

**BOTTLENECK ANALYSIS OF HMIS INDICATORS AT SUB
CENTER LEVEL: STUDY IN BAHRAICH DISTRICT OF UTTAR
PRADESH**

**Dissertation
At
Indian Health Action Trust**

**By
Charu Yadav**

**Under the guidance of
Dr. Shilpi Mishra Sharma**

**MBA Hospital & Health Management
2013–15**


**Institute of Health Management Research
Jaipur
2015**

ACKNOWLEDGEMENT

At the completion of my dissertation I would like to show my sincere gratitude to the IHAT authority especially to the Team leader Monitoring and evaluation Dr. Arup Das, for providing me such an opportunity. Without his constant support and guidance it would never be a success.

I wish to express my deep sense of gratitude to my Line manager Mr, Huzaifa Bilal, Zonal monitoring and evaluation specialist, Barabanki zone, IHAT, UPTSU, Uttar Pradesh for their constant help and cooperation, able guidance, valuable suggestion and inspiration. He was kind enough to give his valuable time from his extremely busy schedule.

Words are inadequate to offer my thanks to all the respected staff at GMSCL Gujarat for their able guidance and support throughout the dissertation period.

I am glad to acknowledge Dr. S. D. Gupta, Director IHMR, and my guide Dr. Shilpi Mishra Assistant Professor, IHMR, for incorporating right attitude in me towards learning and for helping and supporting whenever required. I am grateful to them for giving me an opportunity to learn administrative tricks and styles.

I genuinely thank my parents, family and friends for their blessings and support.

Charu Yadav
(PGDHM-18)

Contents

1.Introduction-	1
1.1 BASIC CONCEPTS IN HMIS	3
1.1.3 CONVERTING DATA ELEMENTS INTO INDICATORS	4
1.1.4 VALIDATION-	5
1.2 DATA FLOW- (INFORMATION FLOW FROM SUB-CENTRE TO NATIONAL LEVEL)6	
1.3 DATA REPORTING & DATA ENTRY	7
1.4 DATA AGGREGATION-	8
1.5 DATA QUALITY-	8
1.5.1 COMPLETENESS	8
1.5.3 ACCURACY	9
1.5.4 DATA ENTRY ERRORS	10
2.LITERATURE REVIEW-	10
3. RESEARCH QUESTION	12
What are the bottlenecks which results into the poor data quality of HMIS?.....	12
4. OBJECTIVES:	12
5. METHODOLOGY-	13
5.2 STUDY AREA	13
5.3 STUDY RESPONDENTS	13
5.5SAMPLING AND SAMPLE SELECTION	13
5.6DATA COLLECTION-	13
Data collection tool	14
6.RESULTS & DISCUSSION	15
6.1 AVAILABILITY OF HMIS FORMAT	15
6.2.7REFERRAL IN AND OUT REGISTER	22
6.2.8DEATH REGISTER	23
6.3UNDERSTANDING OF ANM ON DATA ELEMENTS IN HMIS FORMAT	24
6.3.4FAMILY PLANNING	31
6.4.1 Sub centers(ANM) not aware about the reporting period-	33
6.4.2. ANM WHO SUBMITTED THERE HMIS FORMAT ACCORDING TO REPORTING PERIOD	34
6.4DATA ACCURACY-	35

6.4.1 REPORTING OF MISSING VALUES OR LOWER FIGURES	35
6.5.2 FORMATS IN WHICH VALIDATION ERRORS WERE FOUND.....	35
7. BOTTELNECKS IDENTIFIED/RECOMMENDATIONS-	36

ABBREVIATIONS

AAP	Annual Action Plan
ANC	Antenatal Clinic
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
BPM	Block program manger
CHC	Community Health Centre
CMIS	Computerized Management Information System
CMO	Chief medical officer
DPM	District program manager
DPMU	District program management unit
HMIS	Health management information system
ICDS	Integrated Child Development Services
IHAT	India Health Action Trust
M&E	Monitoring & Evaluation
MIS	Management Information System
NGO	Non-Government Organisation
NRHM	National Rural Health Mission
NTSU	National Technical Support Unit
PHC	Primary Health Centre
PIP	Project Implementation Plan
PM	Programme Management
RCH	Reproductive Child Health
SBA	Skilled Birth Attendant
SC	Sub center
TSU	Technical Support Unit
UNICEF	United Nations International Children's Emergency Fund
UoM	University of Manitoba

EXECUTIVE SUMMARY

Keywords: Health Management Information System, Data quality, Bottlenecks, Sub center

Background: Ministry of Health and Family Welfare launched the National Rural Health Mission (NRHM) to ensure necessary architectural corrections in the basic health care delivery system. The interventions have increased the demand for data on population and health for use in both micro-level planning and programmed implementation. All levels in a health department; be it a Primary Health Centre or a District Hospital or the State or National Office, need information on regular basis. Therefore, a robust information system which can provide *accurate, up-to-date, and timely information* to the health department is needed at every level. Data flows from sub center level to state level. So gaps and quality issues at sub center level may hinder the analysis, and will lead in to false interpretation.

Objective: The objectives of the present were; 1) To analyze the current status of HMIS in terms of quality and 2) To do the bottleneck analysis of HMIS data quality.

Methodology: The present study was cross sectional descriptive study. The respective study was conducted in Four Technical support unit Blocks (Chittaura, Mahsi, Mihipurwa, Shivpur) of District Bahraich, Uttar Pradesh. Random sampling of the subcenters was done for each block. 32 ANM, eight from each block was taken as respondents to collect the desired information for the study. Analysis was done at sub center level. Primary data was collected. Quantitative analysis was done.

Findings: Study shows that bottle necks were identified at sub center level due to which data quality was affected. Factors resulting into poor data quality are unavailability of HMIS format, Lack of availability, usage and completion and updation of registers and records, Lack of understanding about the data elements in the HMIS format and Lack of submission of reports on time, Lack of Data accuracy.

Recommendations: It was recommended that Proper set of guideline and procedure should be explained to ANM. For this training should be conducted at block level. ANM and data operators should be the participants. And all the data elements should be explained to them. Reporting period should be clearly mentioned. A pretest and posttest should be scheduled to know the effectiveness of the training. A Log register should be made and maintained on monthly basis by ANM. HMIS report should be timely reviewed on regular basis by the Block managers. The ranking of sub-centers on the performance on quality of HMIS data (completeness and accuracy) and related feedback should be provided to the ANM in monthly review meetings. This will help in motivating grassroots level health workers by creating health competitive environment.

1.Introduction-

Ministry of Health and Family Welfare launched the National Rural Health Mission (NRHM) to ensure necessary architectural corrections in the basic health care delivery system. The plan of action includes: increasing public expenditure on health, reducing regional imbalance in health infrastructure, pooling resources, integration of organizational structures, optimization of health manpower, decentralization and District management of health programs, community participation and ownership of assets, induction of management and financial personnel into District health systems, and operationalizing Community Health Centers into functional hospitals in each Block across the country that meet Indian Public Health Standards.

These interventions have increased the demand for data on population and health for use in both micro-level planning and programme implementation. At the same time, understanding the synergy between availability of services, cost involved in provision of public health care services, expenditure and pattern of utilization among various sections of population, including vulnerable sections of the society, are important aspects that influence decision making. A continuous flow of good quality information on inputs, outputs and outcome indicators facilitates monitoring of the objectives of NRHM.

For reasons such as these efficient health management information systems are required. HMIS is an information system that has been specially designed to assist health departments, at all levels, in managing and planning health programs. HMIS is defined as:

“A tool which helps in gathering, aggregating, analyzing and then using the information generated for taking actions to improve performance of health systems.”

All levels in a health department, be it a Primary Health Centre or a District Hospital or the State or National Office, need information on regular basis not only to monitor the health status of the population they serve but also to track progress towards achievement of targets under different health programme. Information needs, purpose, and use of information differs at each level in the hierarchy. Therefore, a robust information system which can provide *accurate, up-to-date, and timely information* to the health department is needed at every level.

Following are the uses of HMIS at different levels of health department:

At the National and State level, HMIS is primarily a tool of policy and strategy making. It is useful for assessing the progress of national health programs. For example, by analyzing full immunization coverage in different states, the officer responsible for child health can evaluate performance of immunization coverage in various States, so that they can allocate resources more effectively and strengthen support for these States.

At the State and District level, HMIS is a tool of programme monitoring and management. A robust HMIS can help Programme Managers to track the progress of implementation of various programs. It enables them to distinguish well performing areas from those that require more support and resources. Thus, HMIS helps in planning and designing specific interventions that can strengthen a programme. At the sub-District level such as Block, PHC, sub-Center, and other facilities, HMIS facilitates: efficient and effective registering and collation of data; improvements in data quality; systems for complete reporting; timeliness and accuracy; provision of data analysis tools; interpretation and translation of data to guide action and intervention at local level. HMIS's Name-based tracking system for pregnancy and child-care can help ANM to use their primary name-based register to plan their visit and service delivery schedules for women and children.

- 2-way feedback mechanism: Many a times no feedback is provided on information collected from facilities and service providers after processing of data. Data/information/reports are always sent up in the hierarchy. Feedback ensures data quality and reliability; it also builds up the sense of responsibility among service providers. HMIS portal under NRHM generates 'Feedback reports'. The 'Feedback reports' provide status of achievement against a target, comparisons with facilities and time periods can also be made. Provision for reminders about service delivery due dates can also be made to the Service Providers on their mobile phones to assist them with their work.

At every level, an effective HMIS should help us answer six classical epidemiological questions: Who, What, When, Where, Why, and How about the health status of the people.

Service Providers such as ANMs or Medical Officers will probably be interested in fewer data elements that they can use as indicators. Some may find indicators confusing. However, it is empowering for the Service Providers to understand the utility of HMIS in programme planning and resource allocation. This higher level of understanding improves competency and ability of Service Providers in programme planning and management at all levels.

1.1 BASIC CONCEPTS IN HMIS

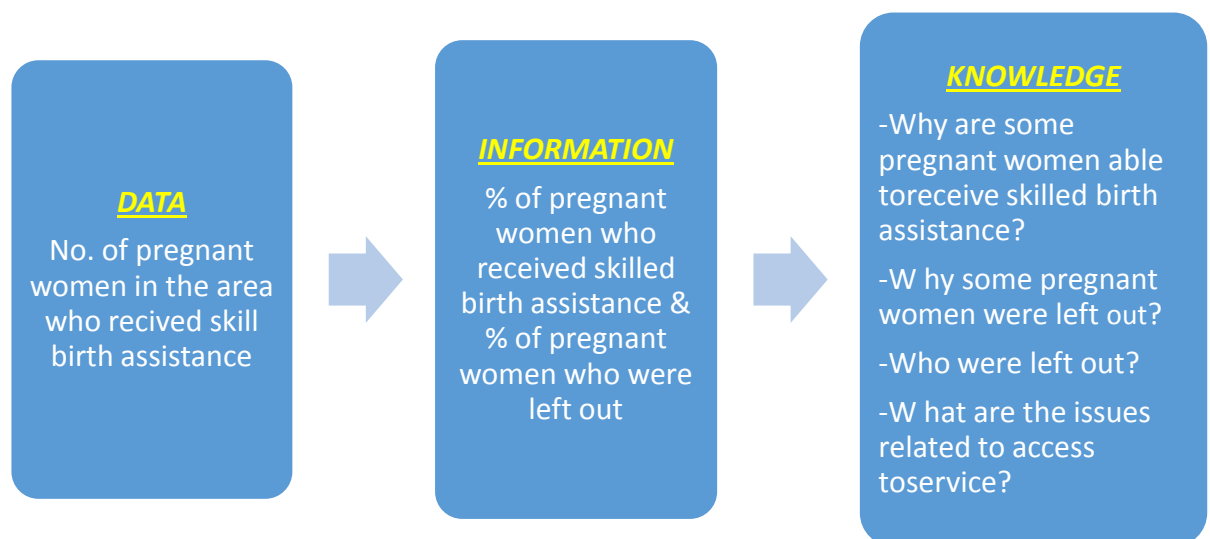
The concepts of data, information, and knowledge are often used interchangeably though they are not synonymous. Often collecting more data is regarded as creating more knowledge, which is a wrong assumption.

Data: It is the raw material in the form of numbers or characters and it is without context.

Information: It is a meaningful collection of facts/data with reference to a context.

Knowledge: When information is analyzed, communicated, and acted-upon it becomes knowledge.

Figure below illustrates these concepts with example-



1.1.1 DATA ELEMENT-

Data element refers to the name of a particular event or factor that must be counted or measured.”

In context of HMIS, a data element is a record of health event or health related event.

Example During a particular month:

1. Number of pregnant women who received an antenatal check-up.
2. Number of children below five years who were affected with measles.
3. Number of female children born.

1.1.2 Indicator-

An indicator is a data element placed in a given context so that it becomes information that can be acted upon and can be used for programme monitoring and management. It consist of numerator, denominator and multiplied by a constant.

CLASSIFICATION OF INDICATORS-

Indicators can be classified into following groups:

- a. **Input indicators:** indicate resources invested in the system, e.g., number of doctors per 100,000 people.
- b. **Process indicators:** indicate activities of the health system, e.g., percentage of doctors trained in safe delivery skills.
- c. **Output indicators:** indicate achievements made in specific health strategies e.g. percentage of women who received 3 ANC's.
- d. **Outcome indicators:** indicate achievements of a health programme or health system. e.g institutional delivery rate, breastfeeding in one hour rate etc.
- e. **Impact indicators:** indicate achievements in health status of particular group of people e.g. Maternal Mortality Ratio, Infant Mortality Rate, and Total Fertility Rate etc.
- f.

1.1.3 CONVERTING DATA ELEMENTS INTO INDICATORS

To derive an indicator, identify a data element as the numerator, divide it by another data element which represents the context and multiply it by a factor (which is usually but not always 100). Thus, an indicator is also a relationship between two data elements.

