DATA QUALITY ASSESSMENT & FACTORS RESPONSIBLE IN DISTRICT BAREILLY , UTTAR PRADESH

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INTRODUCTION

- Health care data is defined as that information used to provide, manage, pay and/or report on the services used across the entire health care system. HMIS produce data about health service provision and population health status to be used for decision making and program planning at all levels of the health system.
- Accurate, timely and reliable public health data are essential for the delivery of high-quality healthcare services and for ongoing improvement of public health programs.
- Quality and timely data from a health information system should be used to guide decision making across all the other health system functions (service delivery, health workforce, access to essential medicines, financing, leadership, and governance).

INTRODUCTION

- These decision-making processes include priority setting, health resource allocation and utilization, introducing and improving service delivery and policymaking to promote greater utilization of health services and improve health outcomes by annual health planning and budgeting.
- Data-informed decision making contributes to a culture of transparency and accountability, as available information is used to ensure that resources such as workforce, finances, and commodities are being used effectively and appropriately.

LITERATURE REVIEW

- Barriers to Use of Health Data in Low- and Middle- Income Countries done by USAID and MEASURE EVALUATION suggested that low data quality can be attributed to a variety of root causes and is exacerbated when health workers are unmotivated to collect accurate data. Data quality practices can also be dependent on leaders that value and incentivize quality data for decision making; organizational supports that outline roles, responsibilities, or procedures for data quality improvement activities; and the design of health information systems that facilitate easy collection and reporting of data. (Michelle et al,2018, p.6)

- A quality assessment of Health Management Information System (HMIS) data for maternal and child in Jimma zone, Ethiopia suggested the importance of quality of data and the ways to improve the quality of HMIS data. (Ouedraogo Mariame, 2011, p.3)

LITERATURE REVIEW

- Main barriers for quality data collection, done by University of Porto stated that the volume of health data is rising, and health information technologies are a promising solution. However, they often cause errors instead of preventing them. A study using 5 different database engines were conducted from which data availability, format, accuracy and data accessibility were the most focused problems to address. (Rui et al,2009, p.1)

RATIONALE

- Data quality analysis in health care is a large and ongoing problem. As the scope of health care information systems is extremely broad and have either a direct or indirect impact on the provision of health care, their quality is a topic of critical importance.
- However, while data has the potential to be very helpful in healthcare, it is not always organized or managed properly, making it difficult to understand required data management and analysis.
- There are multiple facilitators that strongly influence the ability of individuals and organizations to use data effectively, as well as barriers that prevent this from happening. Despite the global recognition for the need to strengthen data-informed decision making, little is known on how to best accomplish this goal.
- Even after improvements in technological solutions facilitating the collection of data and improving data analytics and visualization, actual use of data remains limited in many settings, especially at lower levels such as the district or community.

RESEARCH QUESTION

- What are the provider side barriers affecting data quality in Bareilly, Uttar Pradesh?

OBJECTIVES

- To identify the data quality status on key parameters in district Bareilly
- To analyze the provider side barriers (person responsible for data entry at the facility) for poor data quality.

MATERIAL AND METHOD

- STUDY DESIGN: Cross sectional
- SETTING: Study will take place in the blocks of district Bareilly, Uttar Pradesh
- STUDY POPULATION:

  Inclusion criteria: All the public health facilities of district Bareilly, Uttar Pradesh

  Exclusion criteria: Any other private facility at district Bareilly.

  - STUDY TOOL: Questionnaire
  - DURATION: 3 months
  - SAMPLE SIZE: 9 facilities

MATERIAL AND METHOD

- SAMPLING TECHNIQUE: Multi-stage

Analysis of data quality of blocks of Bareilly district was done. On the basis of analysis of data quality indicators, the best performing and worst performing blocks were identified.

From the 2 blocks 1 PHC, 1 block facility (BPHC/ BCHC) & 2 sub centers were chosen for the study randomly.

- Data Collection

The data was collected by the means of questionnaire

Blocks were selected and then from those blocks sample facilities were selected for collection of data.

