## **Original Research Article**

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20164705

# Evaluation of health information system in reproductive and child health program at primary health center level: a system analysis

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**Received:** 10 November 2016 **Accepted:** 03 December 2016

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## **ABSTRACT**

**Background:** Primary aim of health information system is, using it in decision-making. Not many systematic studies on actual status of health information system are available. So this study was undertaken to evaluate the current status of Health Information System (HIS) at the primary level in relation to selective components of Reproductive and Child Health (RCH) Programme and to determine its utilization for identification of problem and decision making at that level.

**Methods:** Cross sectional study done in Bangalore Urban District. HIS was analyzed for completeness, timeliness and utilization. Monthly reports of previous 3 months from PHCs were looked for completeness and timeliness. Utilization of information was assessed by interviewing the medical officers of 4 PHCs for actions they intend to take for modifying the performance; prior to and also after providing them with analyzed information of the available data (customization of data). Both these were compared for differences and specificity of responses. For customization of the data, sub center reports were reviewed and few beneficiaries were interviewed.

**Results:** 85% of the reporting formats were incompletely filled. It was observed an increase in number of medical officers giving more specific actions such as review in monthly meeting, ask explanation by specific sub-center health worker for not giving follow up care to improve the performance than the responses which were more general prior to receiving the customized data. It shows that MOs are not utilizing the available health information for identification of problem or to make decisions.

**Conclusions:** This study showed that medical officers are signing the monthly reports prepared by health workers, without actually using the information at least to identify the problem as it was seen that coverage in one sub-centre was consistently low for all the three months but didn't focus their actions towards that sub center.

Keywords: Completeness, Evaluation, Health information, PHC, Utilization

#### **INTRODUCTION**

Health Information system is a process whereby health data are recorded, stored, retrieved and processed for decision making.<sup>1</sup> It is the basic tool of management and key input for any society.<sup>2</sup>

Monitoring of health status of the population, provision of services in terms of coverage, utility, drug stocks,

consumption patterns, equipment status and its availability etc. on a regular basis is a prerequisite for health management. 1

This requires timely and accurate information from various sources. Without this it would not be possible to know if the organization or its components are achieving objectives and even to identify problem areas. If problem areas are not identified, managerial decision-making for

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corrective actions cannot take place and effectiveness and efficiency of the organization will be reduced.

Better information supply and use within countries have shown to deliver cost savings, system efficiencies (including quality and coverage) and even improved health outcome.<sup>3</sup> The importance of timely, relevant quality of information on health is crucial. Public health decision-making is critically dependent on timely availability of sound data.<sup>4,5</sup>

Any information to influence management in an optimal way, it has to be used by decision-makers at each level in the hierarchy of management. But it is observed in many instances that every level in the government is used to adhocism and decision is based on personal and value based observation and by 'gut' feeling and not based on information. More emphasis is needed on the development of an "Information culture", in which there is more motivation and incentives for managers to use data for decision-making. 1

It was observed that not many empirical studies of actual use of information within a health system could be identified.<sup>1,7</sup> This study was undertaken with the objective of evaluation of status of health information system with respect to selective components of RCH program at primary health care system.

#### **METHODS**

It's a cross sectional study done in PHCs of Bangalore Urban District in 2007. The study was undertaken after taking permission from District Health Officer of Bangalore urban district. There are four talukas and 31 PHCs in Bangalore Urban District. Usually evaluation of health information system includes assessing for completeness, timeliness, utilization and quality of information generated.8 In this study, following three aspects were assessed. (1) Completeness of information: This was done by collecting three months reports (reporting format 7) of all PHCs and they were assessed for completeness. The reports were considered complete only when all the relevant information in the forms were properly entered, were legible and all the columns in the reporting formats are filled (no column are left empty). (2) Timeliness of information: This was assessed by finding the actual date of receiving the reports from PHCs at District Health Office, as compared to the scheduled date. (3) Utilization of information: Utilization of information was assessed only for the purpose of 'identification of problem' and to solve the identified problems by Medical Officers (MO) of PHC. For this purpose the responses of medical officers of randomly selected 4 PHCs before and after providing analyzed data of available information were compared for differences and specificity of responses.<sup>7</sup>

All the PHCs were included for assessing completeness and timeliness. Four PHCs, that is, one from each taluk

were randomly selected to assess utilization of information by medical officers.