Example

Data element: Total number of children in 12-23 month age group who have been given Measles vaccine=360

Numerator: Total number of children given measles=360

Denominator: Total number of children in the age group 12 to 23 months=450

Multiplying factor: 100

Indicator: Percentage of children in 12-23 month age group given Measles vaccine=80%

1.1.4 VALIDATION-

Validation is also a means to check accuracy. Validation is performed by comparing values of 2 (or more) data elements that are related. One (or more) data elements are placed on left side and other data element(s) are placed on right side with an operator separating both sides e.g. 'Early ANC registration' is a part of 'ANC registration' and it can equal to 'ANC registration' or it will be less than or equal to 'ANC registration' but it can't be greater than 'ANC registration'.

Frequently used validation rule

1 ANTENATAL CARE

I ANC registration should be equal or greater than TT1

II Early ANC registration must be $\leq$ to ANC registration

2 DELIVERIES

I Caesarean Deliveries must be $\leq$ to institutional deliveries

II Deliveries discharged under 48 hours $\leq$ deliveries at facility

III BCG given should be $\leq$ Deliveries

IV OPV0 given should be $\leq$ Deliveries

V Total deliveries should be equal to live births + still births

3 IMMUNISATION

I BCG should be $\leq$ to live births

II Immunisation sessions planned should be greater than or equal to sessions held

III Measles dose given should be greater than or equal to full immunization

6 NEWBORNS

I Newborns breastfed within 1 hour are $<$ total live births

II Newborns weighed at birth _ total live births

III Newborns weighing less than 2.5 kgs _ total newborns weighed

7 POST NATAL CARE

I Women receiving first (within 48 hour) post-partum checkup $\leq$ to total live births plus still birth.

1.2 DATA FLOW- (INFORMATION FLOW FROM SUB-CENTRE TO NATIONAL LEVEL)

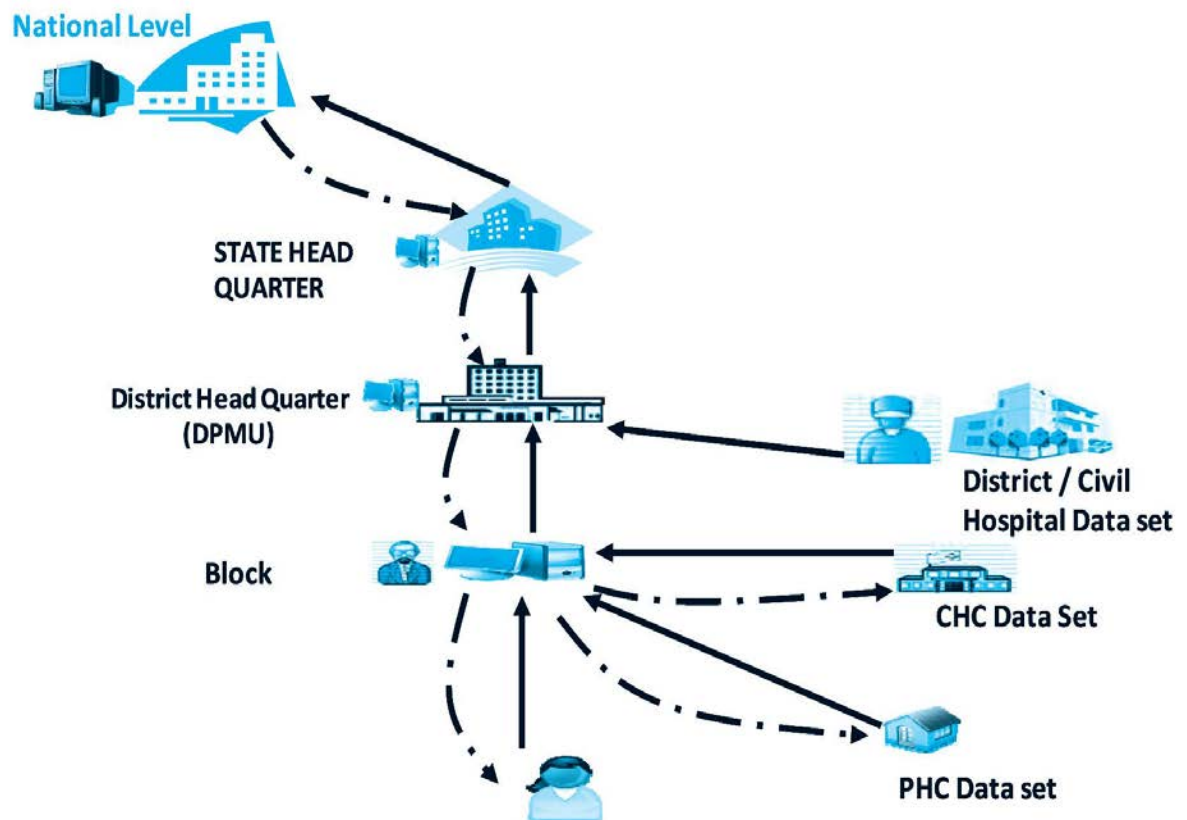


FIG-1: DATA FLOW

In the figure above, straight lines represents upward flow of information and the dotted lines represents downward flow of information (feedback report). Private facilities report either at Block level or directly to the District Headquarter.

The levels of reporting in computerized HMIS can be Districts, Blocks, and Facilities. Each level of reporting has its own benefits but it is always better to have facility-wise data entry and reporting. Facility-wise data entry helps in:

- Assessing performance of each facility with respect to other facilities in a District.
- Identifying which facility has low or high coverage and this is very useful to identify underserved population in a community.
- Assessing how many facilities are reporting data on time (not possible in consolidated reporting such as
 - Block or District).
- Probing further question related to data quality and services coverage e.g., if a District has reported ‘full immunization=106%’, facility-wise data helps in identification of those facilities which have reported very high coverage and this can be due to duplication or over reporting. Also, if the District has reported ‘home deliveries=50%’ facility-wise data will help find facilities that have highest burden of home delivery, so that decisions can be made accordingly.
- To ensure continuous and seamless data flow and reporting, these guidelines on data reporting, entry and aggregation should be followed.

1.3 DATA REPORTING & DATA ENTRY-

Monthly

All facilities including health sub-Centre, PHC & CHC, will report their data to Block in the format prescribed for their facility. At the Block level, Block will consolidate these data to prepare the ‘Block Consolidated Report’. Block Consolidated Report will be sent to the District Programme Management Unit (DPMU). Here, DPMU will consolidate all Block data and include stock details of Districts to make the ‘District Monthly Consolidated Report’, which will be then uploaded on Web Portal.

Monthly Data sets are: (sub-Centre dataset=sub-Centre reporting format, PHC data set=PHC reporting form, CHC dataset=CHC reporting form).

1.4 DATA AGGREGATION-

- ***First level aggregation:*** First level of data aggregation will be at the Block, where data from all the facilities will be consolidated to prepare the 'Block Monthly Consolidated Report'.
- ***Second level aggregation:*** Second level of aggregation will be at the DPMU, where data for whole Block and the District stock details will be consolidated to prepare the 'District Monthly Consolidated Report'. This report will be electronically uploaded on the central Web Portal. Where ever State HMIS application is functional one copy of the entire database will be stored in the State HMIS application.
- ***Third level aggregation:*** Third point of aggregation is the State, where all the State monthly, quarterly and annual reports will be generated. Aggregation will be carried out by accessing all District consolidated reports and all State specific data entry that was done at the State level (quarterly, FMR, annually). 'State Aggregated. Report' will be uploaded on the Web Portal, and a copy of the same will be available in the State specific HMIS application running on the State server.

1.5 DATA QUALITY-

Data quality refers to the extent to which data measures what they intend to measure. It is not enough to collect and report data, data should be checked for quality to minimize errors so that they can be used for decision making. Data use is known to improve data quality. Parameters of data quality are:

1. Completeness
2. Accuracy
3. Timeliness

1.5.1 COMPLETENESS

Reports are a reflection of services provision and utilization thus an incomplete report will indicate partial service delivery/utilization. Data completeness is assessed for the following:

1. Number of facilities reported against total facilities
2. Number of data elements reported against total data elements in a reporting form.

Ideally, we would like to receive data/reports from all facilities, public or private in an area to get a complete picture of health therefore it is necessary to encourage private facilities to report using either CHC or PHC format.

Assessment of data/reporting completeness: While assessing data/reporting completeness, remember that zero and blanks need to be examined carefully. Generate data completeness status report by including as well as excluding zero values to see the difference.

1.5.2TIMELINESS-

Timeliness is very important component of HMIS. Timely processing and reporting of data facilitates timely availability of data for decision making. E.g.during monthly meetings in the health department previous month's performance are evaluated and strategic decisions are taken to address the problems. If out of 10 sub- Centers 5 do not submit report on time it will be difficult for the MO to assess the performance and develop a plan for PHC in particular and of sub-Centers in general. Chapter 1 presents report submission schedule for all the facilities. Adherence of this schedule can improve data quality.

While analyzing data, remember to leave out the most recent month for analysis, if timeliness of reports of some units is known to be poor.

1.5.3 ACCURACY

Accuracy refers to the correctness of data collected in terms of actual number of services provided or health events organized. Inaccurate data will yield incorrect conclusions during analyses and interpretation. Small errors at facility level will cumulate into bigger mistakes since data from various providers/facilities are aggregated.

Poor data accuracy could be due to following four factors:

1. Gaps in understanding of data definitions and data collection methods
2. Data recording and data entry errors

3. Systemic errors- logical errors embedded in the system due to which these errors remain unless underlying systemic issues are corrected

4. Misreporting

First factor has been discussed in Competency 1. In this chapter, we discuss both data entry errors and systemic errors. We do not discuss dishonesty in reporting except to note that very often this is not the major source of error. Many Programme Managers, quite lazily and erroneously jump to the conclusion that poor data quality is due to false reporting or dishonesty in reporting. But if we check across the Districts and we find the same mistake in all, then we can be sure that these are systemic errors. Even if the error occurs in only one District, one should check for completion of reporting and then for data entry errors and if neither are found, then search for a systemic errors. This lesson helps to identify the reasons behind poor quality of data, the methods of measuring data quality, and the ways to improve it.

1.5.4 DATA ENTRY ERRORS

Data entry errors could be due to...

1. Typing errors: wrong numbers typed in computer
2. Wrong box entry: data entered in wrong box e.g., 'ANC registration' data entered in 'Registration in first trimester'.
3. Calculation errors: during data entry basic computation happens if formulae are incorrect then errors can happen.

2.LITERATURE REVIEW-

- **According to World Bank study (march2009) in INDIA Data use in the health sector is very low.** The average score of the respondents is below the half point mark. This average hides a considerable variation among central, state, district and below levels. Data use is lowest at district and state levels and highest at sub-district and central levels. **A number of factors contribute to such low level of data use.** The factors range from organizational to behavioral to skills. At organizational level, a work culture that is less focused on results, and resource allocation decisions that are based on normative

practices provide little incentives for evidence-based decision making. At individual level, impediments include lack of skills to analyze and use data, absence of incentives for data use and lack recognition for performance at work place.

- **Sultan A.et al (August 2011)** - The study identified that the implementation of health data/information and utilization of health information system was found to be far below the national expectation. Activities are poorly coordinated at the districts and primary health units where data was generated initially. Therefore, in-service training and updating of staff involved in health information system (HIS) at district, strengthening health information system inputs, timely and concrete feedbacks with establishment of functional health management information system (HMIS).
- **Krishnan et al. BMC Health Services Research 2010**-Study concludes that the major advantage of computerization has been in saving of time of health workers in record keeping and report generation. The initial capital costs of computerization can be recovered within two years of implementation if the system is fully operational. Computerization has enabled implementation of a good system for service delivery, monitoring and supervision. There have been no major hardware problems in use of computerized HMIS. More than 95% of data was found to be accurate. Health workers acknowledge the usefulness of HMIS in service delivery, data storage, generation of work plans and reports. For program managers, it provides a better tool for monitoring and supervision and data management.
- **Jørn Braa et al, Bull World Health Organ (2010)**- In Zanzibar, United Republic of Tanzania, as in many developing countries, health managers lack faith in the national Health Management Information System (HMIS). The establishment of parallel data collection systems generates a vicious cycle: national health data are used little because they are of poor quality, and their relative lack of use, in turn, makes their quality remain poor. Study concludes that the data-use workshops generated inputs that were used by District Health Information Software developers to improve the tool. The HMIS, which initially covered only primary care outpatients and antenatal care, eventually grew to encompass all major health programs and district and referral hospitals. The workshops

directly contributed to improvements in data coverage, data set quality and rationalization, and local use of target indicators. Data-use workshops with active engagement of data users themselves can improve health information systems overall and enhance staff capacity for information use, presentation and analysis for decision-making.

- **Christon Mesheck Moyo(2005)**-This study has described the findings of the assessment of HMIS data quality conducted in selected health facilities in Lilongwe district. The objective of the study was to assess the quality of data in terms of completeness, accuracy and timeliness and come up with recommendations intended to address the shortcomings and contribute to the improvement of data quality and its use in the management of health services in the country.(1)

Extra efforts, investments and recurrent costs are definitely required to ensure data quality in the district and facilities. However to improve data quality of routine health data requires innovative interventions that are cost effective to motivate the health workers to have quality data. The introduction of the incentive scheme that encourages health workers and facilities to improve data quality, introduction and intensification of innovative ways of providing supervision to health facilities and providing on the job practical sessions, quarterly and annual peer reviews at zone level and providing feedback are some of the cost effective interventions that could contribute to data quality improvements. Furthermore implementation of advocacy activities on the importance of having quality data and its use targeting policy makers and other stakeholders could also be given prominence on the intervention list to be implemented.

3. RESEARCH QUESTION

What are the bottlenecks which results into the poor data quality of HMIS?

4. OBJECTIVES:

- 1) To analyze the current status of HMIS in terms of quality
- 2) To do the bottleneck analysis of HMIS data quality.

