

**STUDY ON ASSESSMENT OF DISCREPANCIES IN HMIS DATA
IN DISTRICT LAKHIMPUR KHERI OF
UTTAR PRADESH**

**Dissertation
At
UP-TSU Indian Health Action Trust (IHAT) Organization**

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Jaipur
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CERTIFICATE

TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Amita Kshirsagar** student of MBA Hospital and Health Management from IIHMR University, Jaipur has undergone internship training at **UP-TSU India Health Action Trust (IHAT)** from **2nd February, 2015** to **30th April, 2015**.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



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The certificate is awarded to

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In recognition of having successfully completed her
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And has successfully completed her Dissertation Project on

A Study on Assessment of Discrepancies in delivery data in Health Management Information (HMIS) and Key Performance Indicator Tool at Lakhimpur District of Uttar Pradesh

She comes across as a committed, sincere & diligent person who has a
Strong drive & zeal for learning

We wish him all the best for future endeavors



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ABSTRACT

Background

Managers require a good quality data for evidence based decision making and future planning. There is always need of new facility and strengthening of existing delivery points. To identify the potential facilities for upgradation, mapping has to be done which requires quality data. HMIS is a good source of data. Health Management Information System (HMIS) is web based system which generate predetermined indicators across different level of facilities based on a set of registers and other source documents at facilities. Thus it captures the data of all the delivery points and non delivery points. Flow of data starts from the facility level through HMIS format which is compiled at Block data operator in the HMIS portal and forwarded to the district and then further to the state.

Key Performance Indicator (KPI) is a tool used for the assessment of performance of designated delivery points. It generates set of data giving information about delivery status, Human resource and commodity availability in the facility. Thus it captures the data of all the delivery points. Flow of data is similar to HMIS but it is a paper based reporting and format used is KPI format

Since KPI reports data of delivery points and HMIS report data of all facilities both should have no discrepancies and following condition should be fulfilled-1) HMIS should include all the delivery points listed in KPI. 2) Total number of deliveries reported in HMIS $\geq$ Total number of deliveries reported in KPI. 3) Delivery points matched both in HMIS and KPI should have same number of deliveries.

But the quality of data is questionable. Hence a study is required.

Method

To assess the data quality of HMIS, data was triangulated with data of KPI using common indicator which is “Number of deliveries conducted in the facility”. To do this exercise data of KPI of last financial 2014-15 was collected from blocks through email. HMIS data was extracted from the HMIS portal. To validate the data of both the sources primary data of deliveries were collected from the facility delivery register of last financial year and was compared. Data analysis was done using MS excel

Result

During this study, it was found that there is inconsistency in the data of HMIS and KPI either due to missing data or due to reporting error. Though all the delivery points listed in the KPI also existed in HMIS but there was difference in the data. Data was compared on month wise and block wise basis. In both ways, HMIS data was less than the KPI data which was indicative reporting error i.e. either over reporting or under reporting. The third condition, that delivery data of HMIS and KPI of delivery point should have no discrepancies. On average 29 percent delivery points had inconsistency in data. On month wise analysis of data, difference in data of both the sources was 23 percent. Since there was difference in the data it was validated with actual physical data. Validation also indicated that data of HMIS and KPI had discrepancies but the difference between physical data and KPI was minimum. So there is need assess the causes of the discrepancies.

Keyword: Health Management Information System (HMIS), Key Performance Indicator (KPI), Delivery Points, Data discrepancy.



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ABBREVIATION

APHC	Additional Primary Health Centre
BEmOC	Basic Emergency Obstetric Care
BPHC	Block Primary Health Centre
CEmOC	Comprehensive Emergency Obstetric Care
CHC	Community Health Centre
CS	Caesarean Section
DH	District Hospital
DP	Delivery Point
GIS	Geographic Information System
HMIS	Health Management Information System
HQ	Head Quarters
KPI	Key Performance Indicator
L1	Level 1
L2	Level 2
L3	Level 3
MIS	Management Information System
MS	Microsoft
Non DP	Non Delivery Point
PHC	Primary Health Centre
RMNCH	Reproductive, Maternal, Newborn and Child Health
SC	Sub Centre
WHO	World Health Organisation

1. INTRODUCTION

Health information is information about people's health, what the health services are being provided by the government, how much they are being utilized by the people, describing about the availability and effectiveness of curative activities.

Health information like skilled manpower, drugs, money, equipment, and so forth, is one of the essential ingredients of an effective health delivery system. Health managers and planners need information not only for conducting specific programs but also for assessing organizational effectiveness.

A good MIS produces complete, accurate, and timely information for managers to use as a basis for making appropriate decisions that contribute to the quality, expansion and sustainability of their programs and organizations. While the MIS design must provide the information needed to make good management decisions today, it must also anticipate the decisions the managers are likely to face tomorrow.

1.1 Health Management Information System:

A Health Management Information System (HMIS) is defined as an information system specially designed to assist in the management and planning of health programmes, as opposed to delivery of care (World Health Organization, 2004). It is an “integrated effort to collect, process, report and use health information and knowledge to influence policy-making, programme action and research” (AbouZahr and Boerma, 2005).

Government of India felt that relevant and up-to-date information is essential for the health service providers at all levels so that they can initiate action on the gaps in the system based on evidence and information. Recognizing the need for an information base, one of the core strategies of the “Strengthening capacities for data collection, assessment and review for evidence based planning, monitoring and supervision” as a

step in this direction, the Ministry established a dedicated Health Management Information System (HMIS) portal for all Public Health related information which was launched on 21st October 2008.

HMIS is a web-based system of generating a set of predetermined indicators across different levels of facilities based on a set of registers and other source documents at facilities. The facility wise data from the registers are collated to arrive at indicators.

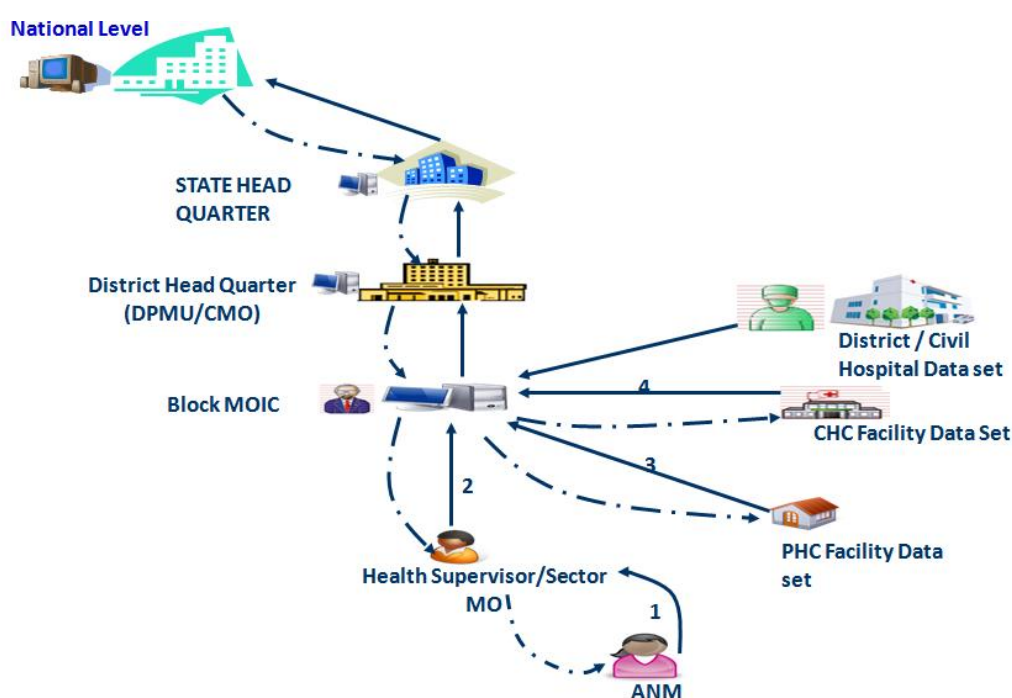
Features

- Aggregated facility based data compiled from a set of paper based registers
- Set of pre decide indicators on service utilization
- Periodicity: Monthly, quarterly and annually

Operational Principles of HMIS

- Data collected only from facility where service is provided
- All data collected should contribute to indicators
- No data will be collected twice
- Disaggregated data best collected through surveys
- Distinguish between recording and reporting formats

Figure 1.1 Information Flow in HMIS



This HMIS portal captures data to be collected as per the revised HMIS formats on a web-based system at the District level so that the primary data can be easily aggregated and the information/reports flow quickly to the State HQ and the Ministry. The system also enables information to be entered for each facility so that MIS reporting can be of a better quality.

1.2 Key Performance Indicator (KPI)

Key Performance Indicator (KPI"s) are considered as useful tools for determining if the project is moving towards the successful implementation of proposed strategies and solutions. Government of Uttar Pradesh is using some Key Performance Indicator to assess the performance of delivery points (DPs) .KPI consist of set of indicators which captures the information about delivery and other health information, human resource and their training status, status of availability of commodities in the facility.

Information Flow

ANM or Staff Nurse provides the data of the required data elements to the Block Program Manager, from the specific registers of the facility like delivery data is given from the delivery register of the facility in a KPI format. Data of all the delivery points are collected and compiled at block in compilation sheet and sent to the district through mail. Compilation of all the blocks is done by District Data Operator and forwarded to the State through mail.

1.3 Delivery Points

Delivery points are the facilities which are conducting deliveries above a minimum benchmark. These are designated as Delivery Points. These benchmarks for each level of facility are based on actual average number of deliveries being conducted per month.

1.4 Advantages of Mapping

The objective of the mapping is to reduce duplication of resources, increase coverage especially of un-served and under-served regions and establish a blue print for effective referral system at the district level, streamlining services and finally to utilize mapping as a tool for planning and monitoring purposes .Mapping will be beneficial in showing current distribution and disparities among existing health facilities and for taking decisions in the future while establishing or issuing licenses for new facilities.(10)

1.5 Ideal Conditions when HMIS and KPI data is compared

Since KPI reports data of delivery points and HMIS report data of all facilities both should have no discrepancies.

