | | | Number of users | | | | | Use rate per 100 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Women listed in FWA Register | Women listed in HDSS Record | | | | LARC and PM use in FWA Register | LARC and PM use in HDSS Record | | | | LARC and PM use rate in FWA Register | LARC and PM use rate in HDSS Record | | | |
| | Yes | No | All | | | Yes | No | All | | | Yes | No | All | |
| Yes | $N_{11}$ | $N_{12}$ | | | Yes | $n_{11}$ | $n_{12}$ | | | Yes | $r_{11}$ | $r_{12}$ | | |
| No | $N_{21}$ | $N_{22}$ | | | No | $n_{21}$ | $n_{22}$ | | | No | $r_{21}$ | $r_{22}$ | | |
| All | | | $N$ | | All | | | $n$ | | All | | | $r$ | |

The primary aim of the study was to identify the $N_{11}$, $N_{21}$, $N_{12}$, $N_{22}$, $n_{11}$, $n_{21}$, $n_{12}$, and $n_{22}$ so that the true rate could be calculated.

It should be noted that there may be some women, designated as $N_{22}$, who are not listed in either system, and can only be identified through a census of all women in the 16 villages. A census is a huge task which we did not undertake, instead we assumed that the number of missing women simultaneously from the two systems is almost nil. The Matlab HDSS, based on a rigorous and high-quality longitudinal surveillance over a long period of time, is highly unlikely to miss enlisting any women in their data system.

## 2.4 Ethical Considerations

The project entitled 'Estimation of LARC and PM use rates verifying DGFP MIS with surveillance and survey data in 16 villages of Daudkandi sub-district' was approved by icddr,b's Institutional Review Board (the Research Review Committee and the Ethical Review Committee). Informed consent was obtained from all women before their interview.

# 3. Findings

## 3.1 Number of Women Belonging to the 10 FWA Catchment Area

According to the FWA registers and HDSS records, there were 3,056 and 2,802 women, respectively, in the FWAs' and HDSS records. The initial matching between the FWA Registers and HDSS records revealed that 2,264 women matched between the two systems (Table 3, Panel A). There were 792 women who were in the FWA registers but not found in the HDSS records, and 538 women who were found in HDSS but not in the FWA records. These women (792 and 538) (or their households) were visited by the field verification workers of this study, as indicated above.

**Table 3: Number of women, number of LARC and PM users, and LARC and PM use rate**

A.) Number of women

| FWA Register | HDSS | | Total |
|---|---|---|---|
| | Yes | No | |
| Yes | 2,264<br>(335 temporarily absent*) | 792 | 3,056 |
| No | 538<br>(107 temporarily absent*) | | |
| Total | 2,802<br>(442 temporarily absent*) | | |

*absent during the visit of HDSS data collector in May-June 2017 visiting cycle

B.) Number of LARC and PM users

| FWA Register Yes | HDSS | | |
|---|---|---|---|
| | Yes | No | Total |
| Yes | 277 in FWA register<br>204 in HDSS | 123 | 400 |
| No | 13 | | |
| Total | 217 | | |

C.) LARC and PM use rate

| | | HDSS | | |
|---|---|---|---|---|
| | | Yes | No | Total |
| FWA | Yes | 12.2% according to FWA registers<br>10.6% **according to HDSS | 15.5% | 13.1% |
| | No | 3.0%** | | |
| Total | | 9.2%** | | |

**adjusted for absence at the time of household visit of HDSS data collection.

Among the 792 women not found in HDSS, 104 were found as residents of the area (Matlab HDSS includes a person in its system if s/he lives in the household for at least 6 months). Thirty of the 104 women never stayed in the household for at least 6 months; 44 women from those households did not consent to participate in the HDSS; and 30 women who recently migrated in the area and the HDSS was yet to register them. The persons under observation are not included in the denominator for calculating rates, e.g., LARC and PM use in our case. Therefore, the true number of women exposed to the acceptance or use of contraceptives (i.e., the denominator for calculating contraceptive prevalence or LARC and PM use rate) would be 2,802 (2,264 + 538).

The common reasons for not finding the 688 (792-104) women in HDSS were (a) moving out permanently or temporarily or residents of other villages (n=505), (b) divorced or widowed and thus are ineligible as a contraceptive recipient (n=27), (d) death (n=7), (e) losing eligibility of reproductive age, i.e., becoming 50 or older for age (n=112), (f) no one could identify (37).