5. METHODOLOGY-

5.1 STUDY DESIGN

The present study will be cross sectional descriptive study.

5.2 STUDY AREA

The respective study will be conducted in Four Technical support unit Blocks (Chittaura, Mahsi, Mihipurwa, Shivpur) of District Bahraich, Uttar Pradesh. These block have been selected as in these four blocks Indian health action trust is providing technical support, on the basis of delivery case loads, two blocks are high case delivery load blocks and other two blocks are low case delivery load

5.3 STUDY RESPONDENTS

ANM will be taken as respondents to collect the desired information for the study.

5.4SAMPLE SIZE-

32 ANM (8ANM*4BLOCKS)

Analysis will be done at Sub center level. As at the end of reporting period of every month which 21st -20th. ANM have to submit the report of their sub center by filling the HMIS format to the PHC so that Data operator can fill the reports into the online HMIS web portal. Sample size is taken as mentioned above because there are resource constraints and this sample size is sufficient to perform the planned analysis.

5.5SAMPLING AND SAMPLE SELECTION

Random sampling will be used in the present study. Out of fourteen blocks in Bahraich Four blocks have been selected, as in these four blocks technical support to the NRHM is provided by the Indian health action trust .Eight Sub Centers from each block PHC would be selected randomly. Eight ANM posted in the sub centers, selected randomly, will be interviewed from each block.

5.6DATA COLLECTION-

Primary data to be collected. Quantitative analysis will be done. Four blocks which are supported by Indian health action trust will be surveyed. Eight subcenters from each

block will be randomly selected and then the ANM of those subcenters will be interviewed using *HMIS supportive supervision checklist*.

Data collection tool- HMIS Supportive supervision checklist

Information to be collected – Information which is collected through this interview from ANM is

- Availability of the HMIS format
- Availability of the records/registers from which HMIS data is taken.
- Their knowledge and understandings about the data elements.
- The data is accurately filled or not.
- The format is completely filled on time

TABLE-1 List of Subcenters visited in the Four blocks				
DISTRICT	BAHRAICH			
BLOCK	Chittaura	Mahsi	Mhipurwa	Shivpur
SC	Nagraur	Garwa	Bojhiya	Chandelkala
	Machhiyahi	Bakaina	Argorwa	Kishapur Meetha
	Jagatpur	Hardi-2	Jhala	Sohbatiya
	Deeha	Hardi	Dharampur	Khairikala
	Laukana	Raipur	Kudwa	Maina Nevari
	Chilwariya	Rehuwa mansoor	Semri ghathi	Rampur dhobiyar
	Rahwa Vishnupur	Mururiya	Gopiya	Intaha
	REWALI	Chaukariya	Gaura Pipra	Matera kala

6.RESULTS & DISCUSSION

Data flows from sub center to PHC TO CHC to Block and then to State head quarter. The ultimate source or the basic source of the data is the sub center level. Data is filled by the ANM in the HMIS format which is a hardcopy and is submitted by them at their respective PHC by the 21st of every month. Data is submitted by 21st of every month as the reporting period is from 21st-20th of every month. After that Data is verified by Block program manager/ARO and then data is filled online by Data operator between 1st- 5th of every month.

TABLE-2 Summary of places visited

BLOCKS	No of facilities(Subcenters) visited
Chittaura	8
Mahsi	8
Mihipurwa	8
Shivpur	8

Study is conducted in the Bahraich district of Uttar Pradesh. Out of 14 blocks in Bahraich four blocks were studied. In four blocks total 32 sub centers were visited and 32 ANM who were posted in their respective subcenters were interviewed.

6.1 AVAILABILITY OF HMIS FORMAT

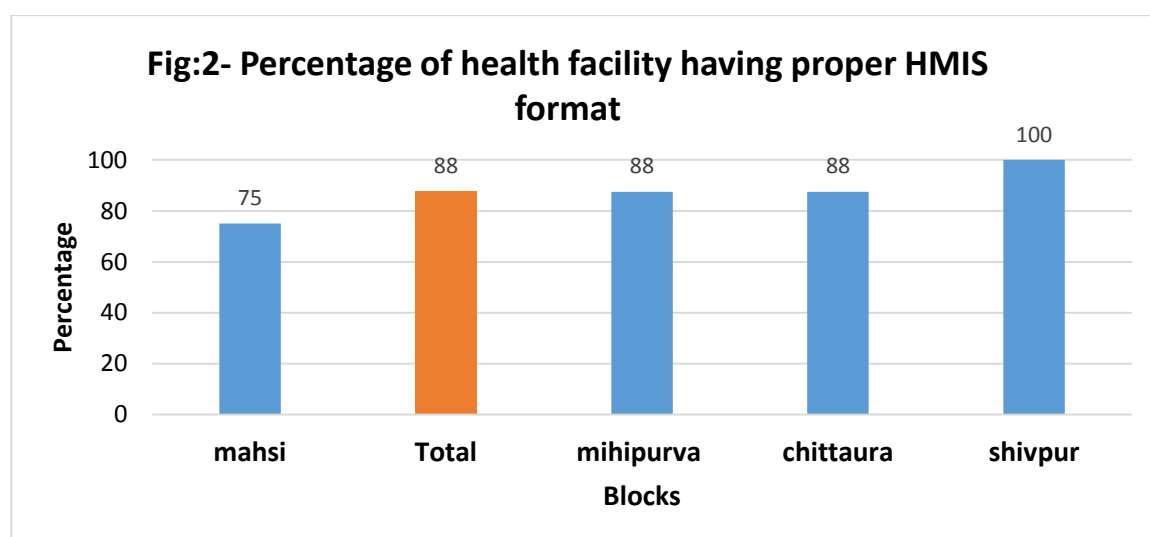


Fig2 shows the availability of Hmis format in the subcenters under study. It was found that 88% of the facilities studied had the proper HMIS format and still 12% of the subcenters do not have the proper format. Out of four blocks mahsi block had the lowest percentage of availability of HMIS format that is 75% and remaining 25% did not had the format. And maximum was in shivpur block that is 100%, which means all the subcenters which were studied had the printed HMIS format.

6.2 STAUS OF REGISTERS/RECORDS IN TERMS OF AVAILABILITY, USAGE, COMPLETION AND UPDATION AT SUBCENTER OF THE FOUR BLOCKS

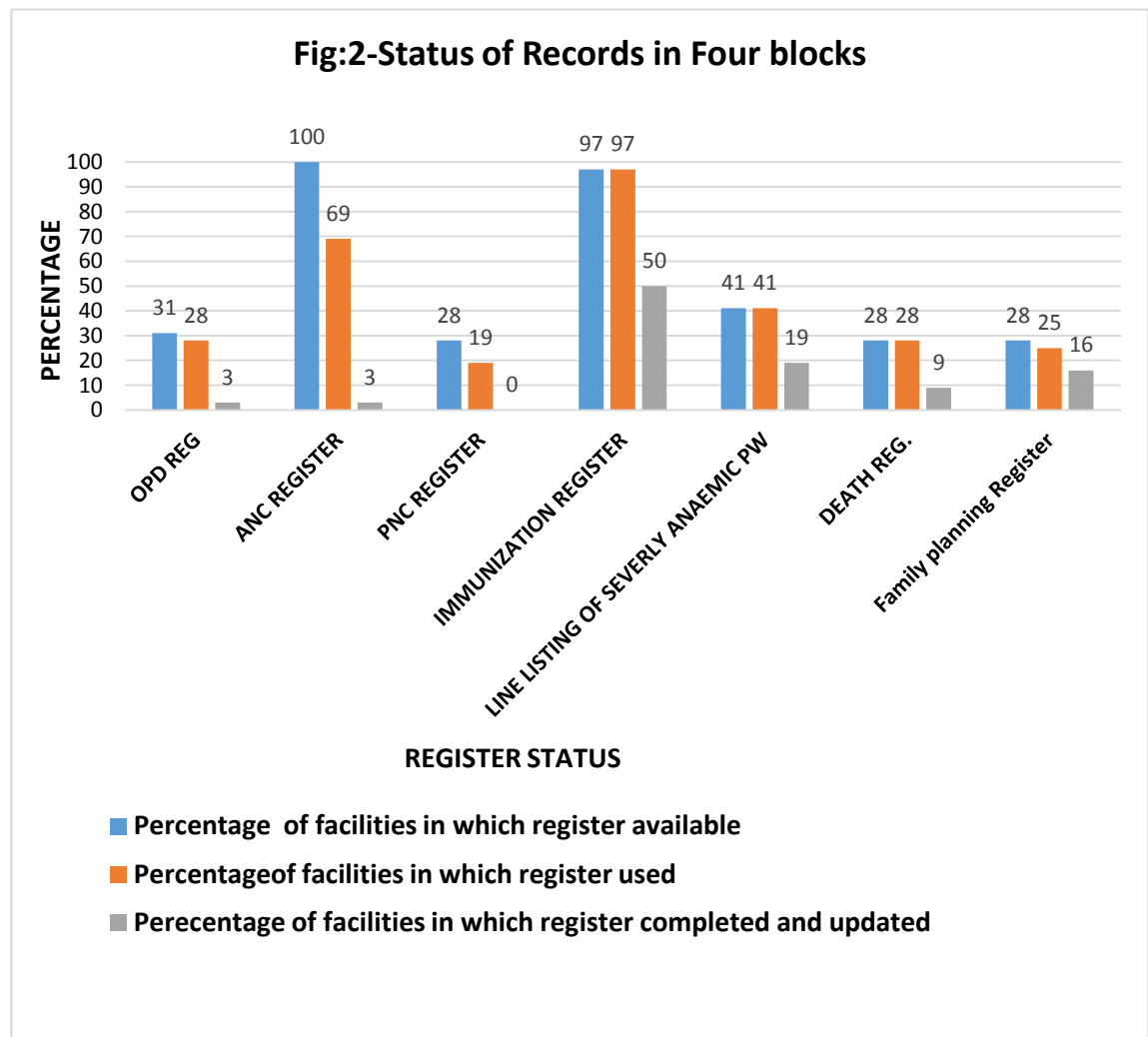


Fig 3 shows the status of registers maintained at sub center .There are 10-12 registers which is to be maintained by every ANM at sub center level. This study covers seven registers for analysis. These registers are OPD Register, ANC register, PNC Register, Immunization register, Line listing of severely anaemic women, Death register, and Family planning register. Fig2 shows the status of these registers in the subcenters of four blocks which are under study. The status of these records are further divided into three parts-First is availability of the register, second is whether the available register is used by ANM for its respective purpose and third one is whether the available register is complete and updated on time.

Fig 2 shows that availability of ANC register is 100%, its use is 69% and its completion and updation is only 3% which reflects that ANM do not update their register on time. PNC register consist the detail of those beneficiaries to whom ANM.ASHA visited for Post-natal care/ checkup within 42 days after the delivery. Availability of PNC register is only 28% that is out of 32 subcenters studied only 28% of subcenters have PNC register, and 19% of them are used and 0% that is no sub center update or complete the PNC register. Availability of immunization register is 97% out of 32 subcenters. All the subcenters who have immunization register uses the register to fill data of immunization, but only 50 % complete and update data. Line listing of severely anaemic register consist of names of those pregnant women whose Hemoglobin level was found to be less than 7. Availability of this register is 41% in the subcenters and its use is also 41% out of 32 subcenters studied, but completion and updation is only 19%. Death register consist of deaths occurred in the area covered under the sub center. It is again to be filled by ANM, availability and usage of this register is 28% and updation and completion is just 9%. Last register is Family planning register, it consist of the details of the beneficiaries utilizing family planning services. Availability of this register is 28% and usage is 25% and the updation and completion is only 9%, indicating very low updation.

6.2.1. OPD REGISTER-

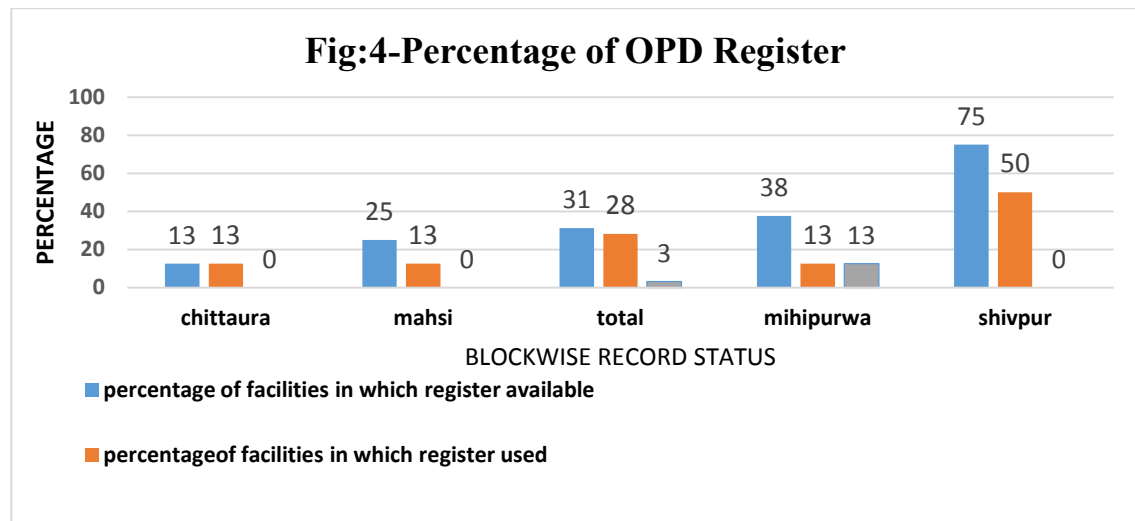


Fig3 shows the status of Out Patient Department (OPD) register status in the 32 subcenters of 4 blocks under study. 31% out of 32 subcenters in four blocks have OPD register and it is used in 12% of the subcenters and completion and updation is 3%. It was found that in shivpur block 75% of the sub center out of 8 subcenters had the OPD register, and used by 50% of the subcenters but none of them have complete or updated register. Lowest being chittaura with only 13% of availability and usage of register, and none of the facility have done completed and updated the register. Study shows that that from availability to completion and updation of OPD register is very low at sub center level. There are few data elements in the HMIS format which require information about OPD done by the ANM. Data shows a very low availability of This register, because of which many times this column in HMIS format remains blank and lead to incompleteness of the format.