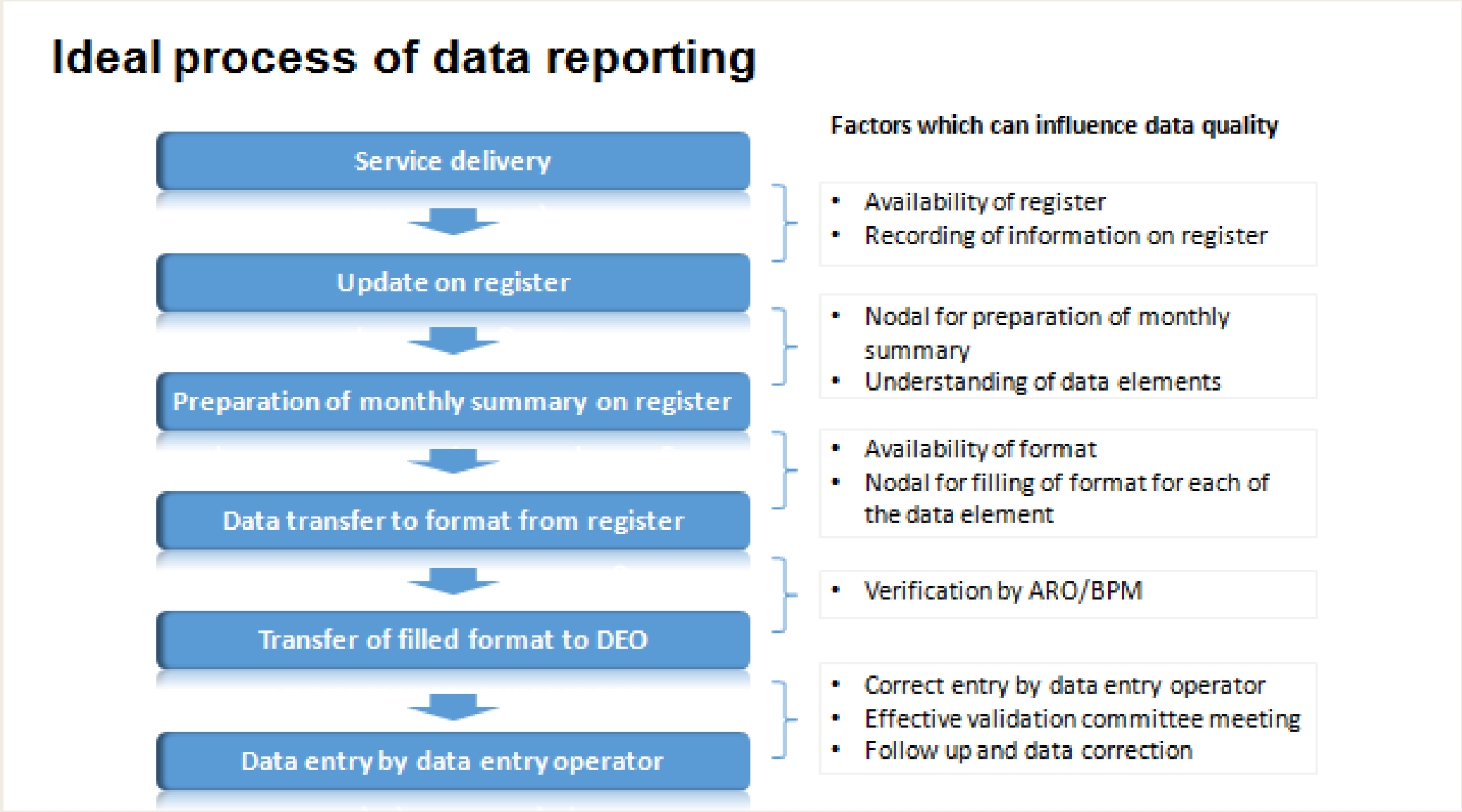
Blockwise analysis

S.No.	Block	Facility	Respondent
1	Kyara	BPHC Kyara	BPM
2		PHC Kandharpur	SN
3		SC Sadpur hakansh	ANM
4		SC Vidholiya	ANM
5	Mudia Nawi Bux	BPHC Mudia Nawi Bux	BPM
6		PHC Riccha	SN
7		SC Damkhoda	ANM
8		SC Riccha	ANM
9	District headquarters	District Female Hospital	Quality Manager