#### RESULTS

#### Completeness of information

It was observed that 79 (84.9%) out of 93 reporting formats were incompletely filled and out of them in majority (92.8%) of them, 5<sup>th</sup> column in the format which is meant for planned performance for the current year was left empty.<sup>9</sup> Data in this column will help the user to compare current months performance with the planned performance for the year and identify any significant deviations from expected. Despite the targets for intervention in RCH program being sent to District Health Office at the beginning of the year, absence of the same data from reporting formats was evident.

#### Timeliness of information

Monthly reports should be sent from sub center to PHC on 1<sup>st</sup> of every month, from PHC to DHO on 5<sup>th</sup> of every month and district to State Health authority on 8<sup>th</sup> of every month. But since there was no record of the dates of receiving the reports in DHO' office, and when enquired with the concerned officer in charge of receiving the reports, it was found that every month they receive the reports in time from all the PHCs.

### Utilization of information

To assess utilization, initially the MOs were shown the current performance with respect to RCH services (like early registration of pregnancy, minimum three ANC visits, TT injections and providing IFA tablets) and asked about the actions they would like to take to improve the current performance. Their responses were recorded (Table 1).

Later the sub center reports of each of these PHC were analysed. Additional data was collected by interviewing 20 mothers in each PHC areas about reasons for late registration and for not availing other antenatal services. Both these data, one which is already available in the form of sub-center reports and another additional data collected for the purpose of solving the identified problems were analysed and it was found that:

- 2 sub centers each; in 2 of the PHCs the coverage of selected RCH services were consistently low.
- It was observed that though coverage of registration of pregnancy was high, coverage of minimum 3 antenatal check-ups was low in all 4 PHCs.
- One of the reasons for late registration as stated by the mothers was, that an ANM / Nurse at the center had sent them back, asking to come after 12 weeks of gestation.
- 42% of the mothers opined that early registration was not necessary.

• 25% of them had opined that it was not necessary to have 3 or more antenatal check-ups.

With the above analyzed information (which can be called as customization of available data), the same MOs

were again interviewed and asked for actions they would take to modify the current performance. The responses were again recorded and compared with the responses given prior to customization for any difference.

Table 1: Responses of MOs, before providing the analyzed data of available information.

Responses	Frequency (N=4)	%
Improve awareness campaign to improve early registration	3	75
10 - 30% of them avail services from private setup	3	75
Floating population in the area affects the coverage	3	75
Review the responses in the monthly meeting and take actions accordingly	2	50
Stay of ANMs in sub-center area should be made compulsory	3	75
Population covered by each ANM is high	2	50
We need vehicle to do supervisory visits by which coverage might improve	2	50
Most of the time is lost in giving curative services. We need at least 2 MOs per PHC	1	25
Timing of field workers should be changed	4	100

It (Table 2) showed that there was difference in number of medical officers responding that they would review the issue in the monthly meeting and take action accordingly (increased from 2 to all the 4 of them) and they would increase the frequency of awareness program on early registration of pregnancy and importance of regular ANCs (from 3medical officers before to all the 4 MOs after getting customized information) which are more specific actions to improve the performance than the responses which were more general prior to using the available data.

Similar increase was observed for responses like timings of the field work should be changed to afternoons (from 3 to all the 4 of them) and making the ANMs stay at the sub center compulsory (from 2 MOs to all the 4 MOs after getting analyzed data), which are good suggestions for changing the system according to the need.

There were some newer actions which the MOs intended to take after looking into analyzed data that were more specific for the lacunae found, such as they would find out the reasons (3 out of 4 MOs) for not giving follow up visits for all the registered women and ask for explanation (all the 4 MOs) for the same by ANMs & LHV as the number of registered mothers getting minimum 3 ANCs had reduced as compared to the number of registered ANCs; and then take actions accordingly.

Some of the responses that were more general, like some proportion of population avail services from private set up, population to be covered by each ANMs is too large, need at least 2 MOs per PHC and a vehicle to do supervisory visits and effect of floating population on the coverage percentage were not among the responses given after seeing the analyzed information.

Table 2: Responses of MOs, after providing the analyzed data of available information.

Responses	Frequency (N=4)	%
Review the responses in the monthly meeting and take actions accordingly	4	100
Find out the knowledge of health workers and correct their misconception	2	50
Find out reasons for not giving follow up visits by ANMs and take necessary actions	2	50
Ask for explanation from the field workers for not giving follow up visits even after registration of pregnancy	4	100
Would increase awareness campaign with regards to early registration and importance of regular ANCs	4	100
Stay of ANMs in the sub centre area should be made compulsory	4	100
Timing of field workers should be changed	4	100

#### **DISCUSSION**

A review study by Kapilashrami MC and Tiwari VK in two states of India in national health information system was critically examined at various levels; they reported that, at block level large number of reports needs to be prepared monthly of which 50% of data are overlapping. They also found that the records are either incomplete or not available. In the present study also it was found that more than 80% of the forms were incomplete.