6.2.2 ANC REGISTER

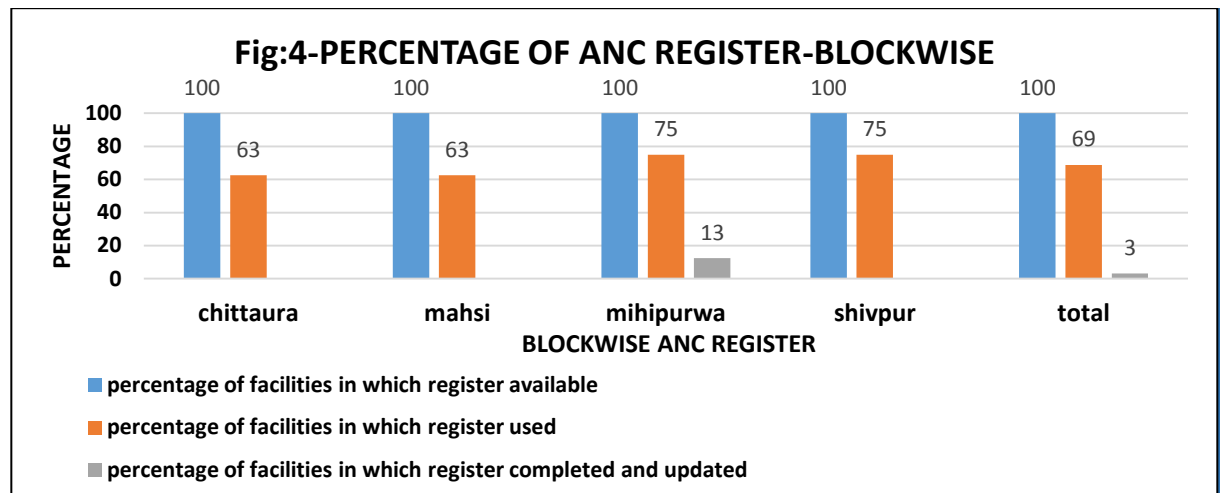


Fig 4 shows the status of ANC (Ante Natal Care) Register status in the four blocks. Study shows that 100% of the subcenters that is all the 32 subcenters have the ANC registers but usage of the register again got decreased remaining 69% and completion and updation being only 3%. Highest usage was seen in Mihipurwa and Shivpur that is 75%. Study shows that only Mihipurwa had completion and updation of the register which is also very low that is only 13%.

6.2.3PNC REGISTER STATUS-BLOCKWISE-

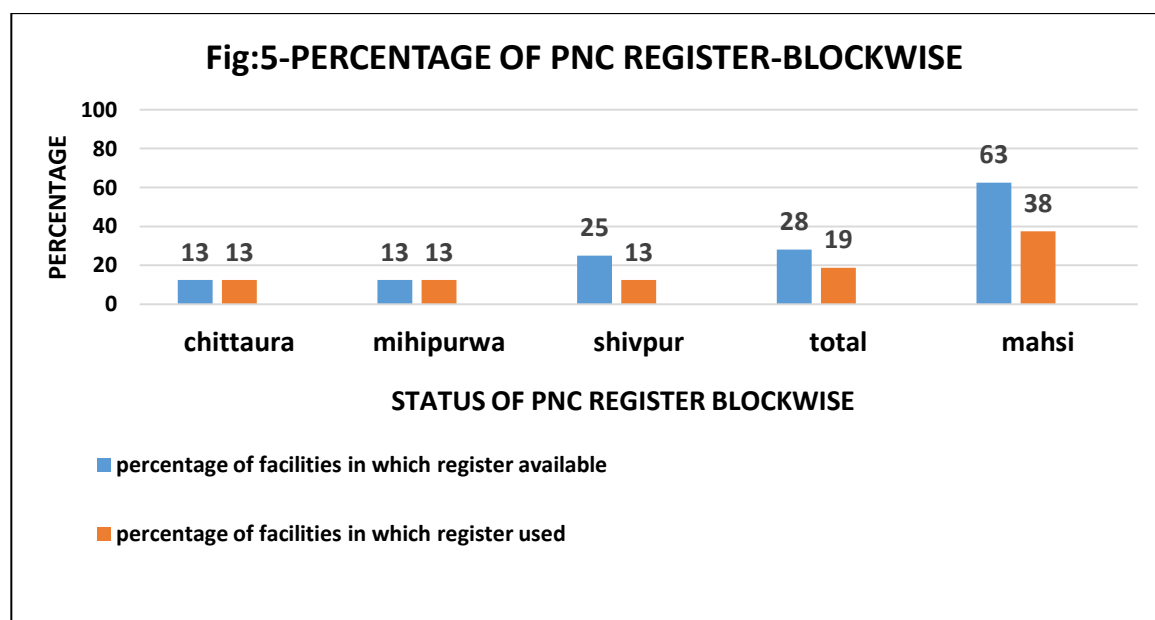


Fig 5 shows the block wise PNC (post-natal care) register status. Study shows that out of 32 subcenters only 28% of the subcenters had the PNC register, the usage of the register is only 19%, and in none of the facility register was updated and completed. Post-natal care services are given by the ANM/ASHA till 42 days after the delivery. This help to rule out the complications which may occur in the first month after delivery and could be treated and if required can be referred to the hospital. Study shows a very low status of availability, usage and completion of this register, which results in less reporting in the HMIS also.

6.2.4 LINE LISITING OF SEVERE ANAEMIC REGISTER-BLOCKWISE

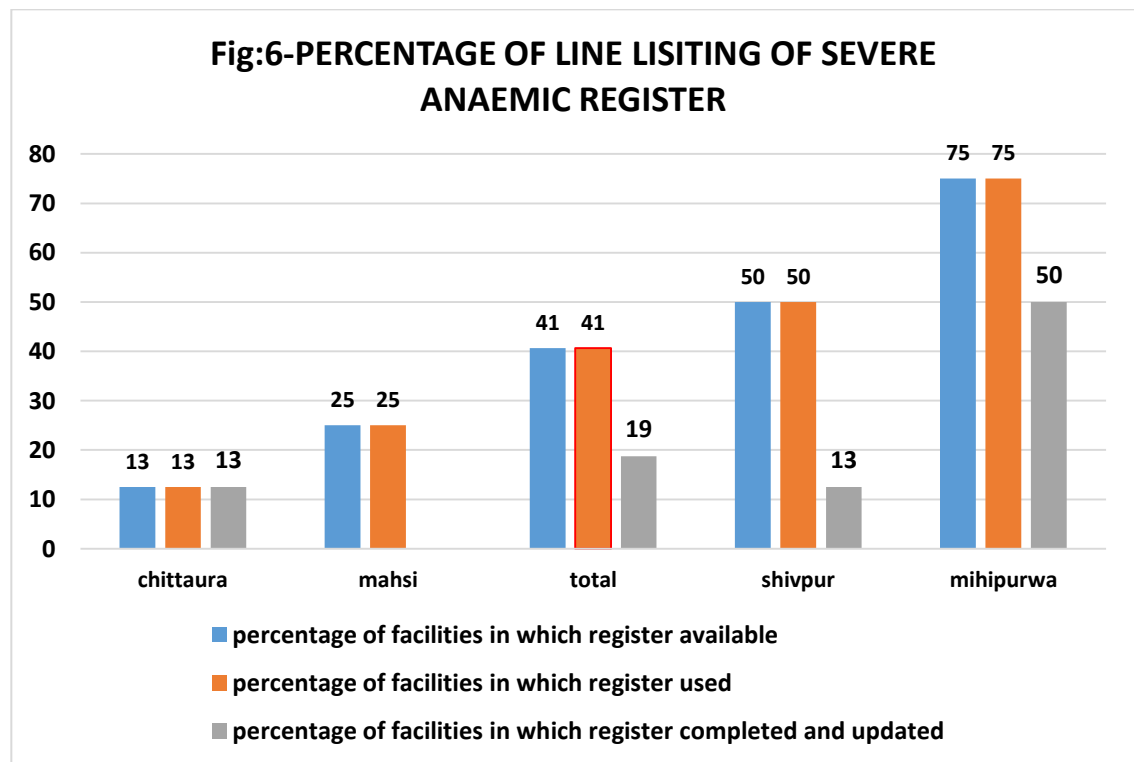


Fig 6 shows the status of register for Line listing of severe anaemic pregnant women. Study shows that out of 32 subcenters studied only 41% of the sub center had the register and in those 41% subcenters registers were used but the status of completion and updation is very low that is 19% only. It was seen in the study those subcenters who had the line listing register they all used it also but the status of completion and updation is

very low. Highest being in Mihipurwa block out of 8 subcenters 75% of the subcenters had the availability and usage of the register and the completion and updation was 50%. Lowest being in chittaura block only 13% of availability, usage, completion and updation of register. It was also seen that in mahsi block none of the sub center had completed and updated register.

6.2.5 FAMILY PLANNING REGISTER-BLOCKWISE

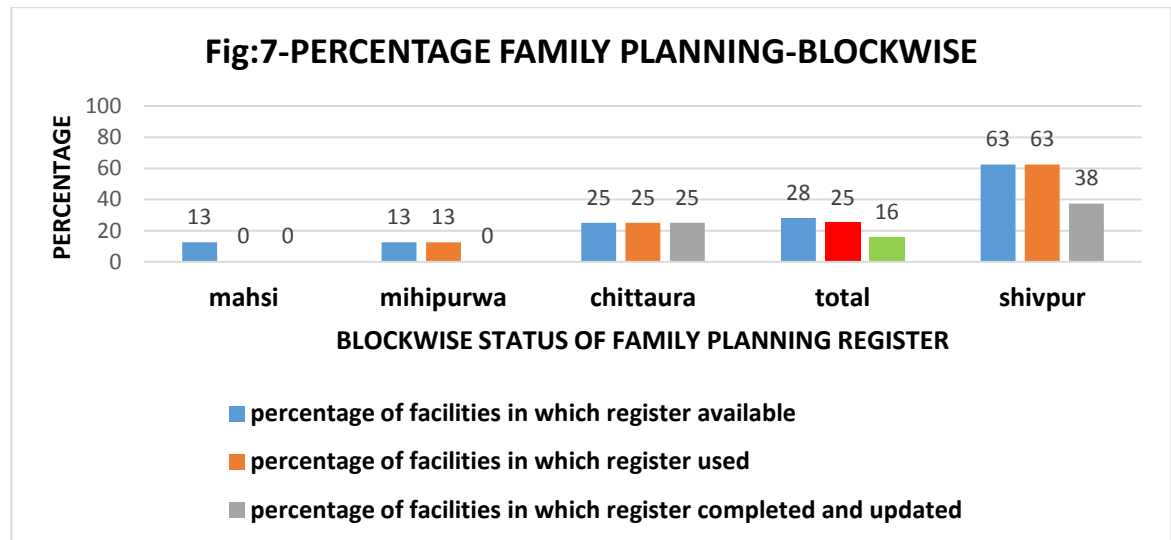


Fig7 shows the status of the family planning register for the four blocks. 28% of the sub center out of 32 have the family planning register, 25% of them uses it and only 16% of the sub center studied have complete and updated the register. Lowest being in mahsi block only 13% of the sub center out of 8 had the family planning register and none of them uses it nor complete and update it. Highest availability and usage is in shivpur that is only 63%, completion and updation is only 38%. Family planning register include family planning services provided by the ANM at the sub center level that is oral pills, condoms and IUCD insertions

6.2.5 IMMUNIZATION REGISTER-BLOCKWISE

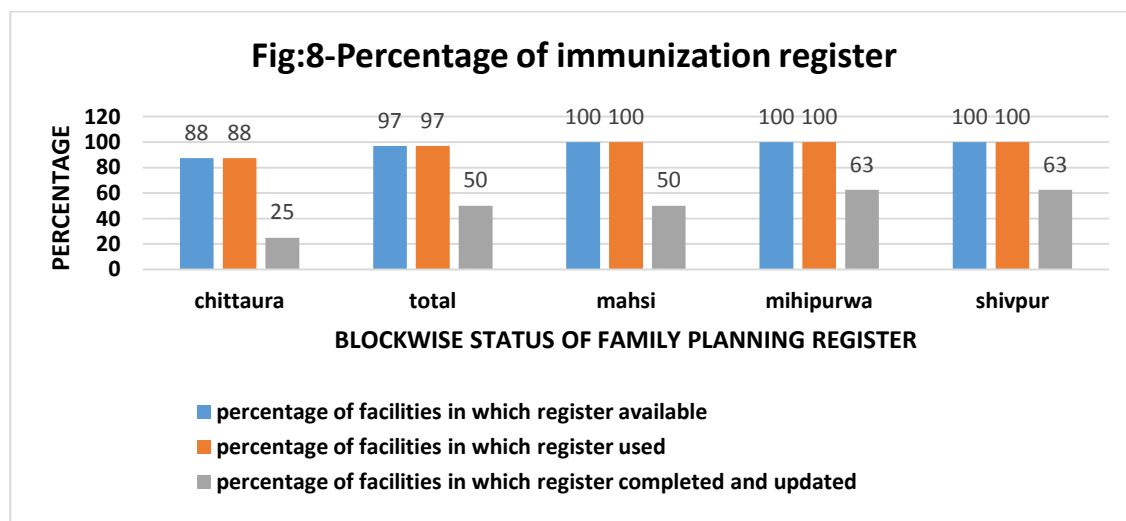


Fig8 shows the status of the Immunization register. It was found in the study that out of 32 subcenters visited 97% of sub center had the immunization register and they were also using it, but the completion and updation of register is 50% only. In mahsi, Mihipurwa and shivpur availability and usage of the register is 100% but completion and updation is 50%, 63%, 63% respectively. In chittaura it was found that availability and usage of register is only 88%, and status of completion and updation is low that is only 25%.