- 1) HMIS should include all the delivery points listed in KPI.
- 2) Total number of deliveries reported in HMIS $\geq$ Total number of deliveries reported in KPI
- 3) Delivery points matched, both in HMIS and KPI should have same number of deliveries.

2. LITERATURE REVIEW

Large numbers of literature are available on GIS and its potential use. Literature on use of KPI in public health are unavailable and few regarding HMIS but its use in mapping is not found.

A dissertation on Evaluation of HMIS in Kerala by Harikumar S (12). This was descriptive crosssectional study which involved 115 respondents from 26 sub-centres, 12 primary health centres, six blocks, two districts and the state level office in Kerala using Performance of Routine Information System Management (PRISM) framework. The study revealed the inadequacies in HMIS processes which resulted in low performance. Low levels of accuracy, completeness and use of information found in this study and reason behind was found out to be low levels of competence, promotion of culture of information, training, supervision and feedback.

In publication “Toward utilization of data for program management and evaluation: quality assessment of five years of health management information system data in Rwanda”(11) Marie Paul Nisingizwe et.al has discussed The purpose of this study is to assess the quality of Rwanda’s HMIS data over a 5-year period. The World Health Organization (WHO) data quality report card framework was used to assess the quality of HMIS data captured from 2008 to 2012 and is a census of all 495 publicly funded health facilities in Rwanda. Factors assessed included completeness and internal consistency of 10 indicators selected based on WHO recommendations and priority areas for the Rwanda national health sector. The average monthly district reporting completeness rate was 98% across 10 key indicators from 2008 to 2012. Completeness of indicator data increased over time: 2008, 88%; 2009, 91%; 2010, 89%; 2011, 90%; and 2012, 95% ($p < 0.0001$). Comparing 2011 and 2012 health events to the mean of the three preceding years, service output increased from 3% (2011) to 9% (2012). Our findings suggest that HMIS data quality in Rwanda has been improving over time.

In “Situation analysis of health management information system in Pakistan”[1] Moazzam Ali, Yoichi Horikoshi discussed about the strength and weaknesses in the HMIS system in Pakistan and about GIS use in the country. The results showed that HMIS was generating information and its coverage was encouraging, but at the same time it needed lot of room for strengthening at various levels. The HMIS approach in Pakistan seems more 'data driven' than 'action oriented'; there was duplication and lack of coordination among various vertical health information systems. The factor of time lag also been seen in receiving of information and its dissemination. The GIS was relatively a new concept in health sector in Pakistan and consequently application was limited at present.

Daudi O. Simba and Mughwira A. Mwangi (13) in their research paper “Factors influencing Quality of Health Management Information System (HMIS) data: The case of Kinondoni district in Dar es Salaam Region, Tanzania assessed the quality of data collected through the HMIS using a structured questionnaire and interviews including 21 public health facilities and 25% private facilities. Conclusion of the research was HMIS activities, had a positive influence on the quality of data where facilities with a focal person had a higher data completion rate (69.9%) compared to those without (44.7%). Accountability as measured by queries reportedly made by Municipal authorities on data inaccuracies was associated with better quality of data. However, queries on delay in sending report had no influence in quality of data.

A publication on website “Using Geographic Information System (GIS) Mapping for Better Health Planning – Binduri District” by Lauren Archer (9) discussed the use of GIS in public health planning. Using the information gained from the district mapping exercise, the Binduri Health Administration started lobbying for funds to build new CHPS facilities that will serve the most remote communities in the district. The work done in Binduri District shows how GIS techniques can be used to improve planning and knowledge of the health situation and available infrastructure in a particular area, leading to more effective implementation of health sector initiatives. Also explained the uses of GIS software like it tool in map making. GIS software allows its users to manipulate geographical information and tell stories with visual representations of data that were otherwise impossible to produce. Governments and organizations use for activities such as identifying locations for new hospitals and other infrastructure

3. RATIONALE

Facilities are unevenly distributed, thus affecting the coverage of medical services. High focus district have very few functional facilities leading to poor coverage of services.

Health planners and managers should plan for operationalization of facilities keeping in view both short and long term goals. Short term goal of planning focuses on making delivery point functional to provide comprehensive RMNCH services and ensuring adequate geographical coverage.

The long term goal should focus on planning for operationalization of defined number of CEmOC and BEmOC centers during the 12th Five Year Plan period as indicated in Table 3.1. These numbers are based on WHO recommendation of at least 10 maternity bed per 1000 pregnant women with 80 percent bed occupancy and three days of stay. This norm has been translated into numbers of BEmOC/ CEmOC facilities as required in India where an L2 delivery point is expected to conduct at least 10 deliveries per month and L3 delivery point at least 20 deliveries per month (including C-Section)(11).

Table 1. GIS map showing delivery points which need to be strengthened

Population	Expected deliveries in one year	Maximum expected no. of deliveries in public health facilities (70%)*	Expected number of deliveries per month (approx)	Number of CEmOC centres (L3)	Number of BEmOC centres (L2)	Number of basic delivery centres with referral linkages (L1)
10 lakh	23,000	16,100	1350	2(50% i.e. 675;540 ND,135 CS)	18(40% i.e. 540 ND)	30 (10% i.e. 135)
Expected number of normal deliveries in each facility per month				270	30	5
Expected number of CS in each facility per month				67		

Present Scenario of the Lakhimpur district, district has population of 42,40,537 .There are L3- 2 facilities, L2 -47 and L1 -59 designated delivery points and on average deliveries per month conducted in these facilities are 542(including C-Section), 67 and 13 respectively. Thus according to norms there is requirement of many more facilities to cater the population. For this planning identification of potential facilities through mapping has to be done which require quality data. HMIS is a facility based data which includes delivery points and non delivery points i.e. all the facilities (DH, CHC, PHC (APHC and BPHC) and SC) whereas KPI is also a facility based data but it only includes delivery points (L3, L2 and L1). Since both reports are facility based the data should be consistent of both sources. But during literature review it was found that there is low level of accuracy and completeness of data in HMIS. Hence the need of assessment of delivery data in HMIS was felt.

4. RESEARCH QUESTION

Whether and to what extent there is discrepancy in the delivery data of HMIS and KPI?

5. OBJECTIVES

1. To map delivery points of Lakhimpur district according to KPI and HMIS.
2. To analyse the deliveries in facilities reported in HMIS and KPI from period April 2014 to March 2015 of Lakhimpur district.
3. To validate the deliveries of delivery points of HMIS, KPI with Physical records.

6. METHODOLOGY

A retrospective quantitative study using primary as well as secondary data source was designed to analyze the institutional delivery status in public health facilities of Lakhimpur district in past one year.

6.1 Data Collection

6.1.1 Desk Review

Monthly Key Performance indicator (KPI) report is generated at all designated delivery points. This secondary data of period April 2014 to March 2015 was collected from all the delivery points through email by sending mail to Block Program Managers of all 15 blocks of the district. HMIS data of all facilities of Kheri district from period April 2014 to March 2015 was extracted from the HMIS portal.

6.1.2 Field Survey

Primary data of delivery was collected from the delivery registers of the selected facility from period April 2014 to March 2015 through a proforma. Purposive sampling was done for the selection of facilities. 10 delivery points in the district were visited and data was collected.

6.2 Data Analysis

The data collected was analyzed using Advance MS Excel and GIS software. The variables used for analysis is facilities matching in HMIS and KPI, institutional deliveries reported in HMIS, deliveries reported in KPI, facilities matching in HMIS and KPI, difference in deliveries.

7. RESULTS

HMIS is a facility based data which includes delivery points and non delivery points i.e. all the facilities (DH, CHC, PHC (APHC and BPHC) and SC) whereas KPI is also a facility based data but it only includes delivery points (L3, L2 and L1). Since both reports are facility based the data should be consistent of both sources.

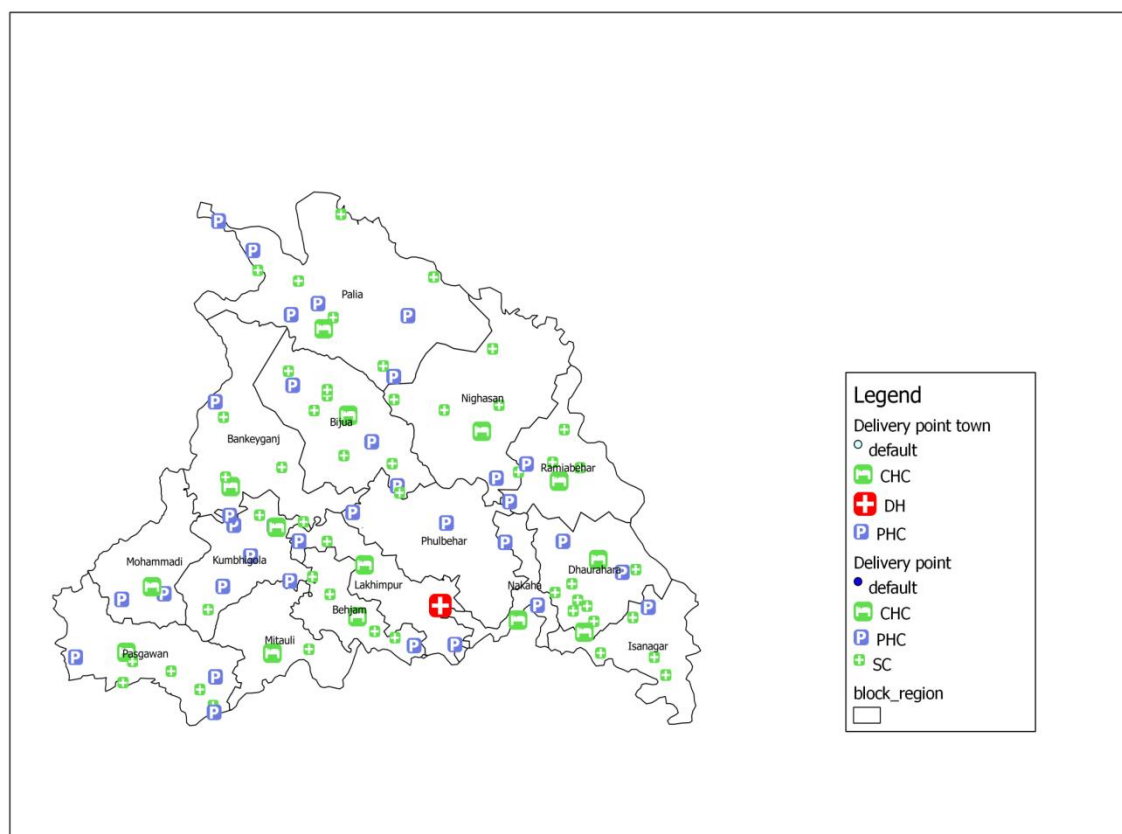
7.1 Delivery points listed in HMIS and KPI