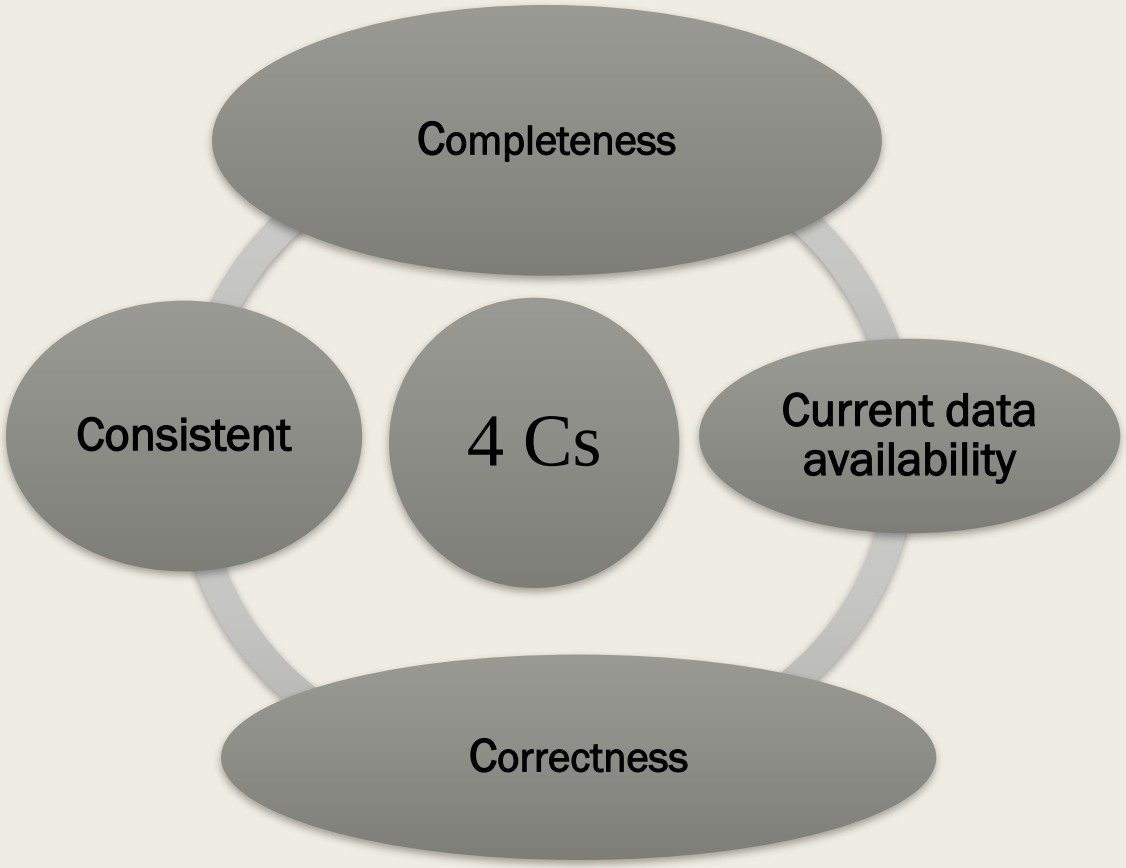
OPERATIONAL DEFINITIONS

- Data entry operators: Person at block level responsible for data entry of all the health related information in UP-HMIS and HMIS
- Facility: Place where health services are provided to public.