6.2.7 REFERRAL IN AND OUT REGISTER

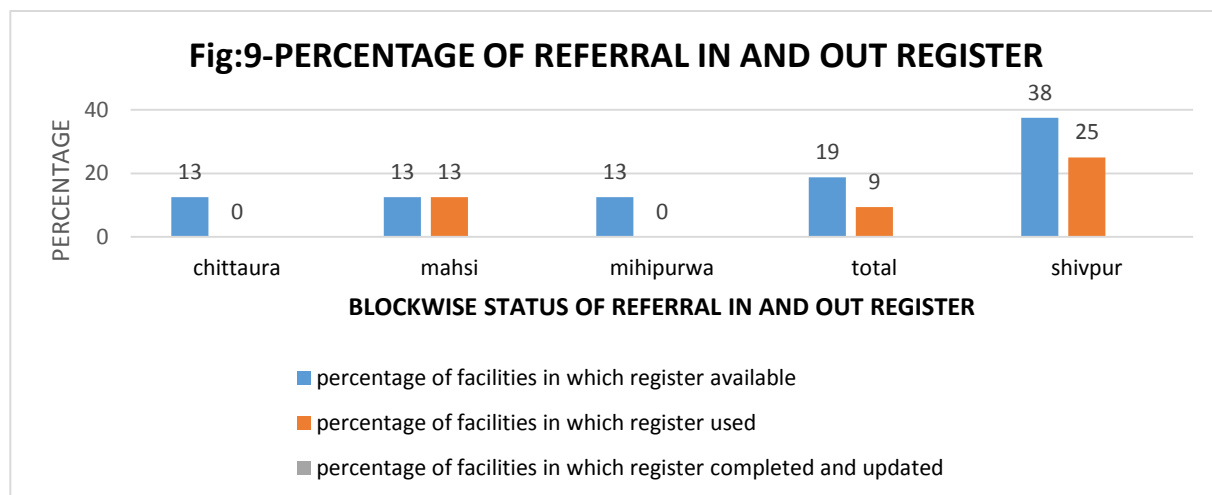


Fig9 shows the status of the referral in and out register. Referral in register consist of data related to the referrals which came to the subcenters either from other public facility or private facility and referral out consist of data related to the referrals done to the other public facilities (District hospitals, CHC, PHC,SC) .Out of 32 subcenters studied only 19% of the subcenters had the referral in and out register, usage of this register was 9% and none of the subcenter had completed and updated register. Highest availability and usage was found in shivpur which is 38% and 25%respectively. Lowest availability and usage was found in chittaura which is 13% and 0% respectively.

6.2.8DEATH REGISTER

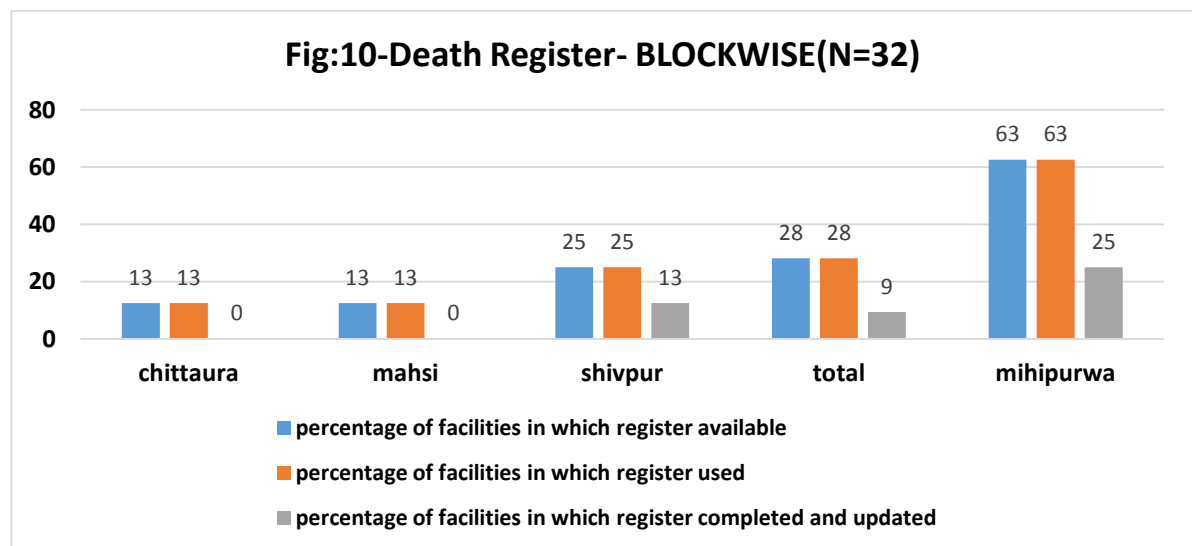


Fig10 shows the status of death register in the four block studied. Death register availability and usage was 28% and completion and updation was 9% out of 32 subcenter studied. Death register/record availability and usage was found maximum in Mihipurwa which was 63% and completion and updation was less which was only 25%. In chittaura it was found that only 13% of subcenter had the death register and none of them had completed and updated register, which was lowest among other four blocks.

6.3 UNDERSTANDING OF ANM ON DATA ELEMENTS IN HMIS FORMAT

6.3.1 UNDERSTANDING ABOUT PREGNANCY CARE

This section includes the understanding of ANM on data elements related to the pregnancy care. Study shows the knowledge of ANM about ANC care/checkups.

6.3.1.1 PREGNANT WOMEN REGISTERED FOR ANC-BLOCKWISE

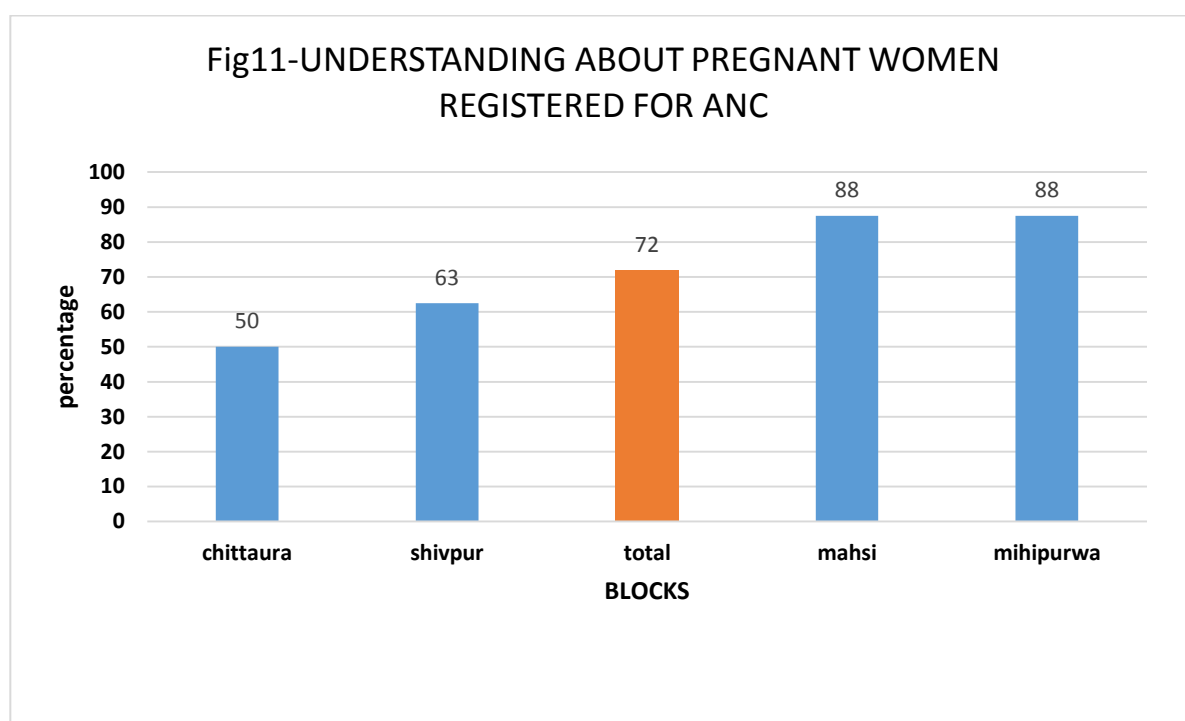


Fig 11 shows the knowledge of ANM about the women registered for ANC. Early registration means that the pregnant women should get registered in her first trimester. Study shows that out of 32 ANM posted in subcenters 72% of them have the understanding of early registration. Lowest being in chittaura only 50% and highest in Mihipurwa which is 88%. Early registration means that the pregnant women should get registered in her first trimester

6.3.1.2 EARLY REGISTRATION FOR ANC

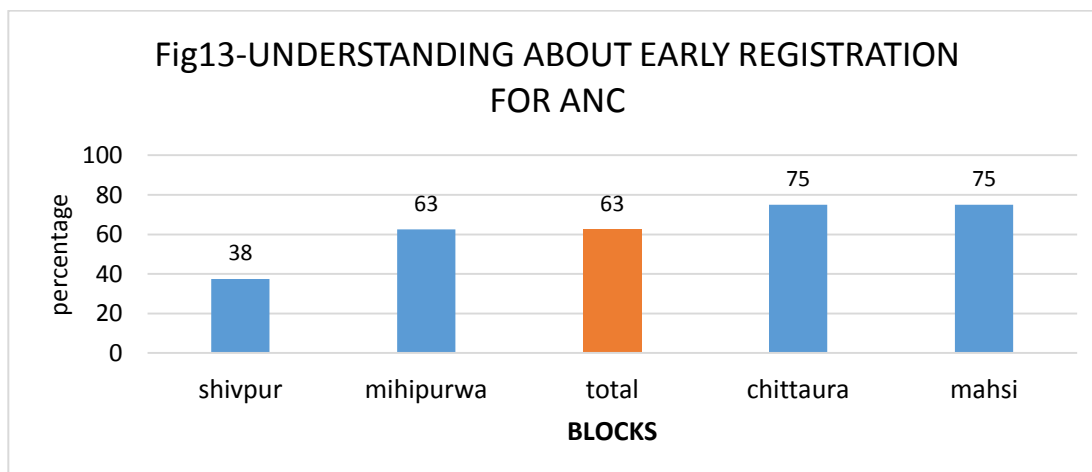


Fig12 shows the understanding of ANM regarding early registration for ANC. 63% of ANM had the understanding about the early registration out of 32 ANM. Lowest understanding about this data element was observed in shivpur block and highest in mahsi and chittaura block.

6.3.1.3 FULL ANC SERVICES-Blockwise

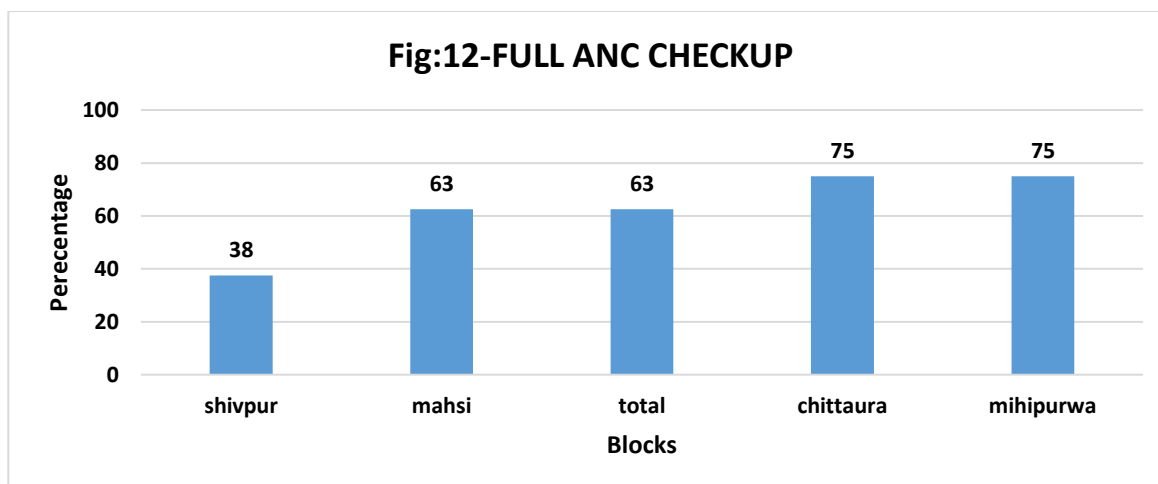


Fig13 shows the status of full ANC checkup. Full ANC checkup consist of 3 ANC check-ups + 2 TT injections + 100 IFA tablet. Understanding about this data element of ANM

was 63% out of total 32 subcenters. Highest was in Mihipurwa and lowest was in shivpur which was 75% and 38% respectively.