Table 2_Monthly matching status of DP in KPI and HMIS

Month	Total number of DP(KPI)	Delivery Points matched in HMIS and KPI
April 14	104	104
May 14	104	104
June 14	105	105
July 14	105	105
August 14	106	106
September 14	106	106
October 14	106	106
November 14	107	107
December 14	107	107
January 15	108	108
February 15	108	108
March 15	109	109

Table 2 shows the matching status of delivery points in HMIS and KPI. Number of DPs are increasing in KPI as the facilities are being activated as DP as proposed in district PIP. All the delivery points in KPI are matching with facilities in HMIS. In June, SC Paithan in Palia block; in August SC Maigalganj in Pasgawa block; in November, SC JB.Ganj in Pasgawa block; in January and in March APHC Simrai, APHC Lagucha of Phardhan block were activated as new delivery points increasing the number to 109. All the DPs are listed in Annexure B and mapped in the figure 2

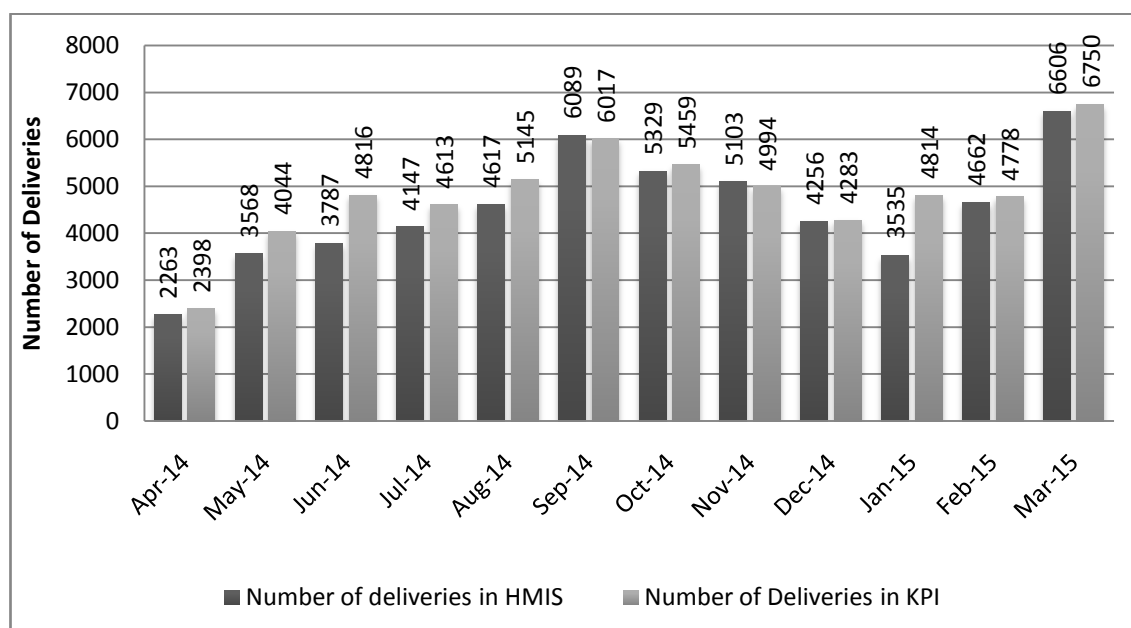
Figure 2 Delivery Points in Lakhimpur District



7.2 Number of deliveries in HMIS and KPI

(HMIS should be $\geq$ KPI)

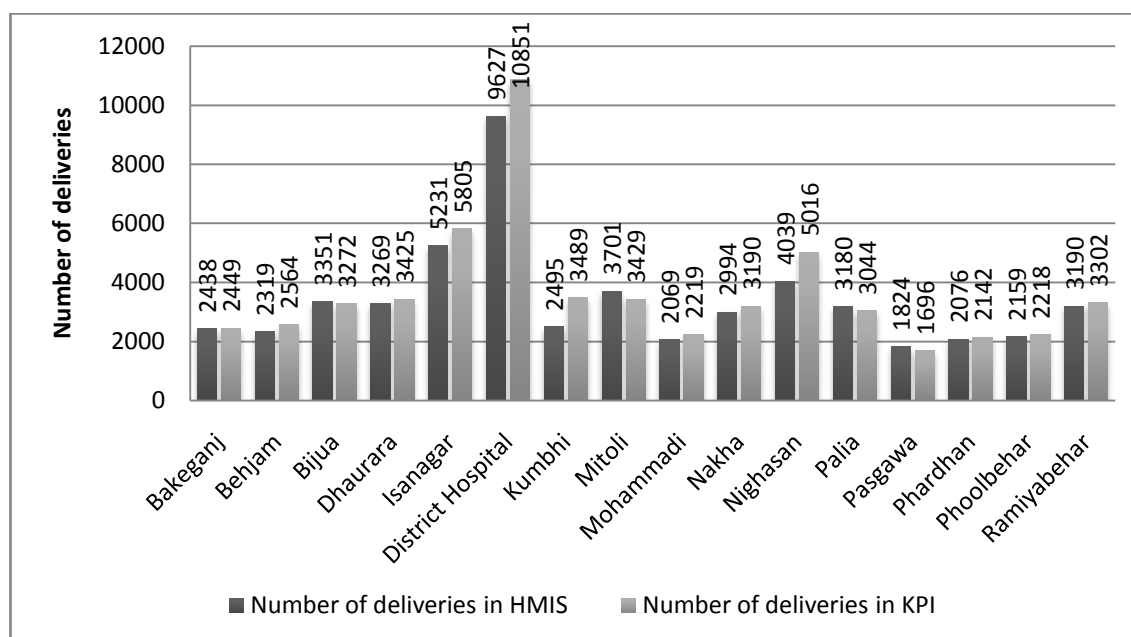
Figure 3 Monthwise comparison of deliveries reported in HMIS and KPI



As mentioned above HMIS reports data of all the delivery points and non delivery points i.e. all the facilities of district whereas KPI reports data of only delivery points, hence number of deliveries reported in HMIS should be more than or equal to number of deliveries reported in KPI (Deliveries reported in HMIS $\geq$ Deliveries reported in KPI)

Figure 3 depicts the monthly delivery status in HMIS and KPI. From the above graph it is evident that number of deliveries in HMIS is less than KPI in all the months except September and November. Thus we can conclude there is data quality issue either in KPI or in HMIS reporting (over reporting in KPI or under reporting in HMIS). This difference is more evident in month of May, June and January which suggest major problem in reporting.

Figure 4 Block wise comparison of deliveries reported in HMIS and KPI



Similarly, in Figure 4 which shows block wise status of deliveries in HMIS and KPI there is difference in the delivery status of KPI and HMIS. All blocks except Palia block are either under reporting in HMIS or over reporting in KPI. Major difference in deliveries are visible in District Hospital (District Hospital has not reported C-Section

deliveries in HMIS for 4 months and normal deliveries for two months), in Kumbhi and in Nighasan block (Nighasan has under reported deliveries in HMIS).

Thus, from both the figures 3 and 4 it is clearly seen that there is discrepancies in the data of HMIS and KPI. HMIS data is less than the data of KPI.

7.3 Number of deliveries in HMIS and KPI among common Delivery point (Delivery points matched in HMIS and KPI should have no data discrepancies)

Figure 5 Percentage of DPs whose delivery data are similar in HMIS and KPI

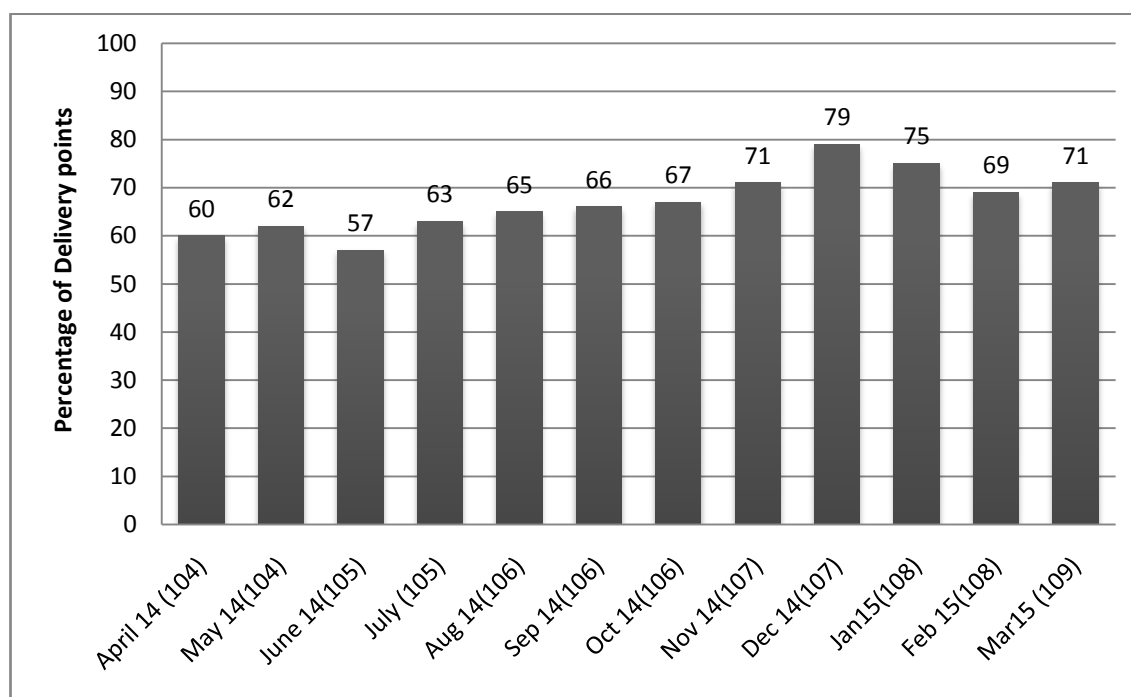


Figure 5. shows the Percentage of delivery points whose delivery data are matching in HMIS as well as in KPI

On an average, 71 percent delivery points match in delivery data of HMIS and KPI. From month of June to December, the trend is increasing but again the graph shows a drop till month of February but again increased in March. This shows the inconsistency of data in both the sources which should be matching ideally.