## 3.2 Number of LARC and PM Users

Panel B of Table 3 shows the number of LARC and PM users in various groups. According to the FWA register, there were a total of 400 LARC and PM users [277 among those (N=2,264) who were matched in both systems and 123 among those who were in FWA registers but not in HDSS]. According to HDSS, there were 217 LARC and PM users (204 among those who matched in both systems and 13 among those women who were in HDSS but not in FWA register).

## 3.3 LARC and PM Use Rate

Panel C of Table 3 shows the LARC and PM use rates according to FWA Register and HDSS data and field verification. LARC and PM use rate was 13.1% during May-June 2017 in the study area according to the FWA Register or FPMIS. In contrast, it was 9.2% according to HDSS and study field verification.

A group of women ($N_{12}$ equivalent cell in Table 2) who either migrated out, divorced, died, or moved to higher ages (50 or more) were kept in the FWA record whose LARC and PM use rate was 15.5%. Another group of women ($N_{21}$ equivalent cell in Table 2) who were not included in the FWA Register but should have been included, as HDSS did, had a relatively low use, only 3.0%. Inclusion of non-eligible women (who should not remain in the system) with high LARC and PM rate and exclusion of eligible women (who should remain in the system) with low LARC and PM use rate artificially inflated LARC and PM rate in FPMIS.

The field verification results from the 178 LARC and PM users who were matched in both the systems are shown in Table 4. There is an indication of misreporting of methods, in this case an underreporting, during the field verification. Of the 136 women of LARC and PM users (who were recorded by HDSS and FWAs as users and were available for the field verification), seven (5.1%) did not report that they or their husband were using the methods. Of the 114 tubectomy users four did not report having the method and three of 13 women whose husband were having an NSV reported that they either used no method or used a short-acting method. Among the four women not reporting their use of tubectomy, it was found that all of them had a hysterectomy while they were in their method, i.e., tubectomy. These 4 women probably decided to report the recent hysterectomy and not disclosing their use of tubectomy.

The likely implication of this kind of misreporting is that LARC and PM use rate obtained from a survey could have been slightly lower than what is found from HDSS, i.e., LARC and PM use would be 8.7% based on a survey vis-à-vis the study finding of 9.2%.

**Table 4. Number of LARC and PM users according to the system record and field verification**

| Method in use according to *FWA Register and HDSS)* | Women reporting methods to the interviewer that they (or their husband) were using during May-June 2017 or currently using | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | Tubectomy | NSV | Implant | IUD | Injectables | No method | |
| **Tubectomy** | 110 | | | | | 4 | 114 |
| **NSV** | | 10 | | | 1 | 2 | 13 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Implant** | | | 8 | | | | 8 |
| **IUD** | | | | 1 | | | 1 |
| **Total** | 110 | 10 | 8 | 1 | 1 | 6 | 136 |

## 3.4 Contact with FWAs and HDSS workers

The reported frequency of contacts between the CMWRA and FWAs was very low, only 11% of women during field verification reported that they had a contact with an FWA in the last six months. In contrast, 90% of women reported that they met an HDSS worker at least once in the last six months.

# 4. Discussion

This is the first study in Bangladesh that attempts to verify LARC and PM usage reported by FPMIS with longitudinal surveillance data and an independent verification. The LARC and PM use was 13.1% according to FPMIS compared to 9.2% in the surveillance, indicating a huge amount of misreporting, particularly overreporting, of contraceptive use in the FPMIS. The primary reason for misreporting of the rate is the maintenance of an improper list of women in the FWA register which continues to keep non-eligible women (migrated-out, moved beyond reproductive age, or died) and excludes eligible women. The former group has a  higher than average LARC and PM use and the latter group has lower use, resulting in an inflation of LARC and PM rate in FPMIS reports. There are some women whose use of LARC and PM was recorded in the FWA Register but were found, during the verification, to use no method or any short-acting methods.

Our findings are likely to assist decision makers to interpret reported family planning data. The FWA registers are not regularly updated and thus contain old information. One reason for this lack in updating of the FWA register may be associated with very low FWA contact with households, also found in this study. Secondly, some quarter claim that LARC and PM use, especially PM use, is underreported in standard demographic or contraceptive prevalence surveys because some women may feel uncomfortable to disclose their use of LARC and PM or their husband's use of NSV to the survey interviewers. We uncover some evidence that a small number of women were reluctant to divulge their husband's usage of NSV to the study interviewers. This may be a function of taboos about divulging family planning information to strangers, and the normal reticence associated with sharing private and sensitive information with strangers. The consequence of this reluctance to share this information is that national surveys such as BDHS and others, may be slightly underestimating PM usage. However, the estimates of LARC and PM usage data obtained from Matlab surveillance and field verification through interviews were very close to each other (approximately 9%).