6.3.1.4 PREGNANT WOMEN GIVEN 100 IFA TABLET-

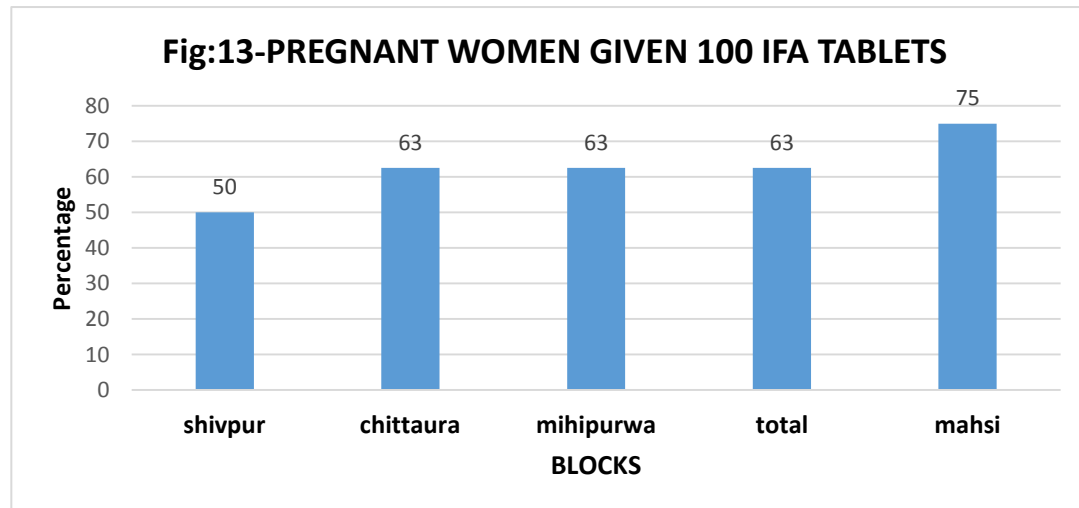


Fig:13 shows understanding about pregnant women given 100 IFA tablets. Understanding about this data element of ANM was 56% out of total 32 ANM interviewed. Maximum understanding in ANM was found in mahsi and lowest being in shivpur which was 75% and 50 % respectively.

6.3.1.4 PREGNANT WOMEN DIAGNOSED WITH ANAEMIA

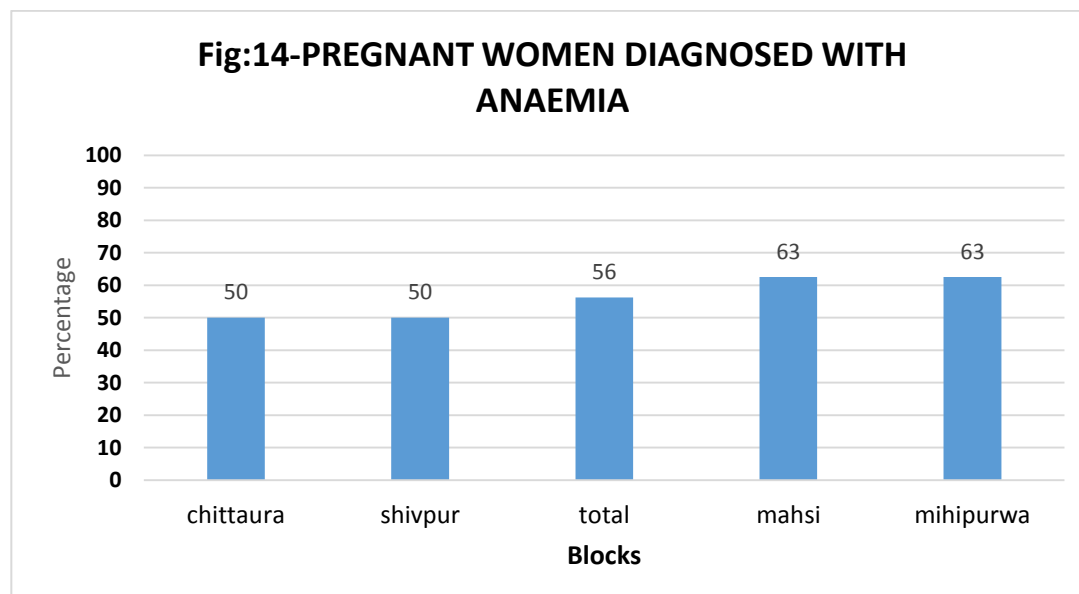


Fig 14 shows the data related to the understanding of ANM about the anaemic pregnant women. Correct definition of this data element was pregnant women tested and found with Hemoglobin (Hb) less than 11 grams/dl. Study shows out of 32 subcenters 56% of the ANM have the understanding about this data element. Highest understanding was found in Mihipurwa and lowest in Chittaura block, which was 63% and 50%.

6.3.2. UNDERSTANDING ABOUT CHILD BIRTH

This section include the child birth and delivery part. In this section understanding of ANM related to child birth was studied. It mainly included two parts deliveries in home by SBA trained ANM and facility based deliveries.

6.3.2.1 DELIVERY CONDUCTED AT HOME AND ATTENDED BY SBA

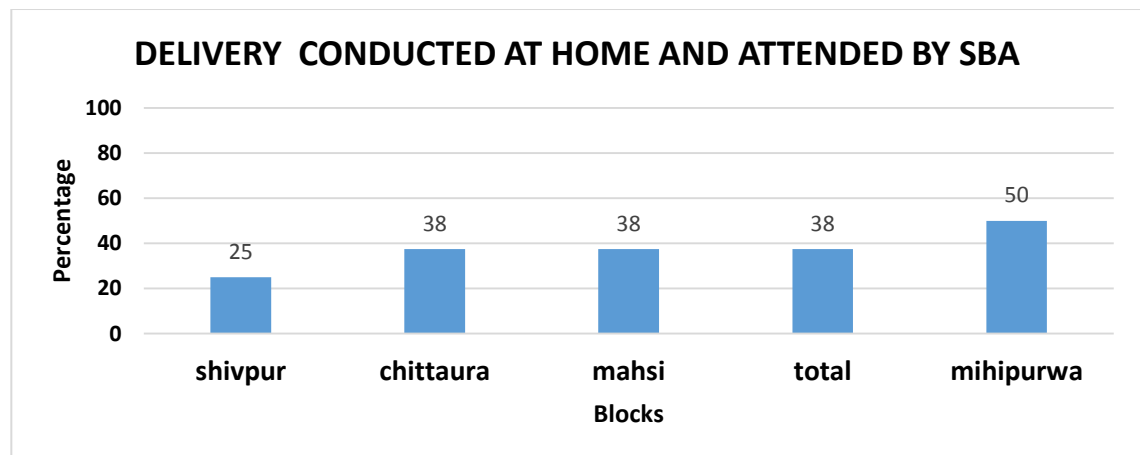


Fig15 shows the understanding of ANM regarding deliveries conducted at home and attended by SBA. Correct definition is Home deliveries attended by a Doctor, Nurse or an ANM (Skill birth attendant trained). Study shows a low understanding about this data element among ANM. Only 38% out Of 32 ANM interviewed knew the correct meaning of this data element, and remaining 62% didn't knew about this data element. Maximum being in Mihipurwa which was only 50%. And lowest being in shivpur that is only 25%.

6.3.2.2 DELIVERIES CONDUCTED AT FACILITY-

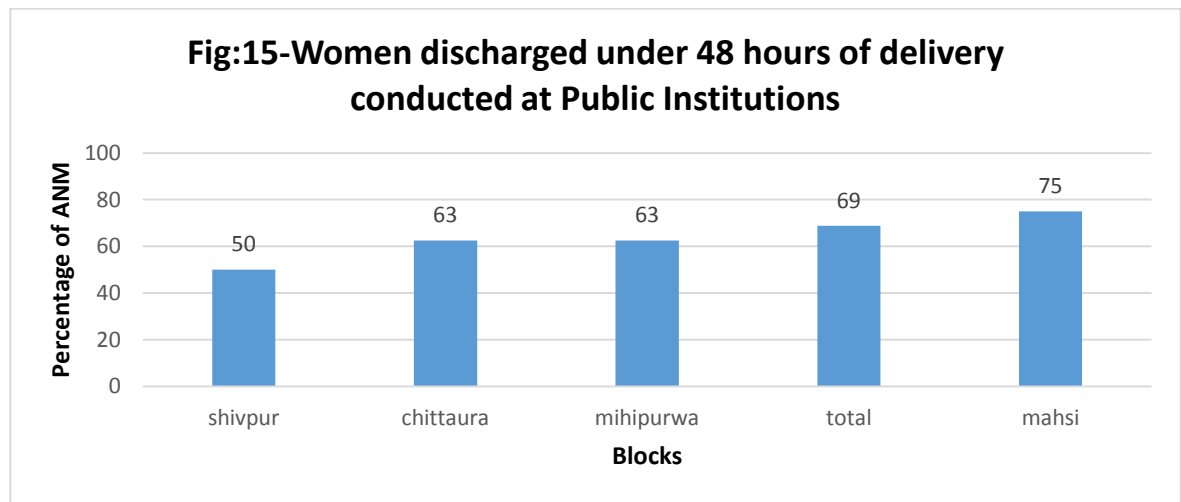


Fig 15 shows understanding related to the deliveries conducted in the facility that the It was found that understanding about this data element was 75% out of 32 ANM interviewed. Maximum being in mahsi that is 88% and lowest being in Mihipurwa that is 63%.

6.3.3 POST NATAL CARE-BLOCKWISE

This section include understanding about Post-natal care. It include four subsections, first is related to discharge within 48 hrs second is related to low birth weight, third is related to breast fed within an hour and fourth one is home visit within 24 hrs of home delivery.

6.3.3.1 WOMEN DISCHARGED UNDER 48 HRS OF DELIVERY CONDUCTED AT PUBLIC INSTITUTIONS

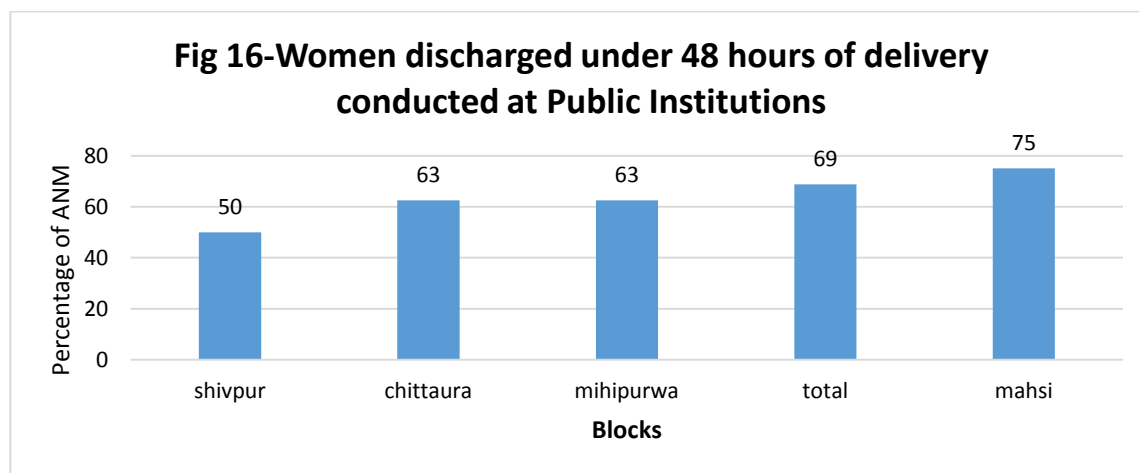


Fig16 include the understanding about the women discharged under 48 hrs of delivery conducted at public institutions. Study shows that out of 32 ANM interviewed 63% of them had the understanding about this data element. Highest being in Mahsi that is 75% and lowest is in shivpur that is 50%.

6.3.2.2 NEWBORN HAVING WEIGHT LESS THAN 2.5KG

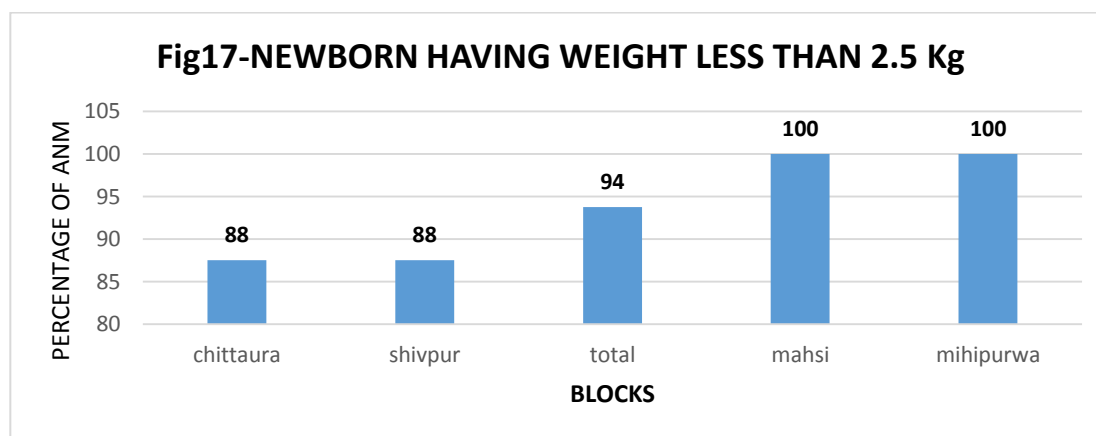


Fig 17 shows the understanding of ANM on newborn having weight less than 2.5kg. It is one of the data element about which ANM had good knowledge. Study shows that 94% of ANM had the knowledge about this data element out of 32 ANM interviewed. Highest being in mahsi and Mihipurwa was 100% and lowest was in chittaura block which was 88%.

6.3.2.3 NEWBORN BREASTFED WITHIN AN HOUR OF DELIVERY

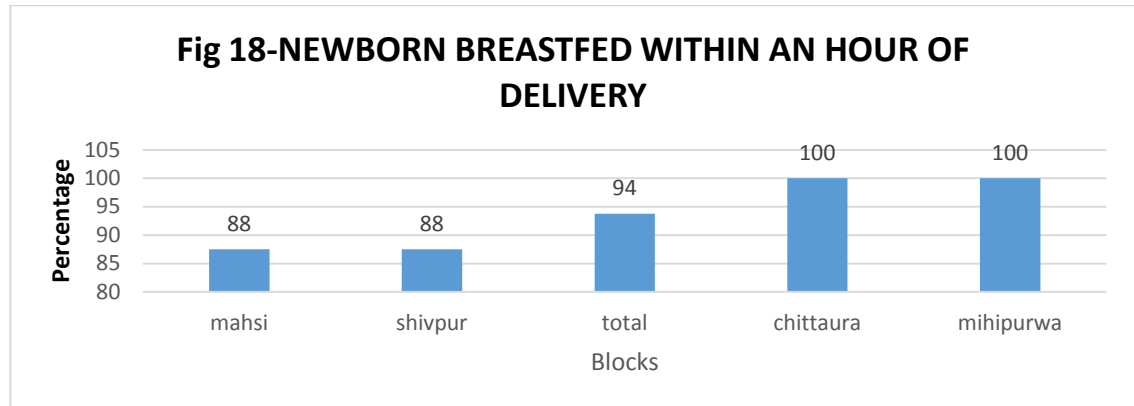


Fig18 shows the status of newborn breastfed within an hour of delivery. Correct definition is Out of newborns reported at the facility in the reporting month, those given breast milk within 1st hour of delivery. Study shows that 94% of ANM know about this data element out of 32 ANM. Highest being in Mihipurwa and chittaura which is 100% and lowest being in mahsi and shivpur is 88%.