Table 3 Month wise comparison in deliveries in HMIS and KPI of matched DPs

Month	Total no. of deliveries in matched DP in HMIS (a)	Total No of Deliveries as per KPI (b)	Difference (c=b-a)	% of difference (c/a%)
April 14	1797	2398	601	33
May 14	3130	4044	914	29
June 14	3171	4816	1645	52
July 14	3682	4613	931	25
August 14	3986	5145	1159	29
September 14	5395	6017	622	12
October 14	4438	5459	1021	23
November 14	4528	4994	466	10
December 14	3789	4283	494	13
January 15	3138	4814	1676	53
February 15	4202	4778	576	13
March 15	5917	6750	833	14
Total	47173	58111	10938	23

Table 3 shows the month wise comparison of deliveries in matched delivery points of HMIS and KPI. Ideally both should match but there is a major difference in the data of both the sources Difference ranges from 10 percent to 53 percent and average difference is 23 percent. In month of June and January major difference is seen 52 and 53 percent respectively. From table we can conclude that there is reporting error.

Table 4 Block wise difference in deliveries in HMIS and KPI of matched DPs

Block	Total no. of deliveries in matched DP in HMIS (a)	Total No of Deliveries as per KPI (b)	Difference (c=b-a)	% of difference (c/a%)
Bakeganj	2432	2449	17	1
Behjam	1737	2564	827	48
Bijua	3351	3272	-79	-2
Dhaurara	2974	3425	451	15
Isanagar	4594	5805	1211	26
District Hospital	9627	10851	1224	13
Kumbhi	2228	3489	1261	57
Mitoli	3472	3429	-43	-1
Mohammadi	2003	2219	216	11
Nakha	1894	3190	1296	68
Nighasan	3174	5016	1842	58
Palia	2918	3044	126	4
Pasgawa	1508	1696	188	12
Phardhan	2071	2142	71	3
Phoolbehar	0	2218	2218	
Ramiyabehar	3190	3302	112	4

Negative sign(-) indicates KPI data < HMIS

From table 4 depicts the percentage of difference in the HMIS and KPI deliveries. Block wise the average difference is reduced. Bijua and Mitoli are over reporting deliveries in HMIS whereas others are under reporting. Major difference was seen in Phoolbehar block which reported zero deliveries in HMIS. Reason of error was analyzed through the data. Phoolbehar block has compiled delivery data in SC Phoolbehar whereas in KPI data was entered in PHC Phoolbehar (as both facilities are in same premises) which is actually the accredited delivery point.

This kind error was also observed in Kumbhi, Behjam blocks where the DP and Non DP with similar name or in same premises.

Other block like Nighasan data quality of HMIS was poor. District hospital has not reported delivery data for 4-5 months for CS and 2 months for normal delivery.

7.4 Checking the reliability of data of the sources

(Data Validation)

The above analysis shows difference in HMIS and KPI data which suggested that there is some reporting error either in HMIS or in KPI. Hence to validate the data, delivery data of one financial year (April 2014 to March 2015) was collected from facility delivery register in a structured validation proforma. Data of 10 delivery points were collected.

7.4.1 CHC Khamariya (Isanagar block)

Figure 6 Monthly status of delivery according to HMIS, KPI and Facility delivery register of CHC Khamariya

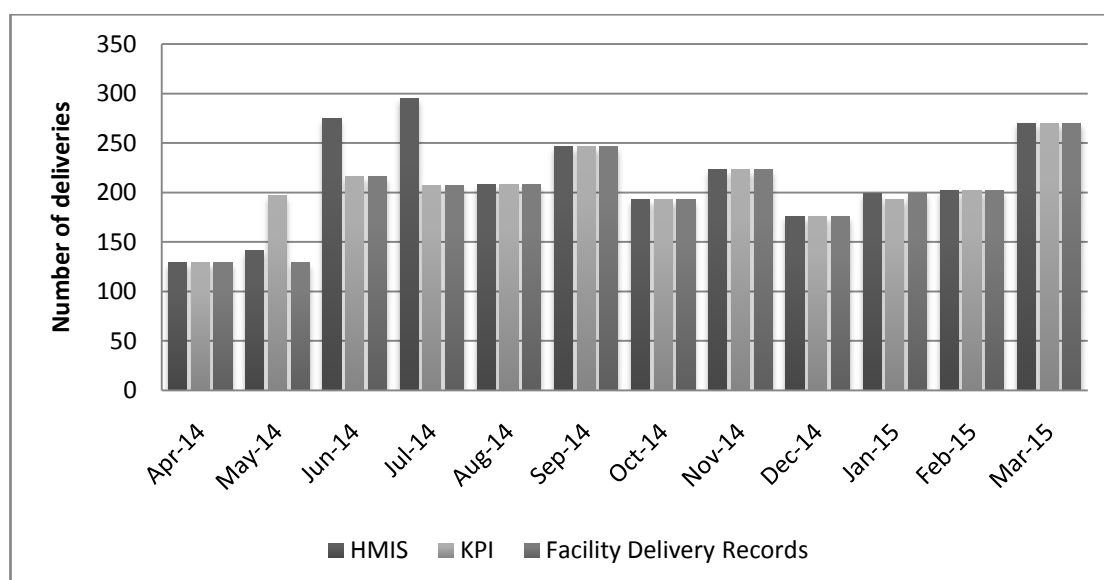
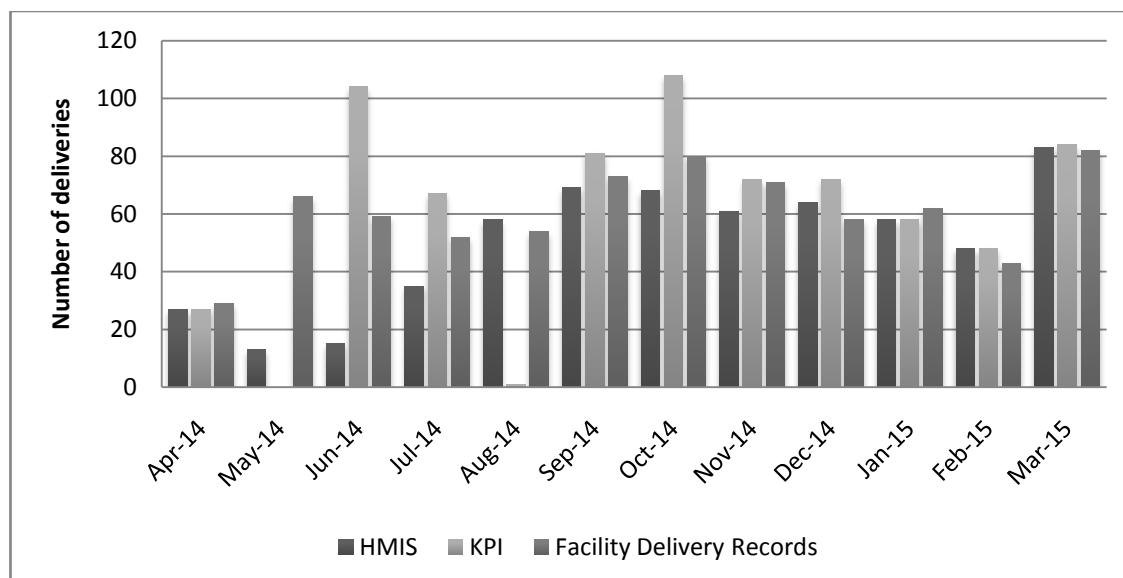


Figure 6 shows the delivery status of CHC Khamariya in various data sources like HMIS, KPI and Facility delivery register. Data of all these three data sources should be same. Data of the DP is almost same in all the three sources in all months except May, June, July and January. In month of June and July HMIS data was over reported. In May data of all the three sources were inconsistent. In month of January, facility has under reported the delivery data in KPI, HMIS and facility records were matching.

7.4.2 SC Katauli (Isanagar Block)

Figure 7 Monthly status of delivery according to HMIS, KPI and Facility delivery register of SC Katauli



Total deliveries in SC Kautali according to HMIS, KPI and actual delivery register data are 599, 722 and 729 respectively. Though the total deliveries in KPI and register are almost equal, from the above graph 7, it was evident that there are discrepancies in both. In month of June deliveries reported in HMIS are 15, KPI 104 and actual 59. In month of August actual deliveries conducted in facility are 54, but in KPI one delivery is reported. There is consistent under reporting of deliveries are seen in HMIS which indicates poor quality of HMIS data.