IDEAL DATA REPORTING



DATA QUALITY PARAMETERS



Current Availability

Current or recent data must be available for all the facility/units for all formats

Completeness

All the data elements for all the facility must be completely filled

Correctness

Data must be correct and accurate

Consistency

Data consistency means that data values should be similar for all instances across different reporting months

Data Quality Indicators

#	Parameter	Indicator	Type
1	Current Availability	% of facilities uploaded/imported UPHMIS and HMIS file in UPHMIS portal (timely and total availability)	Positive
2		% of districts uploaded all the district level format (format wise)	Positive
3	Completeness	% of facilities with greater than 80% of non blank data elements (including zero)	Positive
4		% of facilities with greater than 30% of non zero data elements (excluding zero)	Positive
5		% of facilities (DHs and CHCs) reported non blank/zero in >=14 (Out of 20) critical data elements	Positive
6	Correctness	% of facilities with at least 1 validation rule error	Negative
7		District with indicator value (5 key indicators) variation from NFHS 4 is ±15%	Positive
8		% of data elements matched with source document	Positive
9	Consistency	% of facilities reported outlier	Negative

RESULTS

DATA QUALITY ANALYSIS:

Block wise ranking of the 16 blocks in district Bareilly, based on the composite index of all data quality indicators.

Rank	Block	Composite Index
1	Mudia Nawi Bux	0.278
2	Ramnagar	0.303
3	Bithrichainpur	0.331
4	Kuadanda	0.365
5	Fatehganj(West)	0.376
6	Bhojipura	0.428
7	Mirganj	0.448
8	Dalelnagar	0.469
9	Behedi	0.495
10	Faridpur	0.513
11	Bhamora	0.520
12	Shargarh	0.563
13	Majhganwa	0.565
14	Nawabganj	0.569
15	Bareily DHQ	0.593
16	Kyara	0.618

Block	% of facilities uploaded/imported UPHMIS and HMIS file in UPHMIS portal (timely and total availability)	% of facilities with greater than 80% of non-blank data elements (including zero)	% of facilities with greater than 30% of non-zero data elements (excluding zero)	% of facilities with at least 1 validation rule error	% of facilities reported outlier
Bareily DHQ	97	43	2.11	17	4.7
Behedi	100	52	1.65	77	3.0
Bhamora	100	22	0.00	33	2.8
Bhojipura	93	0	0.00	13	3.8
Bithrichainpur	83	5	0.28	25	3.1
Dalelnagar	100	4	0.29	31	3.2
Faridpur	100	16	0.00	26	3.2
Fatehganj(West)	87	14	0.30	30	3.3
Kuadanda	87	5	0.55	30	3.0
Kyara	97	72	0.00	29	3.4
Majhganwa	90	73	0.22	38	2.4
Mirganj	94	12	0.30	27	3.3
Mudia Nawi Bux	79	1	0.00	24	3.2
Nawabganj	100	67	0.00	33	5.4
Ramnagar	94	0	0.00	26	7.1
Shargarh	80	6	9.09	35	0.0

Results of the study

- This table show that Bareilly and kyara are good performing blocks and the worst performing is the Mudia nawi bux, in accordance with the composite index of all data quality indicators.
- Mudia nawi block does worst of all suggesting that the data quality has been compromised in most of the aspects and important steps are required to be taken at every place for improvisation of quality of data.
- Bareilly and kyara does well in the data quality, but still have scope for improvement. The efficiency of data collection and quality aspect at every phase should be taken care of, for best quality of data.