6.3.2.4 NEWBORN VISITED WITHIN 24 HOUR IN CASE OF HOME DELIVERY

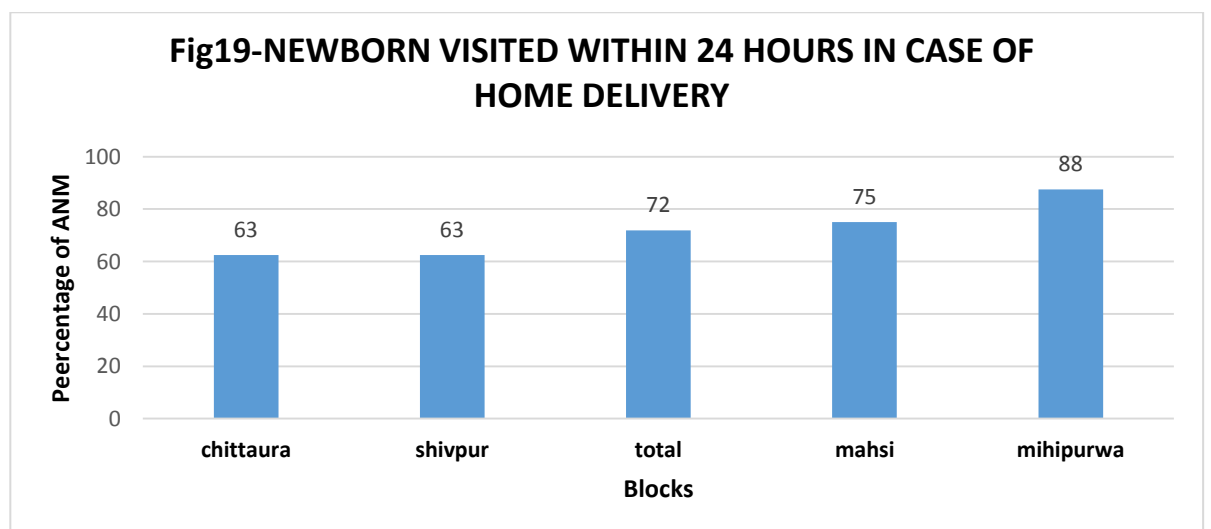


Fig 19 shows the status of newborn visited within 24hrs in case of home delivery. Correct definition is Home deliveries visited by ASHA/ANMs during 24 hours of delivery at their home to provide PNC services. Out of 32 ANM interviewed 72% had the understanding of this data element. Highest being in Mihipurwa which is 88% and lowest in chittaura which is 63%.

6.4 IMMUNIZATION-

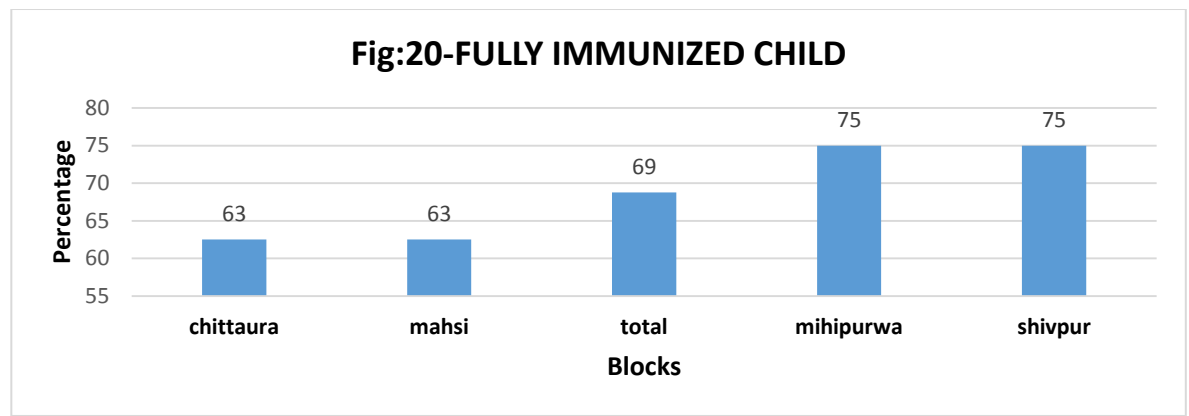


Fig 20 shows the understanding about the fully immunized child. Correct definition is infant receiving OPV – 1,2,3 + DPT-1,2,3+Heb 1,2,3+ BCG + Measles vaccine by 11 month of age. Study shows that 69% of ANM out of 32 ANM interviewed have understanding about this data element. Highest was in shivpur and Mihipurwa is 75% and lowest was in chittaura and mahsi that is 63%

6.3.4FAMILY PLANNING

6.3.4.1 NO. OF ORAL PILL CYCLE DISTRIBUTED

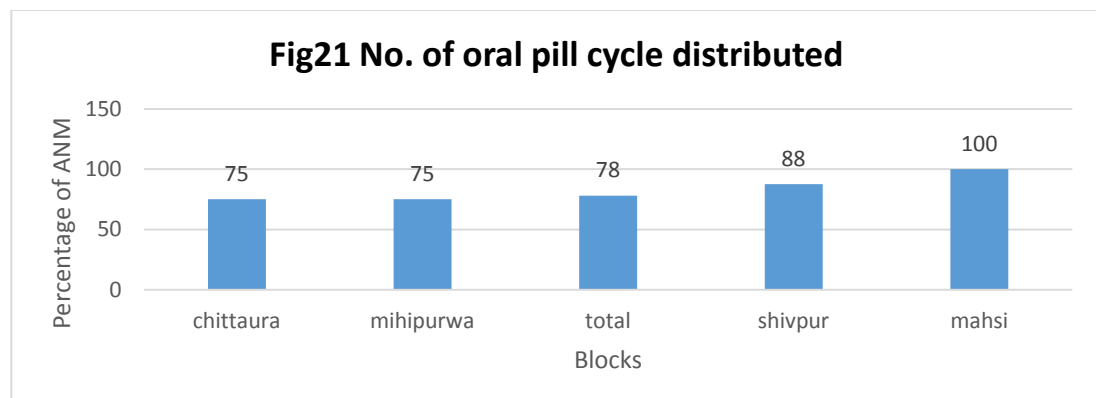


Fig 21 shows the understanding about the no of oral pill cycle distributed. Correct definition is number of oral pill packets distributed to actual beneficiaries, it should not be taken from inventory. Study shows that out of 32 ANM interviewed 78% of ANM had the understanding about this data element.

6.3.4.2 NO OF CONDOM PACKET DISTRIBUTED

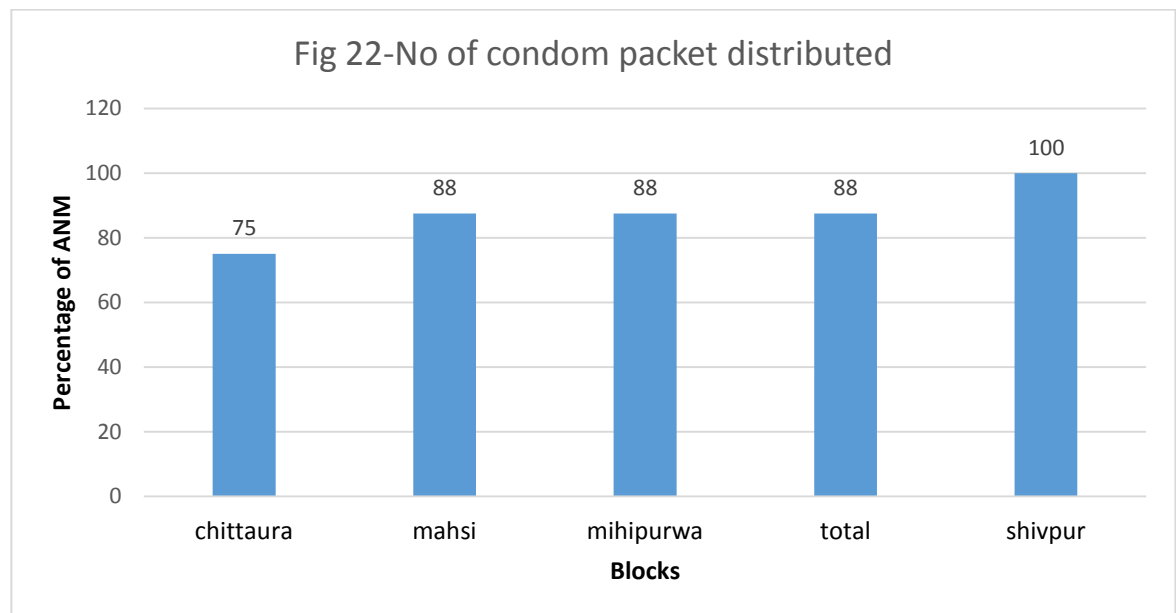


Fig22 shows the understanding about no of condom packet distributed. Correct definition is number of condom packet distributed during the reporting month, including those distributed through depot holder/ASHA/ANM. Out of 32 ANM interviewed 88% of ANM have knowledge about this data element. Maximum understanding was seen in ANM of Shivpur that is 100% and Minimum was in chittaura block which is 75%.

6.3.4.3 NUMBER OF IUCD INSERTIONS CONDUCTED AT FACILITY-

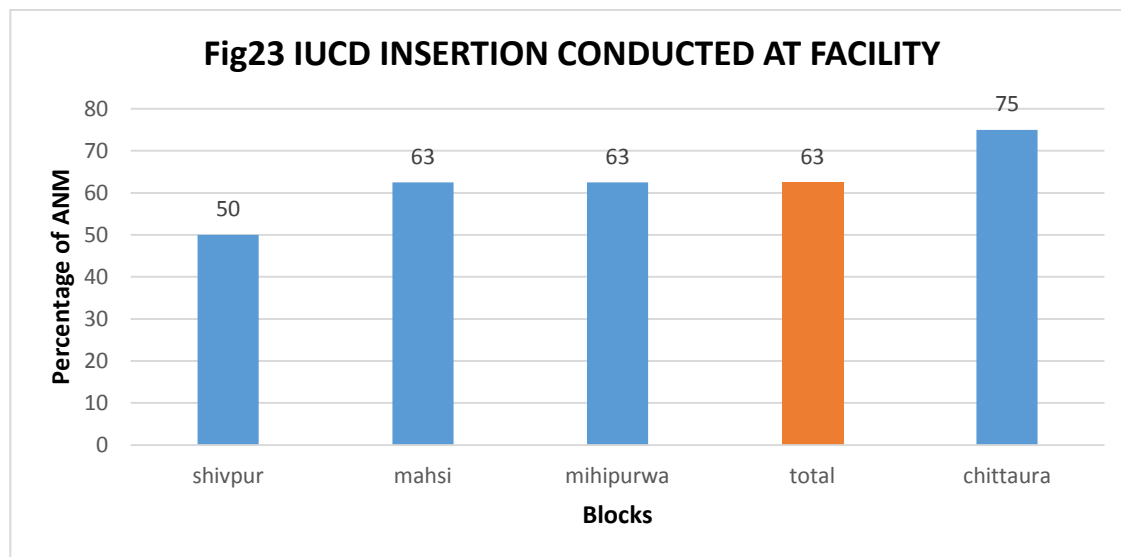


Fig 23 shows the data related to the understanding about the IUCD insertion conducted at facility. Correct definition is Intra Uterine Contraceptive Device (IUD) is inserted into a woman between 15 and 49 years. Study shows that 63% of ANM have the understanding about this data element. Highest understanding was seen in chittaura block and lowest being in shivpur block, which is 75% and 50%.

6.4 DATA TIMELINESS-

6.4.1 Sub centers(ANM) not aware about the reporting period-

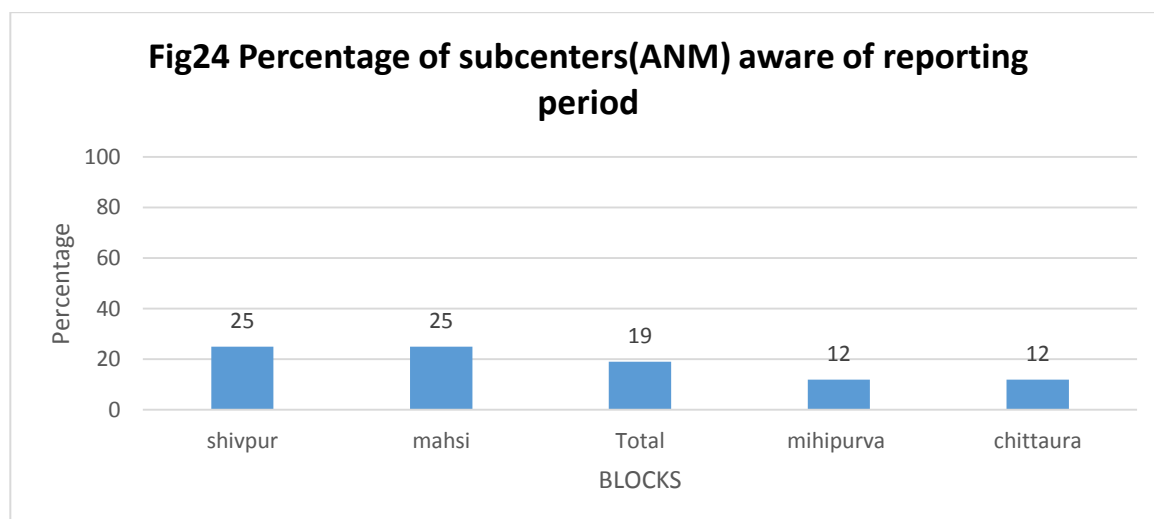


Fig 24 shows the percentage of healthcare facilities (subcenters) not aware about the reporting period.