7.4.3 CHC Bijua (Bijua block)

Figure 8 Monthly status of delivery according to HMIS, KPI and Facility register of CHC Bijua

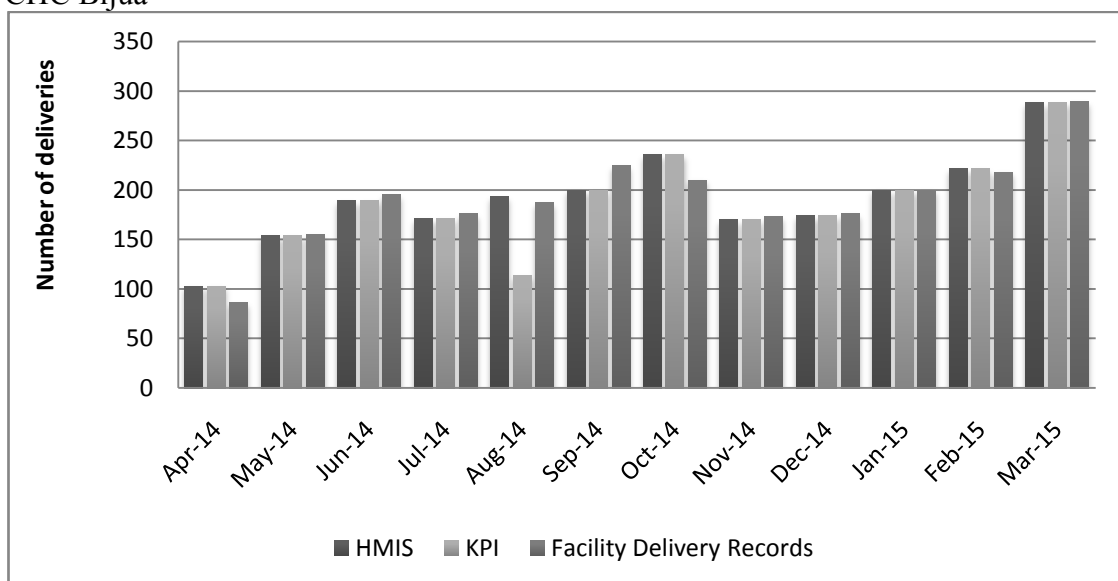


Figure 8 shows the matching status of delivery data of CHC Bijua in HMIS, KPI and Facility delivery register. In month of August there is inconsistency of data in all the sources- KPI data is under reported, HMIS data is over reported. HMIS and KPI data are matching in almost all months but there is difference in physical data which is the main source of data in both the sources. In month of September HMIS and KPI have reported 200 deliveries, but according to delivery register it is 225 differences of 25 deliveries. Total deliveries according to HMIS are 2300, KPI 2221 and from facility register is 2290. HMIS has over reported 10 deliveries whereas KPI have under reported 69 deliveries.

7.4.4 CHC Phardhan (Phardhan block)

Figure 9 Monthly status of delivery according to HMIS, KPI and Facility delivery register of CHC Phardhan

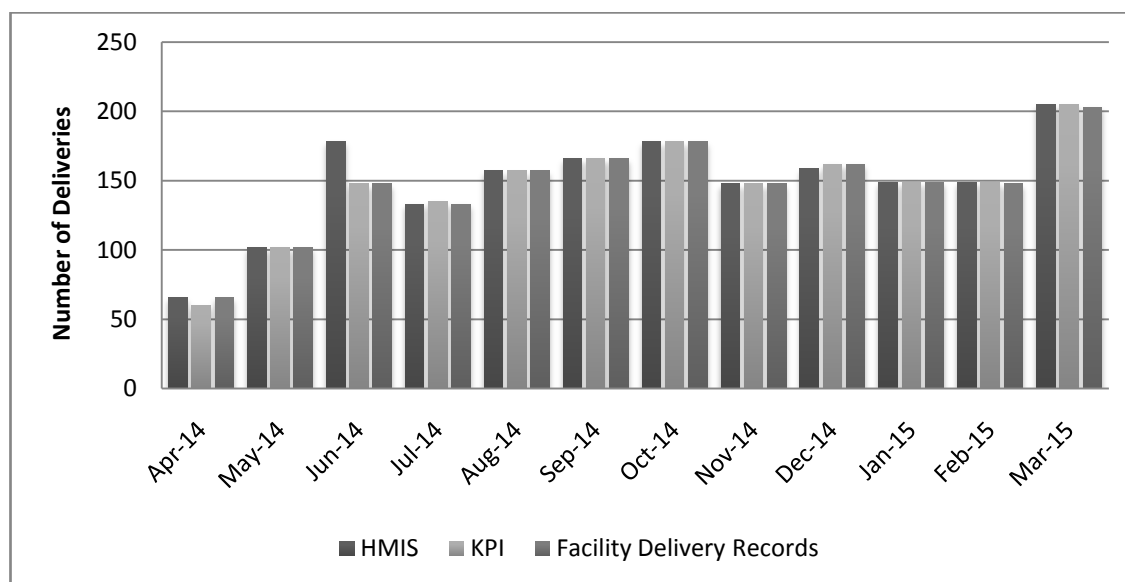


Figure 9 shows the matching status of delivery data of CHC Phardhan in HMIS, KPI and Facility delivery register. Data of all the sources are matching in almost all the months except April and June. Total number of deliveries reported in HMIS is 1790, in KPI 1759 and in delivery register is 1760. KPI and actual data is almost matching.

7.4.5 CHC Nighasan (Nighasan Block)

Figure 10 Monthly status of delivery according to HMIS, KPI and Facility delivery register of CHC Nighasan

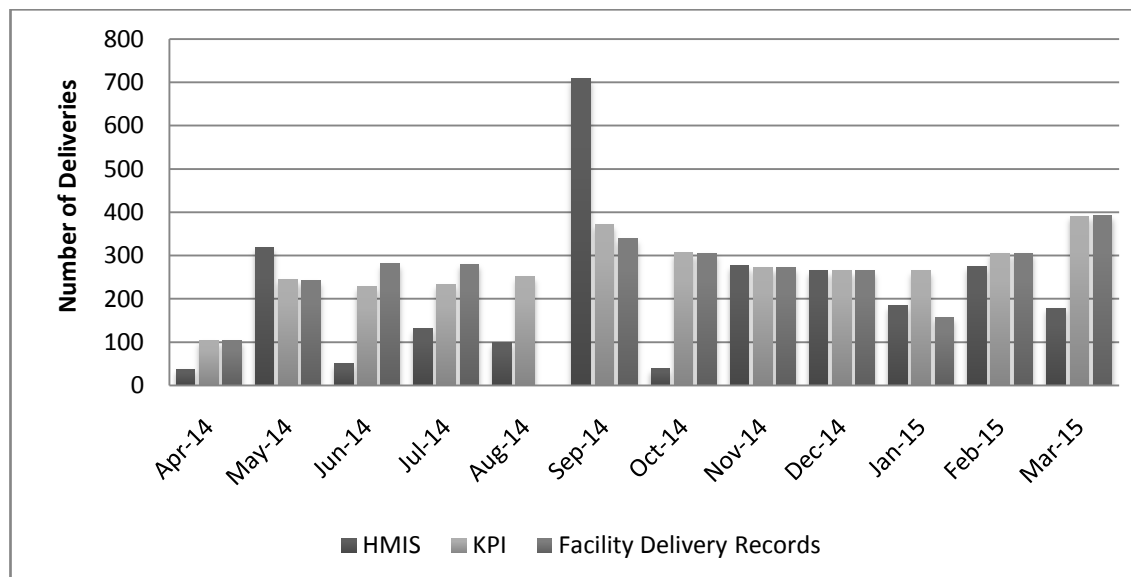
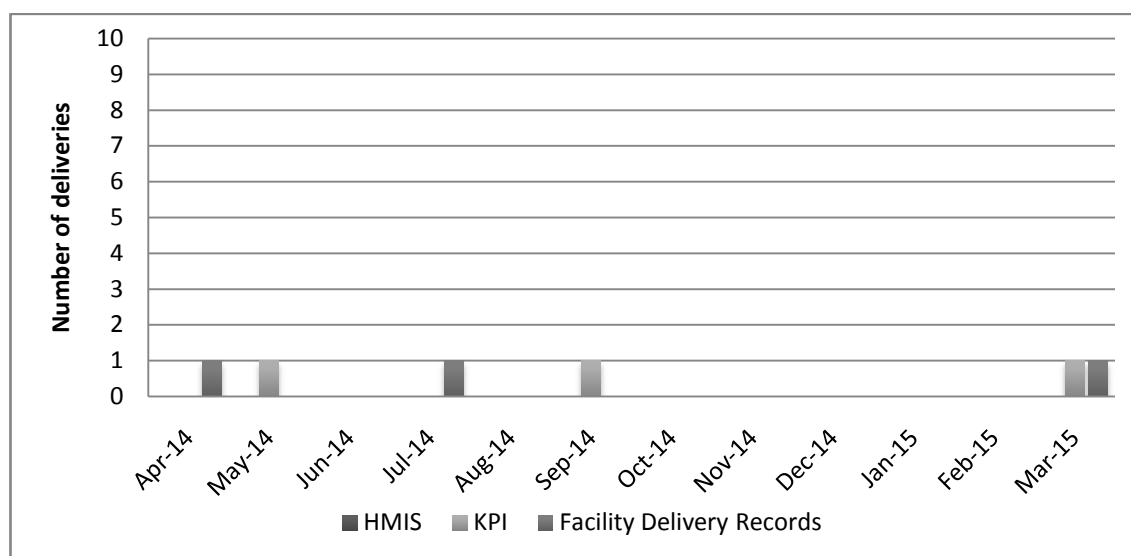


Figure 10 shows the matching status of delivery data of CHC Nighasan in HMIS, KPI and Facility delivery register. Major data error in HMIS reporting is seen in this block which is clearly visible in graph. Total number of deliveries in HMIS is 256, in KPI 3241 whereas actually it is more than 2948 (data of August month is missing in the total). From the graph it is evident that deliveries in KPI are almost matching with actual number of deliveries in all months except September where inconsistency of data is seen all the three data sources.