Results

S.No.	BARRIERS	FACILITY	MN BUX	KYARA	DWH
Source document					
1	Total no. of elements for which summary was prepared in the record	Block facility	12%	44%	31%
		PHC	9%	38%	
		Sub- centre	3%	22%	
2	Total number of data elements for which responsibility is assigned	Block facility	39%	79%	82%
		PHC	46%	70%	
		Sub- centre	0%	40%	
System level					
3	Whether health facility has a printed format for HMIS reporting	Block facility	No	Yes	Yes
		PHC	No	Yes	
		Sub- centre	No	Yes	
4	Training received by computer operator/BPM/ANM on HMIS in last one year	Block facility	Yes	Yes	Yes
5	Validation Committee meeting	Block facility	No	Yes	
6	Visit by government officials for data quality assessment (data audits)	Block Facility	No	Yes	Yes
		PHC	No	Yes	
		Sub- centre	No	Yes	

Results

Knowledge & understanding					
7	Knowledge of reporting period (Period- 21st to 20th)	Block Facility	Yes	Yes	Yes
		PHC	Yes	Yes	
		Sub- centre	Yes	Yes	
8	Knowledge and Understanding (Of indicators)	Block facility	64%	86%	86%
		PHC	67%	78%	
		Sub- centre	80%	80%	

Interpretation of table:

As the above table shows, Kyara and DWH (Bareilly) are the best performing blocks and the barriers are also comparatively less to MN BUX. The parameters directly affecting data quality include:

- Number of data elements for which responsibility is assigned
- Printed format for HMIS reporting
- Validation committee meeting
- Visit by government officials for data quality assessment

DISCUSSION

Data quality can be affected by either of the following factors:

- Assigning data element responsibilities to the staff-

  A successful data management plan requires that the appropriate staffing resources are available and trained. Assigning responsibilities to the concerned staff helps to reduce the workload on the DEO/BPM, hence increasing their efficiency and

- Maintaining summaries at the end of each month-

  Summary maintenance reduces the chances of error and helps attain precision in turn leading to improved data quality.

- Availability of printed formats for reporting-

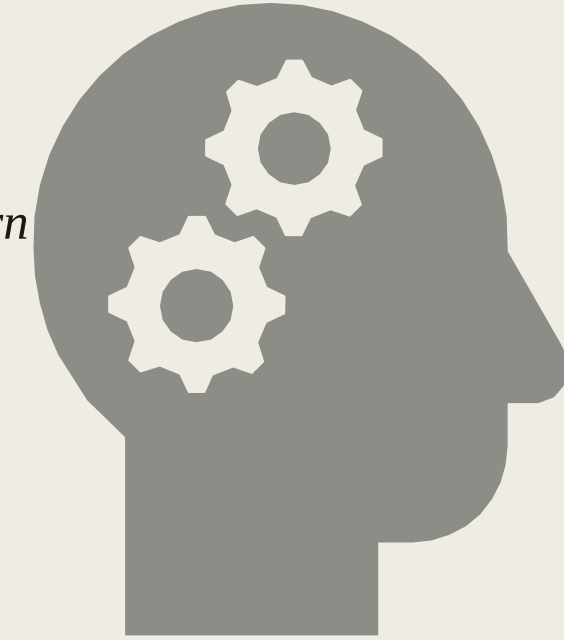
  The availability of printed formats at all levels (Pharmacists, staff nurse, lab technician) directly affects the data quality.

- Continuous monitoring (Data audits)-

  Supportive supervision of the facility for data leads to data profiling to discover inconsistencies and other anomalies in the data

- Validation committee meetings-

  Validation committee meetings on a regular basis, help improve the data quality and maintain the same.



RECOMMENDATIONS

Following recommendations can be made on the basis of study:

- As discussed from the study there is requirement of division of labor is utmost important and should be exercised in every facility.
- Monitoring while collection and even uploading of data should be done in a continuous fashion. It should be made adamantly clear that the data is to be of quality which includes timely uploading and completeness, both including and excluding zero.
- Summary maintenance at the end of each month should be exercised. In every validation meeting the summary should be checked, verified and cross-checked for improvement in the quality of data.
- Data audits should be conducted frequently and formats for reporting should be given and should be properly made so that they can be used and validated whenever required.

REFERENCES

- Ouedraogo Mariame. A quality assessment of Health Management Information System (HMIS) data for maternal and child health in Jimma Zone, Ethiopia. Jou. Pon 2011
- University of Porto. Main barriers for quality data collection, porto,2017

THANK YOU