Review article:

The progress and impact of Health Management Information System (HMIS) in monitoring and evaluation of health programs in India

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Abstract

Health Management Information System (HMIS) is designed to assist in planning and management of health programs. According to World Health Organization (WHO) effort should be made to increase capacity-building for data collection and reporting of vital statistics. The review consists of literatures relating to HMIS as a progress in global as well as in Indian scenario. The search using the key words HMIS, and MIS is made in medline and google scholar. Moreover, different portals of Government of India relation to health and allied sector were also searched for information. There is no rational structure evolved for human resource management and HMIS infrastructure for data utilization, resulting in data overload without analysis at different administrative levels. HMIS provides impetus in achieving the goals of Public Health. The review is examine the utility of HMIS in policy formulation, addressing for equity oriented program implementation, improvement of training programs, effective monitoring and evaluation, and role of various stakeholders at different administrative level.

Key words: HMIS, Monitoring and Evaluation, Historical Review

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INTRODUCTION

The Government of India's initiatives in public health have recorded noteworthy successes over time. Unfortunately, Indian health system is still ranked 118 among 191 Who Health Organization (WHO) member countries on overall health performance (WHO, 2000). One of the reasons is poor management of health programs. Health management requires the monitoring of the health status of the population, provision of services as to the coverage and utility, drugs stock and consumption patterns, equipment status and availability, finances, and appointment of personnel on a regular basis. This requires timely and accurate information from various sources, so as to help health service managers to recognize

weakness in health service provision and take actions that will improve service delivery. In other words, the development of an effective information system is a necessary precursor to managerial improvement (Bodavala, 1998).Health Information System integrates data collection, processing, reporting and use of information for necessary improvement of health services. The Health Management Information System (HMIS) is designed to assist in management and planning of health program (WHO, 2004). WHO has led down 5 major components of evaluation pertaining to HMIS, these are data generation and report compilation, data utilization, computer hardware and software, training, and monitoring.

HMIS has been envisaged to not only help the administrators to have better monitoring and control of the functioning of hospitals and public health programs, but also assist the doctors and medical staff to improve health services with readily reference patient data, work flow across the state by using decision support indicators. This also enabled less paper-process and parameterized alarms and triggers during patient treatment cycle. HMIS enables monitoring pre-defined health indicators and the embedded exception reporting facilitates decision making by the hospital management and state level administrators for policy and strategic decisions. HMIS has enabled provision of better care to patients by automating all the major functional areas of the hospitals and the entire gamut of hospital activities, which ultimately help in overall improvement of public health.

HMIS is supported with the advent of computerized data collection and storage, but the issues of privacy and confidentiality become magnified. In the past, coordinated information about a particular person could be obtained only by sifting through archived records. The information may even have been scattered in several different locations. The fragmented nature of this system provided an inherent measure of privacy by limiting easy access to information. As health and medical data continue to become increasingly computerized and centralized, the difficulty of access is largely removed. This greater threat to individual privacy dictates a need for improved confidentiality policies and security procedures to address both internal and external threats to data. Privacy violations are potentially the most important threat to the effectiveness of data storage and retrieval networks (O'Brien, 1999).

The primary focus of health informatics is on the application of information science and technology, which promote the health of population as opposed the health of individual (Yasnoff, 2000). Moreover, it should promote the prevention of disease and injury by altering the conditions or the environment that put population of individuals at risk. The need for urgent management of information is an opportunity as well as requirement for better health management. The improvement in information technology provides new challenges to public health system and to bring changes in medical delivery system by using HMIS judiciously.

HMIS is a system especially designed to assist in the management and planning of health program. Moreover, it is an interdisciplinary approach which requires knowledge from various disciplines particularly information and computer science, management, psychology, sociology, communication and political science.

ORIGIN OF HMIS IN WORLD SCENARIO

The origin of HMIS may be traced back to hospital database systems. The first articles on information management in medicine appeared in the 1950s. The number of publications in this domain rapidly increased between the 1960s and 1970s, as medical informatics (MI) became identified as an emerging field and a new specialty (Sood & Keeroo et al., 2004).

The World Bank also focuses on proper data management and processing of information. In the line of World Bank's logical framework on e-strategies, WHO has developed e-health development model. The model encompasses three tiers and constructs a solid foundation for enacting policies and actions towards the provision of e-health systems. Specifically, it is a guideline for strategic planning and implementation, as well as monitoring and control. It also offers assistance to nations in terms of preparation for the aforementioned challenges (Panjamapirom & Musa, 2010).

One of the major challenges is the establishment of functional HMIS. The international bodies also concern about the cross cultural differences in HMIS. There are social and cultural differences among nations around the world. As neither ICT (Information and Communication Technology) nor HMIS are artifacts, it is almost impossible to ensure that a specific e-health application would be acceptable across various societies and cultures. Therefore, most such applications would normally need to be modified to fit local contexts. This requires healthcare processes that affect interaction among global, regional, and local level be understood (Panjamapirom & Musa, 2010).