7.4.6. PHC Singhai (Nighasan block)

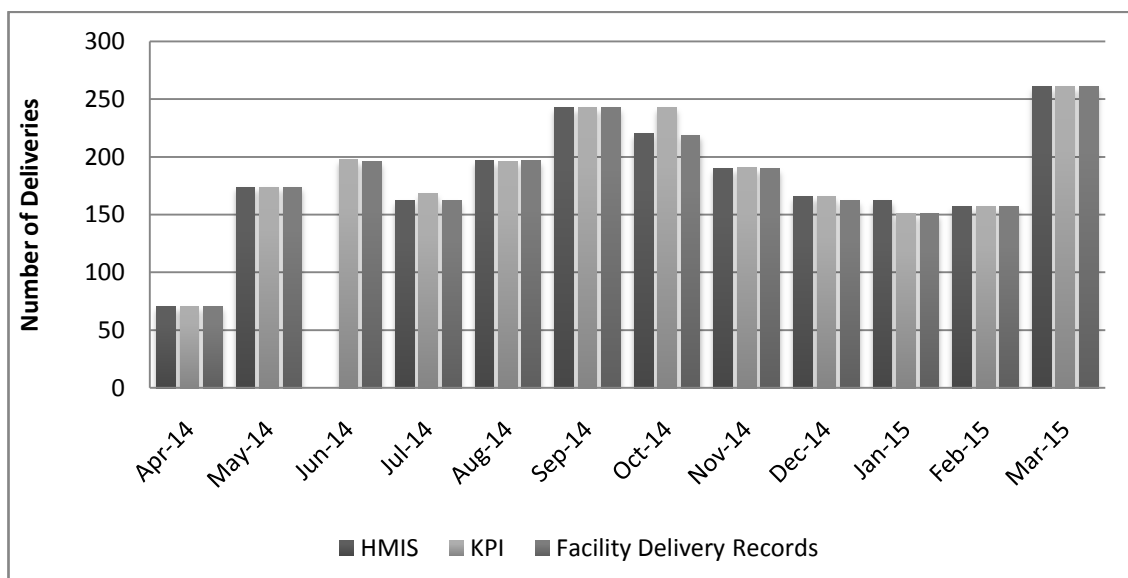
Figure 11 Monthly status of delivery according to HMIS, KPI and Facility delivery register of PHC Singhai



Though the PHC Singhai is a L2 level delivery point but the case load is very poor. Total deliveries conducted in the facility are three according to delivery register and KPI but the reporting months are different where as HMIS did not report any deliveries as seen in graph 11. This indicates the poor data quality in HMIS and KPI

7.4.7 CHC Mohammadi (Mohammadi block)

Figure 12 Monthly status of delivery according to HMIS, KPI and Facility delivery register of CHC Mohammadi



From figure 12 Data quality in CHC Mohammadi is far better, as data consistency is seen in most of the months. HMIS data of Mohammadi is missing in month of June (not entered in the portal). Total deliveries conducted in facility according to HMIS 2003(one month data is missing in total), according to KPI 2219 whereas actual deliveries are 2183 so the missing data in HMIS is 180 deliveries and 36 deliveries are over reported in KPI.

7.4.8 CHC Bankeganj (Bankeganj block)

Figure 13 Monthly status of delivery according to HMIS, KPI and Facility delivery register of CHC Bankeganj.

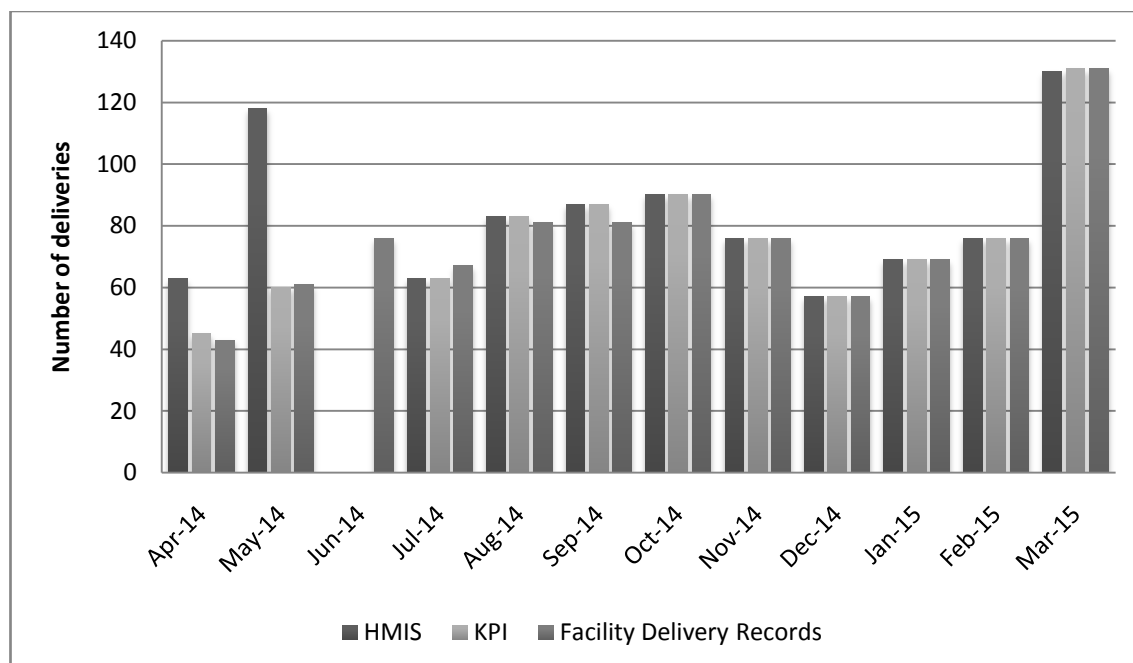
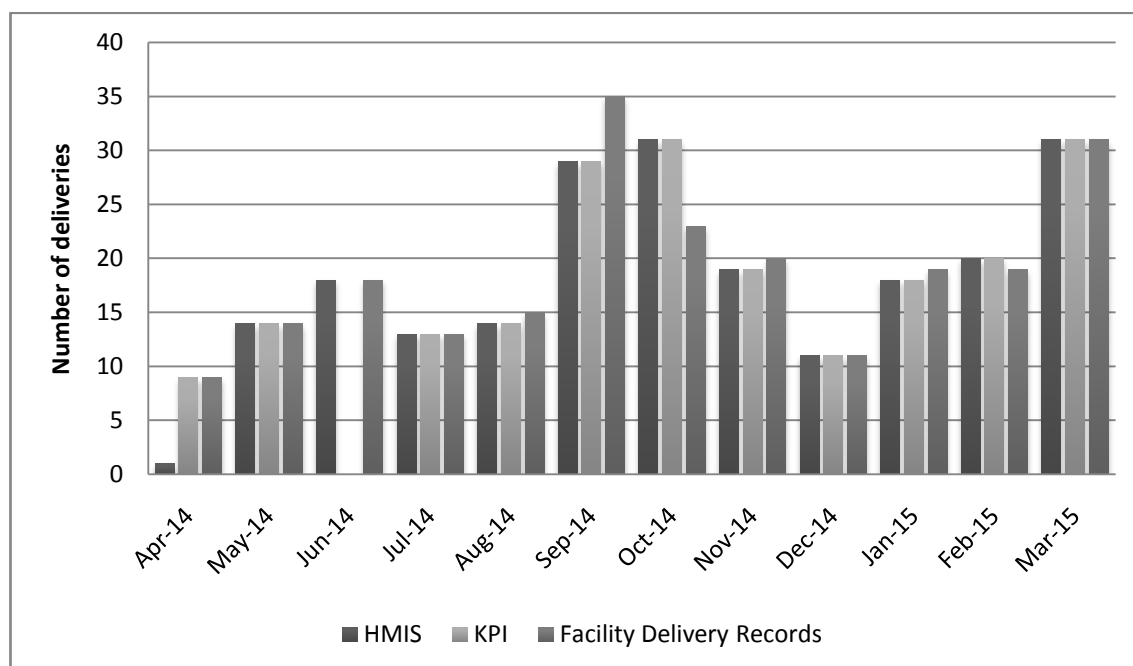


Figure 13 shows that consistency of data is seen from October to March between the different sources. In April and May, HMIS has over reported the number of deliveries. In June data is HMIS and KPI data is missing. Total number of deliveries conducted in the facility as per HMIS, KPI and delivery register are 912,837(June month data is missing) and 908 respectively. From this it is clear that in HMIS over reporting of deliveries has been done.

7.4.9. PHC Milani (Bankeganj block)

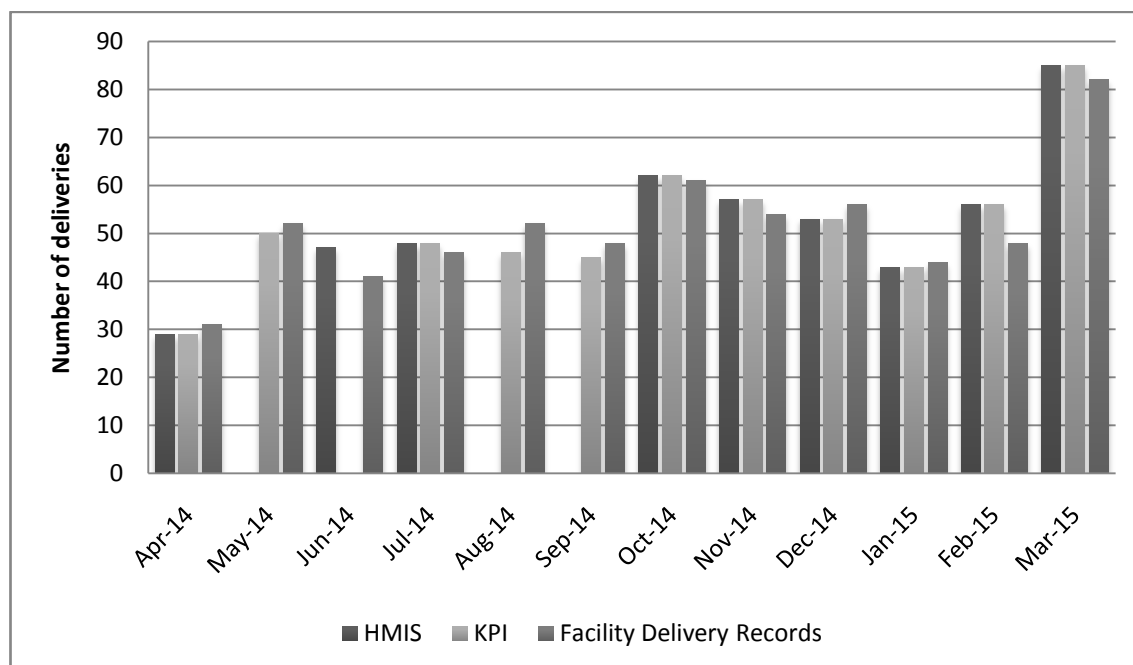
Figure 14 Monthly status of delivery according to HMIS, KPI and Facility delivery register of PHC Milani.