The policy planners and program managers are aware of the challenges of the existing FPMIS data and acknowledge the importance of collection of quality data to enhance the practice of evidence-based decision making.  A strategy should be developed for improving the FPMIS data collection, processing, and use which is necessary to attain an efficient health system in Bangladesh.

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# Appendix

| Village | | Skip |
|---|---|---|
| Woman Identification<br>      a. For those who are in FWA Register but not in HDSS Record<br>          a1. FWA Register Srl #<br>          a2. Woman name in FWA Register<br>          a3. Name of Woman's  husband in FWA Register<br>     b.  For those who are in HDSS record but not in FWA Register<br>          b1. CID<br>          b2. Woman name in HDSS Record<br>          b3. Name of Woman's husband in HDSS Record<br>    c. Name and CID # of the woman with Matched Method<br>          c1.  FWA Register Srl #<br>          c2.  CID<br>          c3.  Woman name<br>          c4.  Name of Woman's  husband | | |

| First Visit,<br>Interviewer's Name | Date :  \|___\|___\|\|___\|___\|\|___\|___\|___\|___\|<br>        Day      Month     Year | **Sec-1** |
|---|---|---|
| Second Visit,<br>Interviewer's Name | Date:  \|___\|___\|\|___\|___\|\|___\|___\|___\|___\|<br>        Day      Month     Year | |

| 4. Does the woman found in the village? | Woman was found                    1      →<br>Woman was not found          2 | | |

| 5. Reason for not finding the woman in the village | Answer  code   1 | 6 a. Source of Information | 6 b. Date |
|---|---|---|---|
| | Migrated        2 | Over Phone   1<br>Neighbor     2<br>Relatives      3 | ___\|___\|\|___\|___\|\|___\|___\|<br>  Day    Month    Year<br>Don't know          8 |
| | Died          3 | Over Phone   1<br>Neighbor     2<br>Relatives      3 | ___\|___\|\|___\|___\|\|___\|___\|<br>  Day    Month    Year<br>Don't know          8 |
| | She is not a resident of this village     4 | Over Phone   1<br>Neighbor     2<br>Relatives      3 | |
| | Not identified  5 | | |

**Woman Questionnaire**

**Section- 1: Background and reproductive information:**

| Sl # | Questions | Answer codes | Skips |
|---|---|---|---|
| 101 | Interview Start time | Hour:         Minute: | |
| 102 | What is your name?<br>(Please write full name, including nick name if there is any) | | |

| 103 | In what month and year you were born? | Month : \|___\|___\| <br> (write "98" for "Don't know") <br> Year : \|___\|___\|\|___\|___\| | |
|---|---|---|---|
| 103a | How old are you now? <br> (Check the answer of 103 and 103 a, if doesn't match, check and correct ) | Age (in full year)………. \|___\|___\| | |
| 104 | Which religion do you follow? | Islam 1 <br> Hindu 2 <br> Buddha 3 <br> Christian 4 <br> Others 8 | |
| 105 | When do you last started live in this house? | From birth 1 <br> After marriage 2 <br> Date : \|___\|___\|\|___\|___\|\|___\|___\| <br>     Day    Month    Year | |
| 106 | What is your marital status? | Currently Married 1→ <br> Separated/Divorced/ Widow 2 | 108 |
| 107 | Date of separation/divorce/widowed | \|___\|___\|\|___\|___\|\|___\|___\|→ <br>     Day    Month    Year | 229 |
| 108 | What is your husband's name (present)? <br> (Please write full name, including nick name if there is any) | | |
| 109 | When did you get married with (husband's name)(present) | \|___\|___\|\|___\|___\|\|___\|___\| <br>     Day    Month    Year | |
| 110 | What is the name of this Village? | | |