A study done by Lal S et al on management of HIS in RCH program at sub center level, they found out that most commonly used records were eligible couple and family welfare registers and use was restricted only for enumeration of beneficiaries and for preparation of reports on services rendered to beneficiaries. They also stated that information at micro level was not used for assessing community health needs, not even for prioritization of clients for services or for preparation of work schedule for efficient coverage & tracking the clients for continuity of services. 10 Similar observations were made in the present study where it was found that forms were incomplete and appears that the health information is not used for assessing progress or to identify the problem nor to solve them by medical officers of PHC.

An evaluation of HMIS in Kerala state found that the completeness (37%) and accuracy (29%) of information was very low. Overall level of use of information in meetings was mainly for the purpose of sending reports to higher centers. It was not used for decision making at the facility level.<sup>11</sup>

In an evaluation of HMIS in India by Bodavala R, it was found that medical officer of PHC; do not show interest in verifying the data, or to reflect on the data and in using the data to take corrective action on any of the anomalies. The authors states that the MOs passively sign whatever is prepared by the concerned staff. A similar observation is made in the present study also.

### CONCLUSION

This study showed that medical officers are signing the monthly reports prepared by health workers, without actually using the information at least to identify the problem as it was seen that coverage in one sub-centre was consistently low for all the three months but didn't focus their actions towards that sub center. It was also evident that they are signing it as routine without actually bothered if the form is completely filled or not as in this study more than 80% of the forms were incompletely filled. We can also conclude that the medical officers are not using the health information in the RCH reporting forms for assessing the progress of the current months' performance against the planned targets for the month or the year which is the first thing they can do to identify the problem; as in many of the forms the information of

targets for the year were left empty. All these findings give us a clue that they (MOs) might not be getting any feedback from the higher authorities.

Suggestions from medical officers, such as changing the timings of field visits, making ANMs stay at sub center compulsory, some system in place for continuous flow of information from private setups in each area can be considered. The quality of information was not assessed in this study, which should have been done for commenting on the status of Health Information System. Utilization of information should be assessed more objectively to actually say whether it is being used or not; which could not be done in this study.

#### **ACKNOWLEDGEMENTS**

Authors would like to thank the Bangalore Urban District Health Officer for permitting me to take up this study and all the PHC medical officers for co-operating and providing me the information.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

#### **REFERENCES**

- 1. Bodawala.R, Evaluation of Health Management Information System in India, available @ www.hsph.harvard.edu/takemi/rp176.pdf accessed on 4/03/15.
- 2. Park. K, Textbook of Preventive & Social Medicine, 2007, 22nd edition, Banarsidas Bhanot Publishers, Jabalpur, pg
- 3. Sally Stansfield, Structuring information and incentives to improve health, Bulletin of WHO, Aug 2005, 83(8), pp 562.
- 4. Ties Boerma, "Getting the numbers right", Bulletin of WHO, Aug 2005, 83(8), pp 567.
- 5. Carla Abou Zarh, Ties Boerma, "Health Information Systems; the foundations of Public Health", Bulletin of WHO, Aug 2005; 83(8); pp 578-583.
- 6. Richard.E.Cibulskis, "Information is not only for managers", Bulletin of WHO, August2005, 83 (8) pp 637.
- 7. Lippeveld T, Sauerborn, R., Bodart C, World Health Organization. (2000. Design and Implementation of Health Information System, Geneva. WHO
- 8. Kapilashrami MC, Tiwari VK. Review study on National Health Information System in two states of India, available @ http://www.hihfw.org/material/research/r190.doc accessed on 4/07/10.
- National Institute of Health and Family Welfare, Reproductive and Child Health – Module for Medical Officer (Primary Health Center), 2003, New Delhi, pp 99-106.
- 10. Lal S, Vashisht, Punia MS, Kumar V, Kumar R, Jain S. Management of health Information system in

- RCH programme. Indian J Community Medicine. 2002;27(2):84-90.
- Harikumar S. Evaluation of Health Management Information Systems- A Study of HMIS in Kerala, India. Working Paper No. 8. Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology: Trivendrum. 2013.

Cite this article as: Deepa LN, Gopinath D. Evaluation of health information system in reproductive and child health program at primary health center level: a system analysis. Int J Community Med Public Health 2017;4:15-9.