Total deliveries in PHC Milani according to HMIS, KPI and actual delivery register data are 219, 209 and 227 respectively (see Annexure C). Though the total deliveries in KPI and HMIS are almost equal, from the above graph 14, it is evident there are discrepancies in register data due to early reporting by the facility to the data operator. June data in KPI is missing. 8 deliveries are missing in April month in HMIS.

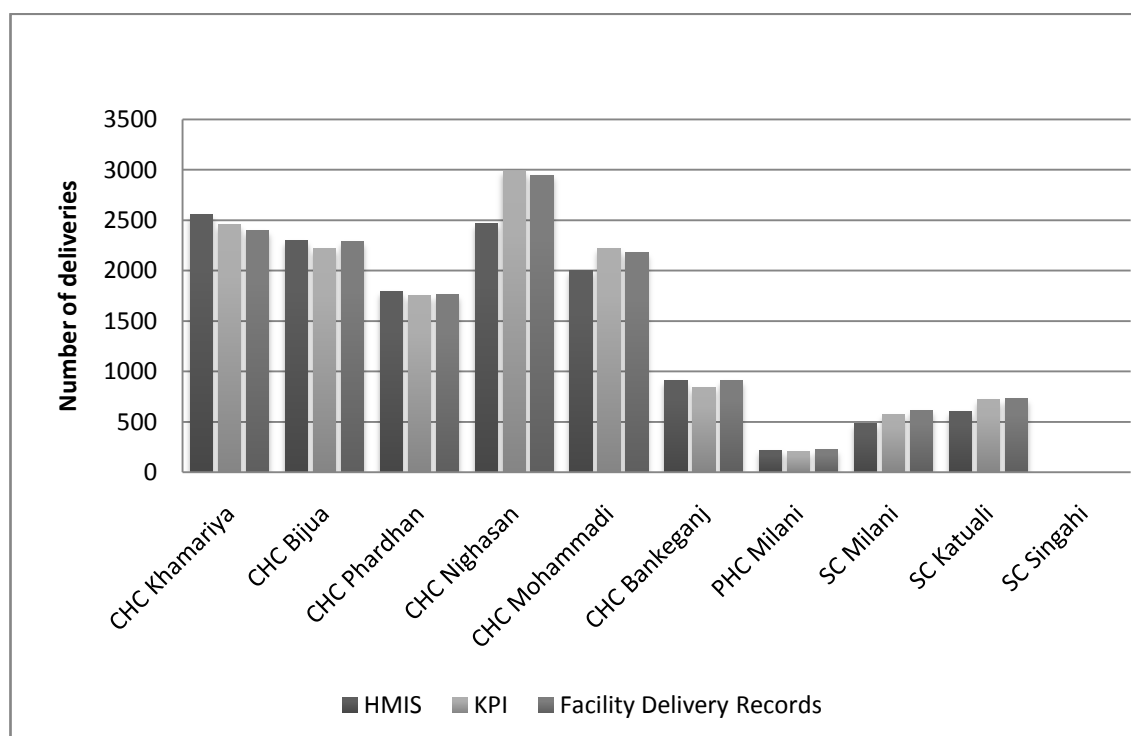
7.4.10. SC Milani (Bankeganj block)

Figure 15 Monthly status of delivery according to HMIS, KPI and Facility delivery register of SC Milani



Total deliveries in SC Milani according to HMIS, KPI and actual delivery register data are 480, 574 and 615 respectively. From the above graph 15, it is evident there are discrepancies in the data and most of the data in HMIS is missing (i.e. May, August, and September data is not entered in the portal). Data of June month in KPI is missing. In month of February actual deliveries conducted in facility are 48, but in KPI and HMIS 56 deliveries have been reported.

Figure 16 Comparison of deliveries in HMIS, KPI and Facility data



From the figure 16, it is evident that all the three data have discrepancies. But in most of the facilities the difference was less in KPI and actual data. In all the facilities the HMIS data is either under reported or over reported. Under reporting facilities in HMIS are CHC Nighasan, CHC Mohammadi, SC Milani and Katuali. In CHC Bijua and Bakeganj, data of HMIS is equal to actual facility data.

Thus from validation of the data, it is clear that there is actually discrepancies in HMIS and KPI data. But still KPI is much nearer to the actual facility data.

DISCUSSION

To assess the quality of HMIS data, it was triangulated with the KPI as both are facility based data by choosing a common variable- Number of deliveries. KPI reports data of all the delivery point whereas HMIS covers all the facilities. So firstly, the data was analyzed to see, whether delivery points listed in KPI also exists in HMIS. It was found that all the facilities listed in KPI also exist in HMIS.

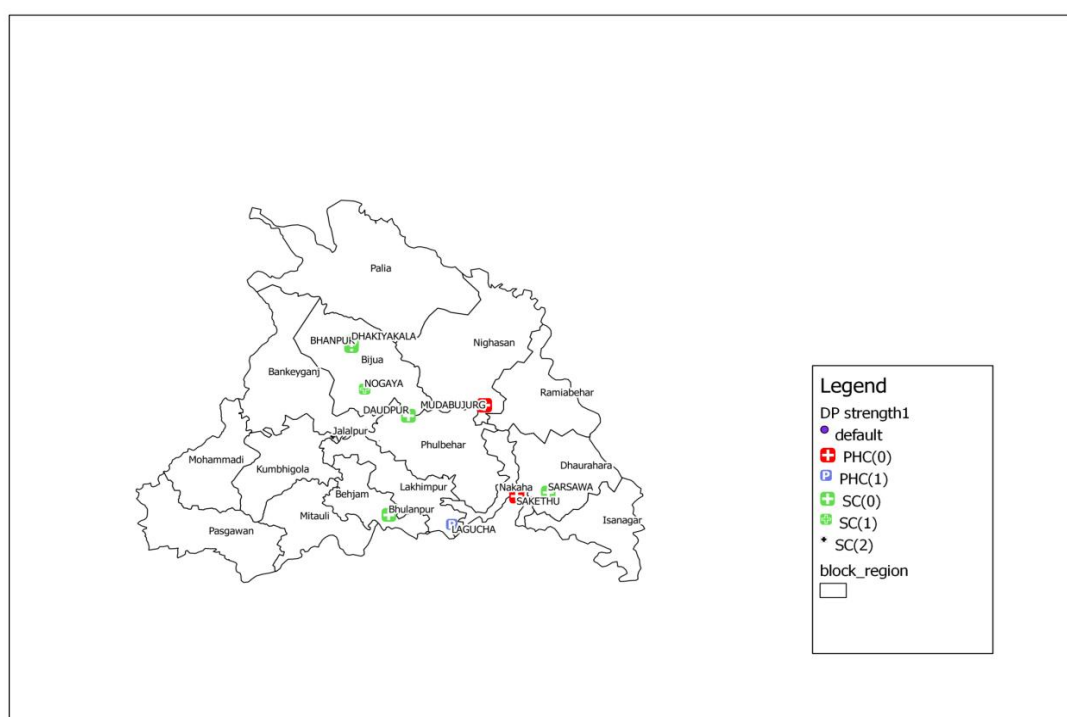
Further data was analyzed to see, whether the matched facilities have consistent data. Since HMIS include DP and Non DP the total number of deliveries in HMIS should be greater than or equal to total number of deliveries reported in KPI (Total deliveries reported in HMIS $\geq$ total number of deliveries reported in KPI). Inconsistency of data was the main issue found out during the data analysis (Number of deliveries in HMIS $<$ Number of deliveries in KPI). Out of 109 delivery points on an average 29 percent facilities data of institutional delivery did not match. From figure 5 in most of the month HMIS data was less than KPI data. Delivery data of matched delivery point was also compared (ideally number of deliveries in HMIS of matched DP = number of deliveries reported in KPI), the difference persisted and also increased as shown in table 3 and 4. To find out the reason of inconsistency analysis was drilled down to month wise and block level. In month wise analysis reason identified behind this inconsistency was firstly due to poor data quality of both the sources i.e. either the data was missing, secondly incorrectly filled by the data operator or there may be possibility that reporting person have given wrong data. In Block wise analysis the difference was reduced see Table 7.2. but few that had major difference was observed were analysed. Reason came out to be either the data was missing, under reported in HMIS or over reported in KPI. Another reason came forward to be, in HMIS the delivery data was compiled in a non delivery point where as in KPI it was compiled in DP of similar names and confusion

persists as both the facilities situated in same premises. For example in Phoolbehar block PHC and SC are running in same premises. Deliveries are being conducted in PHC. In KPI the deliveries were reported in DP named as PHC Phoolbehar but in HMIS it is being reported in SC Phoolbehar which is a non delivery point.