## Section -2: Family planning methods:

| Sl.# | Questions | Answer codes | Skips |
|---|---|---|---|
| 201 | Are you pregnant now? | Yes 1→ <br> No 2 <br> Unsure 8 | 205b |
| 202 | Are you currently doing something or using any method to delay or avoid getting pregnant? | Yes 1 <br> No 2→ | 205 c |
| 203 | Which method are you using? <br> (Circle all mentioned) | Female Sterilization A <br> Male Sterilization B <br> IUD/Coper-T C <br> Norplant/Implant D <br> Injectable E <br> Pill F <br> Condom G <br> LAM H <br> Periodic abstinence I <br> Withdrawal J <br> Others (Specify) K | |
| 203a | From where did you receive this method? | <u>Govt. facilities :</u> <br> Govt. medical college hospital/ district hospital 11 <br> Upazila health complex 12 <br> Maternal & child welfare centre (MCWC) 13 <br> Health & family welfare center (FWC) 14 <br> Community clinic (CC) 15 <br> Other govt. facility (Specify) 19 <br><br> <u>NGO Facilities:</u> | |

| | | | | |
|---|---|---|---|---|
| | | NGO Clinic/ Hospital | 21 | |
| | | NGO Satellite clinic | 22 | |
| | | Other NGO (Specify) | 29 | |
| | | | | |
| | | _Private Medical Sector:_ | | |
| | | Private Clinic/ Hospital | 31 | |
| | | Qualified Doctor's Chamber | 32 | |
| | | Pharmacy | 33 | |
| | | Friends/Relatives | 34 | |
| | | Other Private Sector (Specify) | 39 | |
| | | | | |
| | | _Field Worker:_ | | |
| | | Family Welfare Assistant (FWA) | 41 | |
| | | NGO Field Worker | 42 | |
| | | Other Field Worker (Specify) | 49 | |
| | | Others (Specify) | 99 | |
| 204 | When did you start using this method? (day, moth, year) | Date : \|___\|___\| \|___\|___\| \|___\|___\| <br> Day    Month    Year <br> Method using start date is before May 2017 ☐ → <br> Method using start date is before May 2017 ☐ → | | 214 <br> 205a |
| 205 | a. Which method were you using just before using this method? <br> b. Were you using any method before getting pregnant? <br> c. Did you use any method before? | Female Sterilization | A | |
| | | Male Sterilization | B | |
| | | IUD/ Coper-T | C | |
| | | Norplant/Implant | D | |
| | | Injectable | E | |
| | | Pill | F | |
| | | Condom | G | |
| | | LAM | H | |
| | | Periodic abstinence Safe | I | |
| | | Withdrawal | J | |
| | | Others (Specify) | X | |
| | | No method use | K → | 213 b |
| 206 | When did you start using this method? (day, moth, year) | Date : \|___\|___\| \|___\|___\| \|___\|___\|___\|___\| <br> Day    Month    Year | | |
| 207 | When did you stop using this method? (day, moth, year) | Date : \|___\|___\| \|___\|___\| \|___\|___\|___\|___\| <br> Day    Month    Year | | |
| 207a | Method use status in May 2017 is included in 206 and 207 ☐ → <br> Method use status in May 2017 is included in 206 and 207 and 207 is after May 2017 ☐ → <br> 207: Before May 2017 ☐ → | | | 214 <br> 208 <br> 214 |
| 208 | Which method were you using just before using this method? | Female Sterilization | A | |
| | | Male Sterilization | B | |
| | | IUD/ Coper-T | C | |
| | | Norplant/Implant | D | |
| | | Injectable | E | |
| | | Pill | F | |
| | | Condom | G | |
| | | LAM | H | |
| | | Periodic abstinence Safe | I | |
| | | Withdrawal | J | |
| | | Others (Specify) | X | |
| | | No method use | K → | 214 |
| 209 | When did you start using this method? (day, moth, year) | Date : \|___\|___\| \|___\|___\| \|___\|___\|___\|___\| <br> Day    Month    Year | | |

**15**| _Explaining the discrepancies in long-acting reversible contraceptives and permanent method use data in Bangladesh_