It was found that about 19% of the ANM are not aware about the reporting period. Maximum percentage of such ANM found in shivpur and mahsi block that is 25%. Lowest percentage was found in Mihipurwa and chittaura that is 12%

6.4.2. ANM WHO SUBMITTED THERE HMIS FORMAT ACCORDING TO REPORTING PERIOD

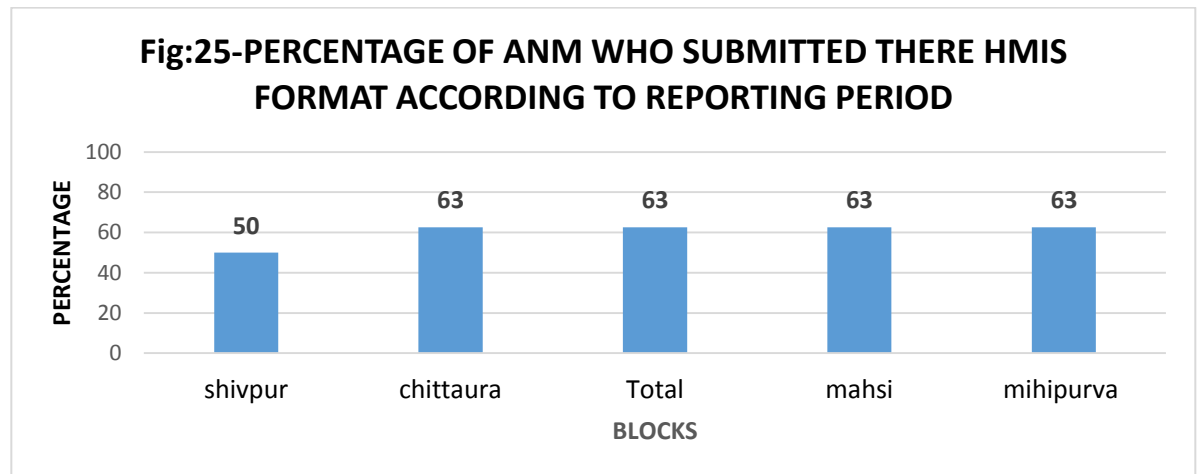


Fig25 shows the data related to the timeliness of report submission. For HMIS reporting there is a reporting period which is from 21st to 20th of every month. On 21st & 22nd of that month ANM have to submit the HMIS format to the PHC. If any delay occurs in the data submission at sub center level then quality of Hmis data affects. Fig 24 shows the percentage of the ANM who submitted their report according to the reporting period and recommended timeline. Out of 32 ANM interviewed 63 % of submitted their report on time, and remaining 27% have not submitted their report on time. 63% of ANM of Mihipurwa block have submitted their report on time. Minimum percentage of report was submitted by the shivpur block which was 50%.

In shivpur block 50 % of ANM have not submitted their report on time

6.4 DATA ACCURACY-

6.4.1 REPORTING OF MISSING VALUES OR LOWER FIGURES

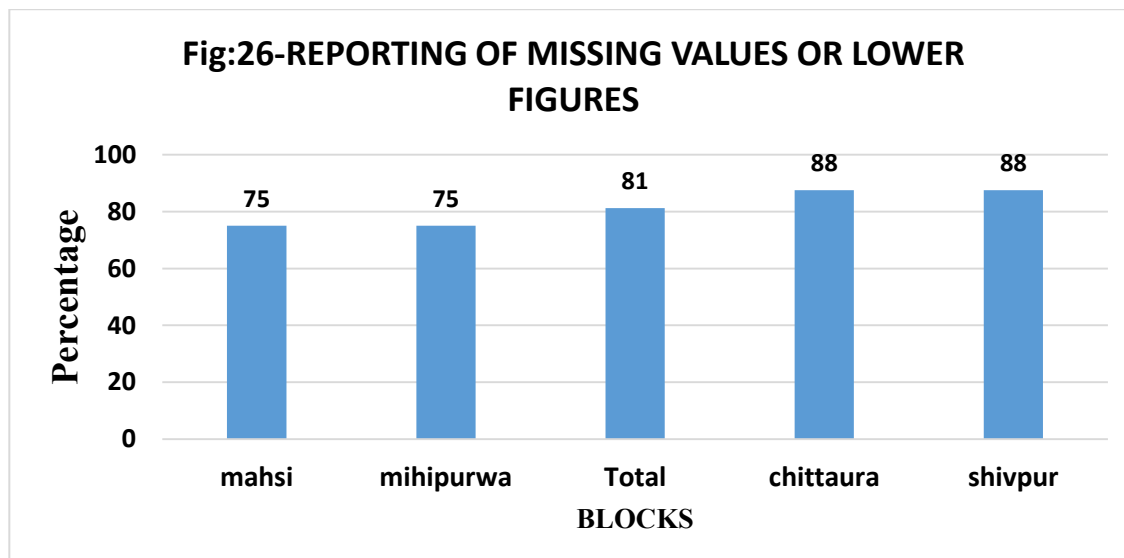


Fig 26 shows the Percentage of reporting of missing values or lower Figures. Study shows that Out of 32 Sub center studied 81 % reports had the missing values or lower figure values. Mahsi had the minimum percentage of such reports and shivpur and chittaura and maximum errors, that is 75% and 88% respectively.

6.5.2 FORMATS IN WHICH VALIDATION ERRORS WERE FOUND

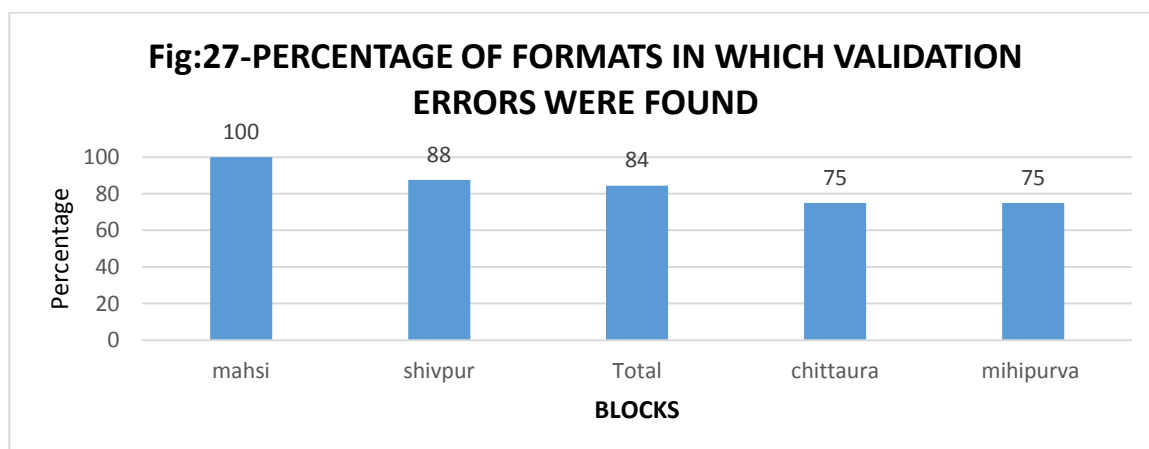


Fig25 shows the data accuracy of four blocks. Data accuracy was checked by validating the record data within itself. There are few data elements in which validation rules can be applied. For eg. Number of women discharged after delivery cannot be more than the deliveries. During analysis it was found that out of 32 sub center studied 84% of block had validation errors in the format. Maximum errors were found in mahsi block which was 100% that means each and every ANM interviewed had the validation error in their HMIS report. It was the major bottleneck which was identified during the study. As it was hindering the data quality.

7. BOTTELNECKS IDENTIFIED/RECOMMENDATIONS-

From the above result and discussion in the study following bottlenecks were identified.

	BOTTELNECKS		BLOCKS NEED TO BE FOCUSED	EASE OF ADDRESSING BOTTELNECKS(Achievable, challenging, Difficult)
HMIS QUALITY BOTTELNECKS	Unavailability of Hmis formats		MAHSI, MIHIPURWA, CHITTAURA	can be achieved with some efforts(Achievable)
	status of registers	Unavailability	MAHSI, CHITTAURA	can be achieved with some efforts(Achievable)
		lack of usage	MAHSI, CHITTAURA	Will take some time to achieve, but is achievable(challenging)
		lack of completion and updation	MAHSI, CHITTAURA, SHIVPUR	Difficult
	Difficulty in Understanding of data elements		SHIVPUR, CHITTAURA	Will take some time to achieve, but is achievable(challenging)
	Data timeliness		SHIVPUR	Will take some time to achieve, but is achievable(challenging)
	Data accuracy		SHIVPUR, MAHSI	Difficult

7.1 Unavailability of hmis format- 12% of the facility showed the unavailability of the HMIS format. Which means that these facilities are either not submitting the monthly data of their sub center or if at all submitting the data then its reliability is questionable. There are many data elements which need clear instruction and proper understanding without any format quality of reporting will be hampered, and interpretation of data at higher level will be affected.

Recommendation- Provide HMIS format in the 12 % of the facility who do not have the format

7.2 Lack of availability, usage and completion and updation of registers and records Out of 32 subcenters around 47% of the Subcenters did not had the required registers, in 55% of the subcenters the registers were not used, and around 86% of ANM were not completing and updating their data. An ANM have to fill around 10-12 registers in their subcenters, which is very difficult to manage. Many subcenters do not have proper infrastructure so they have to keep their register at their home. And because of same reason they do not maintain the registers.

Recommendations-

There are many registers which have to be maintained by the ANM. They should be replaced by one or two registers and those printed registers should be provided to the ANM. And entries in rough diaries should be discouraged. It leads to data error

7.3 Lack of understanding about the data elements in the HMIS format-

Misinterpretation of HMIS data element is very common among ANM. Due to lack of understanding they fill wrong data. Which result into the poor quality of data. Study shows that 27% of ANM didn't know the meaning of the early ANC, and around 44% do not know the correct definition of the anaemic pregnant women. 62% of ANM did not had the understanding about the home delivery conducted by the Skill birth attendant. 25% of ANM didn't knew about the institutional delivery. Around 31% of ANM did not had the understanding of the fully immunized child. The data analysis

shows that there is the need of capacity building of ANM. Poor understanding about data elements will lead to poor filing of data elements.

Recommendations-

- Proper set of guideline and procedure made should be explained to ANM. For this training should be conducted at block level. ANM and data operators should be the participants. And all the data elements should be explained to them. Reporting period should be clearly mentioned. A pretest and posttest should be scheduled to know the effectiveness of the training.
- And a dictionary for the data elements should be provided.
- Supportive supervision checklist to be filled by the district officials also and hand holding support should be provided to the ANM and the data operators during the field visit.

7.4 Lack of submission of reports on time- It was found that around 19% of ANM did not know about the reporting period of HMIS. If ANM do not know the reporting period then they will not be able to take monthly report accurately and timeliness will be affected. Absence of any Proper written procedure and guideline results into such kind of gap. ANM should be told about the proper written procedure.

- **Recommendation-** By 25th of every month Block program manager should identify those ANM who have not submitted the report, and should take necessary action.
- In block review meetings conducted monthly should have feedback related to HMIS format. Ranking should be done of the subcenters, it will provide the feedback to the ANM about their work
- Every month name of those ANM who do not submit the HMIS format according to the defined timeline should be noted down. If any name comes consistently then reason should be identified and proper action should be taken
- A Log register should be made and maintained on monthly basis by ANM. HMIS report should be timely reviewed on regular basis by the Block managers.

7.5 Lack of Data accuracy. Any error in filing the data, or if any required data is missing, or any nonexistent services are filled affects the data accuracy. Validation

errors when found in any HMIS format then it is recorded as it denoted the inaccurate data.

Recommendation

- When ANM submit the HMIS format it should be properly reviewed by the Block program manager, and necessary corrections should be made before giving the formats to data operators.
- Validation checks should be done to identify the validation error and this should be made in ANM considerations. So that in the next month those errors should not be made.

REFERENCES-

1. "An Assessment Of The Quality Of Health Management Information System Data In Selected Health Facilities In Lilongwe District"/ Christon Mesheck Moyo/July2005.
2. Data Utilization and Evidence-Based Decision making in the Health Sector/survey of three Indian states/ World Bank study/march 2009.
3. "Improving quality and use of data through data-use workshops: Zanzibar, United Republic of Tanzania"/Jorn Braa et.al/Bull World Health Organ 2012;90:379–384
4. "Evaluation of computerized health management information system for primary health care in rural India"/ Krishnan et al. BMC Health Services Research 2010, 10:310/http://www.biomedcentral.com/1472-6963/10/310
5. Quality of a routine data collection system for health: case of Kinondoni district in the Dar es Salaam region, Tanzania/Inter Word Communications for Department of Information and Knowledge Management/Vol.7 (2) June 2005.
6. "Utilization of Health Information System at District Level in Jimma Zone Oromia Regional State, South West Ethiopia"/ Sultan A. et al/Ethiop J Health Sci. Vol. 21/ August, 2011.
7. Understanding Health Management Information System, Service Provider Manual/MOHFW&NRHM/January,2011
8. Understanding Health Management Information System, Health Manager Manual/MOHFW&NRHM/January,2011