To validate the data of HMIS and KPI, primary data of deliveries were collected from facility delivery register through facility visits of 10 facilities which included delivery points of L2 and L1(CHC, PHC and SC). Total deliveries of few facilities were matching but difference was seen when the analysis was drilled down on monthly basis. Reason found to be early reporting of data in HMIS i.e. reporting period in last financial year was 16th to 15th of every month, but the report was sent from the facility to the operator prior to the reporting period. Also reporting error (under or over reporting) was observed in many facilities in HMIS and KPI.

8.1 Application of the Study

Figure 17 GIS map showing delivery points which need to be strengthened



Study can be used for identifying the delivery points which are under performing and which need to be strengthened. Like in figure 8.1, two PHCs and few sub centers are identified which have average delivery less than three per month.

8. PROPOSED SOLUTION

This study has proved that there are discrepancies in the HMIS and KPI, so there is need of further study to assess the causes of discrepancies in a scientific way so that solution can be formulated.

The delivery points which were identified for strengthening have to be verified for the cause of underperformance before putting resource for its strengthening.

9. LIMITATION AND SCOPE OF STUDY

Due to lack of time validation of only 10 facilities was possible. Other variable like Severe Anemia (hemoglobin less than 7 gm) was not analyzed due to lack of time and unavailability of proper data. Data of two months are missing in the primary data due to unavailability of register.

10. CONCLUSION

During the analysis of data some issues which were observed which caused discrepancy of data

1. **Missing data-** In HMIS many facilities did not report the delivery data in particular month leading to difference in data. This issue was also identified in KPI but the frequency was less.
2. **Under reporting and Over reporting of data-** Under reporting in HMIS was observed due to faulty reporting from the facility whereas over reporting is due to manipulation of data by block officials to achieve the target.
3. In HMIS the delivery data was compiled in a Non Delivery point where as in KPI it was compiled in DP of similar names and confusion persists as both the facilities situated in same premises.

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ANNEXURE

ANNEXURE A

VALIDATION PROFORMA

District:

Block:

Name of Delivery point:

Level of Delivery Point:

Sr. No.	Month	Number of Deliveries	Number of Pregnant women Anemia(<11gm)	Number of Pregnant women Anemia(<7gm)
1	1 April- 15 April			
2	16 April- 15 May			
3	16 May- 15 June			
4	16 June- 15 July			
5	16 July- 15 Aug			
6	16 Aug- 15 Sep			
7	16 Sep- 15 Nov			
8	16 Nov- 15 Dec			
9	16 Dec- 15 Nov			
10	16 Nov- 15 Dec			
11	16 Dec- 15 Jan			
12	16 Jan- 15 Feb			
13	16 Feb- 31 March			

ANNEXURE B

List of Delivery points in the District Lakhimpur Kheri

Sr. No.	District Type/ Block Name	Name of the Facility (FRU/24X7/Sub Centre)	Type of the Facility (MC,DH, DWH, SDH, CHC-FRU, CHC- Non-FRU, 24x7 PHC, Other PHC, Any other	Type of facility(L1,L2 & L3)
1	Bankey ganj	Bankey ganj	CHC	L2
2	Bankey ganj	Mustafabad	APHC	L2
3	Bankey ganj	Roshan nagar	APHC	L2
4	Bankey ganj	Mailani	APHC	L2
5	Bankey ganj	Mailani	SC	L1
6	Bankey ganj	Jalalpur	SC	L1
7	Bankey ganj	Pahadpur	SC	L1
8	Bankey ganj	Kukuhapur	SC	L1
9	Bankey ganj	Singha	SC	L1
10	Behajam	Behajam	CHC	L2
11	Behajam	Sakethu	APHC	L2
12	Behajam	Oel	APHC	L2
13	Behajam	Neemgaon	SC	L1
14	Behajam	Banika	SC	L1
15	Behajam	Bhulanpur	SC	L1
16	Bijua	Bijua	CHC	L2
17	Bijua	Bheera	APHC	L2
18	Bijua	Pardariya tula	PHC	L2
19	Bijua	Bheera	SC	L1
20	Bijua	Baslipur	SC	L1
21	Bijua	Daudpur	SC	L1
22	Bijua	Malpur	SC	L1
23	Bijua	Pardariya tulakpur	SC	L1
24	Bijua	Bhanpur	SC	L1
25	Bijua	Piperya bhur	SC	L1
26	Bijua	Dharmapur	SC	L1
27	Bijua	Nogayava	SC	L1
28	Bijua	Dhakiya kala	SC	L1
29	Dhaurahra	Dhaurahra	CHC	L2
30	Dhaurahra	Ranjeet ganj	APHC	L2
31	Dhaurahra	Dihua	APHC	L2
32	Dhaurahra	Sisaiya	APHC	L2
33	Dhaurahra	Ghurghutta bujurg	SC	L1
34	Dhaurahra	Gudaria	SC	L1
35	Dhaurahra	Sarsawa	SC	L1
36	Dhaurahra	Musepur	SC	L1
37	Dhaurahra	Rehua	SC	L1
38	Dhaurahra	Siseyakala	SC	L1
39	Dhaurahra	Chaklakhipur	SC	L1
40	Dhaurahra	Chahmal pur	SC	L1
41	Kumbhi	Gola	CHC	L3
42	Kumbhi	Kumbhi	BPHC	L2
43	Kumbhi	Gola	APHC	L2
44	Kumbhi	Sikandarabad	APHC	L2
45	Kumbhi	Jhaupur	APHC	L2
46	Kumbhi	Pareli	APHC	L2
47	Kumbhi	Roshan nagar	SC	L1

Sr. No.	District Type/ Block Name	Name of the Facility (FRU/24X7/Sub Centre)	Type of the Facility (MC,DH, DWH, SDH, CHC-FRU, CHC- Non-FRU, 24x7 PHC, Other PHC, Any other	Type of facility(L1,L2 & L3)
48	Kumbhi	Chitauniya	SC	L1
49	Kumbhi	Magdapur	SC	L1
50	Kumbhi	Suhela	APHC	L2
51	Isa nagar	Isa nagar	BPHC	L2
52	Isa nagar	Khamaria	CHC	L2
53	Isa nagar	Lakhun	SC	L1
54	Isa nagar	Katoli	SC	L1
55	Isa nagar	Lokahimallapur	SC	L1
56	Isa nagar	Mudi	SC	L1
57	Mitauli	Mitauli	CHC	L2
58	Mitauli	Magahi	SC	L1
59	Mohammdi	Mohammdi	CHC	L2
60	Nakha	Nakaha	CHC	L2
61	Nakha	Patrasi	APHC	L2
62	Nakha	Gadaipur	SC	L1
63	Nighasan	Nighasan	CHC	L2
64	Nighasan	Tikuniya	PHC	L2
65	Nighasan	Patiya	PHC	L2
66	Nighasan	Mudabujurg	PHC	L2
67	Nighasan	Singahi	PHC	L2
68	Nighasan	Singhakala	SC	L1
69	Nighasan	Ballipur	SC	L1
70	Nighasan	Bamhanpur	SC	L1
71	Nighasan	Belrayan	SC	L1
72	Paliya	Palia	CHC	L3
73	Paliya	Sampurnanagar	APHC	L2
74	Paliya	Khajuriya	APHC	L2
75	Paliya	Vishenpuri	SC	L1
76	Paliya	Murarkheda	SC	L1
77	Paliya	Chandanchauki	SC	L1
78	Paliya	Trilokpur	SC	L1
79	Paliya	Atariya	SC	L1
80	Paliya	Phulwariya	SC	L1
81	Paliya	Trikauliya	SC	L1
82	Paliya	Gaurifanta	SC	L1
83	Paliya	Majhgai	APHC	L1
84	Paliya	Gaurifanta	APHC	L2
85	Paliya	Parsiya sonaripur	APHC	L2
86	Paliya	Patihan	SC	L1
87	Pasagawa	Pasagawan	CHC	L2
88	Pasagawa	Aurangabad	APHC	L2
89	Pasagawa	Khakhra	APHC	L2
90	Pasagawa	Barbar	APHC	L2
91	Pasagawa	J.B. Ganj	APHC	L2
92	Pasagawa	Uchauliya	APHC	L2
93	Pasagawa	Aurangabad	SC	L1
94	Pasagawa	Baikuya	SC	L1
95	Pasagawa	Nardi	SC	L1
96	Pasagawa	Maksoodpur	SC	L1
97	Pasagawa	Maigalganj	SC	L1
98	Pasagawa	J.B. Ganj	SC	L1
99	Phardhan	Phardhan	CHC	L2
100	Phardhan	Rajaganj	SC	L1
101	Phardhan	Laghucha	APHC	L2

Sr. No.	District Type/ Block Name	Name of the Facility (FRU/24X7/Sub Centre)	Type of the Facility (MC,DH, DWH, SDH, CHC-FRU, CHC- Non-FRU, 24x7 PHC, Other PHC, Any other	Type of facility(L1,L2 & L3)
102	Phardhan	Simrai	APHC	L2
103	Phoolbehar	Phool behar	BPHC	L2
104	Ramiyabehar	Ramia behar	CHC	L2
105	Ramiyabehar	Lakhaniyapur	SC	L1
106	Ramiyabehar	Pratappur	SC	L1
107	Ramiyabehar	Sujanpur	SC	L1
108	Ramiyabehar	Dhakherwa nankar	SC	L1
109	Kheri	District Women Hospital	DWH(DH)	L3

ANNEXURE C

List of Total deliveries in HMIS, KPI and Facility registers

Block	Type of facility	Facilities	Total number of deliveries in		
			HMIS	KPI	Facility Records
Isanagar	CHC	Kamariya	2557	2460	2398
Isanagar	SC	Katuali	599	722	729
Bijua	CHC	Bijua	2300	2221	2290
Phardhan	CHC	Phardhan	1790	1759	1760
Nighasan	CHC	Nighasan	2569	3241	2948
Nighasan	PHC	Singhai	0	3	3
Mohammadi	CHC	Mohammadi	2003	2219	2183
Bankeganj	CHC	Bankeganj	912	837	908
Bankeganj	PHC	Milani	219	209	227
Bankeganj	SC	Milani	480	574	615