| | | | |
|---|---|---|---|
| 210 | When did you stop using this method? (day, moth, year) | Date : \|___\|___\|\|___\|___\|\|___\|___\|___\|___\| <br> Day   Month   Year | |
| 210 a | Method use status in May 2017 is included in 206 and 207   □ → 214 <br> Method use status in May 2017 is included in 206 and 207 and 207 is after May 2017 □ → 208 <br> 207: Before May 2017   □ → 214 | | |
| 211 | Which method were you using just before using this method? | Female Sterilization   A <br> Male Sterilization   B <br> IUD/ Coper-T   C <br> Norplant/Implant   D <br> Injectable   E <br> Pill   F <br> Condom   G <br> LAM   H <br> Periodic abstinence Safe   I <br> Withdrawal   J <br> Others (Specify)   X <br> No method use   K → 214 | |
| 212 | When did you start using this method? (day, moth, year) | Date : \|___\|___\|\|___\|___\|\|___\|___\|___\|___\| <br> Day   Month   Year | |
| 213 | When did you stop using this method? (day, moth, year) | Date : \|___\|___\|\|___\|___\|\|___\|___\|___\|___\| <br> Day   Month   Year | |
| 213 a | Check Answer of 202 <br> If ' No' is circled □ → 213b <br> If 'yes' is circled □ → 214 | | |
| 213b | You told you are currently not doing something or using any method? Why are you not using any method? | Got Menopause   A → 213cA <br> Hysterectomy was done   B → 213cB <br> Infertility   C <br> Not /very less involvement in sexual intercourse   D <br> Post Partum Infertility   E <br> Believe in fortune   F <br> Want to have more children   G <br> Currently Pregnant   H <br> Respondent herself/Husband doesn't like   I <br> Religious Obstacles   J <br> Don't know about Methods   K <br> Don't know from where to receive Methods   L <br> Don't know how to use Methods   M <br> Fear of side effects   N <br> Not easy to get   O <br> Expensive   P <br> Others (Specify)   X | |
| 213c | A. Menopause since? <br> B. Hysterectomy done? | Date : \|___\|___\|\|___\|___\|\|___\|___\|___\|___\| <br> Day   Month   Year | |
| 214 | Check answer of 203,205,208 and 211: <br> If any has **C** circled □ → 218 <br> None has **C** circled □ → 215 | | |
| 215 | Have you ever used IUD? | Yes   1 <br> No   2 → 218 | |
| 216 | When did you receive this method? | Date : \|___\|___\|\|___\|___\|\|___\|___\| <br> Day   Month   Year | |
| 217 | When did you remove it? | Date : \|___\|___\|\|___\|___\|\|___\|___\| <br> Day   Month   Year | |

| | | | | |
|---|---|---|---|---|
| 218 | Check answer of 203,205,208 and 211:<br>If any has **D** circled [____] ➔ 222<br>None has **D** circled [____] ➔ 219 | | | |
| 219 | Have you ever used implant? | Yes                    1<br>No              2➔ | | ➔222 |
| 220 | When did you receive this method? | Date : \|___\|___\|\|___\|___\|\|___\|___\|<br>           Day     Month     Year | | |
| 221 | When did you remove it? | Date : \|___\|___\|\|___\|___\|\|___\|___\|<br>           Day     Month     Year | | |
| 222 | Did any field worker visit your house to talk about family planning method or to know about your method use? | Yes                    1<br>No              2➔ | | ➔224 |
| 223 | Who visited you to talk about family planning method or to know about your method use? | 223_1. Who visited?<br><br>FWA           A<br>Icddr.b field worker    B<br>Govt health worker    C<br>NGO worker        D<br>Others (Specify)     X | 223_2. How many times s/he visited in last 6 month?<br><br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times | |
| 224 | In last 6 months did any field worker visit your house for giving you any family planning method? | Yes                    1<br>No              2 | | ➔225_3 |
| 225 | | 225_1. Who visited?<br><br>FWA           A<br>Icddr.b field worker    B<br>Govt health worker    C<br>NGO worker        D<br>Others (Specify)     X | 225_2. How many times s/he visited in last 6 month?<br><br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times<br>➔ \|___\| times | |
| 225_3 | 'A' circled in any of<br>223_1 and 225_1 [____] ➔ 226<br>'A' is not circled in any of<br>223_1 and 225_1 [____] ➔ 226a | | | |
| 226 | When did FWA visit you last time? | Days ago      \|___\|<br>Months ago    \|___\|<br>Don't know/can't remember      8 | | |
| 226_a | 'A' circled in any of<br>223_1 and 225_1 [____] ➔ 226<br>'A' is not circled in any of<br>223_1 and 225_1 [____] ➔ 226a | | | |
| 227 | When did icddr,b field worker visit you last time? | Days ago      \|___\|<br>Months ago    \|___\|<br>Don't know/can't remember      8 | | |
| 228 | End the interview by thanking the respondent. Record the ending time. | Hour:        \|___\|___\|<br>Minute:     \|___\|___\| | | |
| 229 | Interview Result | Complete                 1<br>Absent                  2<br>Withheld                3<br>Refused                 4<br>Partially complete      5<br>Incapacitated           6<br>Others (Specify)       8 | | |