The perception of various components of HMIS has been interpreted differently in different cultural settings. For instance 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. The data is transformed into information and finally to knowledge. Data is the raw material in the form of numbers or characters and it is without context. Information is a meaningful collection of facts and data with reference to a context. When information is analyzed, communicated, and acted-upon it becomes knowledge (NHSRC Manual, 2010). The choice of indicator depends upon what aspects of the programme we are monitoring and what actions need to be taken in a given context. An indicator provides information on how well a particular parameter of the programme is progressing but this information has to be interpreted in a context to facilitate meaningful action. Information when understood in context is becomes knowledge.

Nations take different approaches in handling and managing healthcare planning and policies. The implementation of e-health system depends on the commitment among various groups in the society,

especially the political group and the government that leads the country. According to WHO there is an epidemiological gap in HMIS, and effort should be made to increase capacity for data collection and reporting of vital statistics. Capacity building efforts need to be made for recording, reporting and geographical coverage of burden of disease for better future estimate (Khan et al., 2006). The primary focus of health informatics is on application of information science and technology that promote the health of population as opposed the health of individual (Yasnoff, 2000). The improvement in information technology provides new challenges to public health system and to bring changes in medical delivery system through judicious use of HMIS.

HMIS IN INDIA: A HISTORICAL OVERVIEW

The necessity of a sound information system as a support to the various developmental activities of the health sector in India was identified as early as the Bhore committee report -1946, after that global call to improvement of HMIS gained its importance. Various bodies at international level focused on the development of HMIS and its integration for subsequent utilization. National Health Information Systems provide the inputs in the formulation of regional and global health policies. The call for action to improve the information infrastructure is global, and as early as 1979 an inter-regional consultation on National Health Information Systems was held in Costa Rica, by the initiative of the division of information support of WHO.

India also falls in the line of international convention for development of health. Subsequent policy documents emphasize on the requirement of HMIS, which is reflected in National Health Policy of India, 1983. It states that appropriate decision-making and program planning in health and related

fields are not possible without establishing an effective health information system. It stressed the need for a nationwide organizational set-up for essential health information, which may provide support for the local management of the health care and effective decentralization of health related activities.

The National Health Policy 2002 felt the need of proper data-base to tackle public health. The absence of a systematic and scientific health statistics data-base is a major deficiency in the current scenario. The health statistics collected are not the product of a rigorous methodology. Statistics available from different parts of the country in respect of major diseases are not obtained in a manner that makes aggregation possible or meaningful. Further, the absence of proper and systematic documentation of the various financial resources used in the health sector is another lacuna in the existing health information scenario. This makes it difficult to understand trends and levels of health spending by private and public providers of health care in the country, and consequently to address related policy issues and to formulate future investment policies. NHP-2002 focused self to the programme for putting in place a modern and scientific health statistics database as well as a system of national health accounts (NHP, 2002). NHP-2002 envisages that, with access to such reliable data on the incidence of various diseases would make public health system move closer to the objective of evidence based policy making.

The mission statement acknowledges that a strong component of technical support is essential for the success of the NRHM. This requires, inter alia, the positioning of programme management units and an improved health information system. In the survey of Bajpai et al (2009), it is found that lack of coordination and cooperation between the health facilities and the District Program Management Units (DPMUs). Another important issue is that the role of the DPMUs has been so defined that they lack the required authority to take crucial administrative decisions. For instance, in case of non-performance of paramedic staff (ASHA or ANM) at the village level, the DPMUs cannot take any corrective action directly; nor is the feedback given by these units to the paramedic staff always accepted by the latter. Further, in order to complete unfinished tasks, it is necessary to identify weaknesses in the implementation procedures of the NRHM. A crucial component in this context is the Health Management Information System (HMIS). The HMIS should be so designed that it can serve as a mechanism for effective monitoring and supervision of the Mission activities and evidence based planning (Husain, 2011).

ORGANIZATIONAL ARRANGEMENTS FOR HMIS IN INDIA

The Government of India has provision for collection of data at various levels. At the central level, Central Bureau of Health Intelligence (CBHI) acts as the health intelligence wing of the Directorate General of Health Services. It deals with the collection, compilation, analysis and dissemination of information on health disciplines in the country covering various aspects including health status, health resources, and utilization of health facilities.

The Department of Health and Family Welfare has a statistical division comprising of a computer unit, demography unit, performance monitoring and evaluation unit and impact monitoring unit. The latter again has Field evaluation unit and Concurrent evaluation unit. These units help in the analysis of data and inform the policies of Government. Sample Registration System (SRS) conduct large scale demographic surveys in India for providing reliable annual estimates of birth rate,

death rate and other fertility and mortality indicators at the national and sub-national levels.

To monitor the performance and quality of the health services being provided under the NRHM, the Ministry of Health & Family Welfare (MoHFW) is putting in place several mechanisms that would strengthen the monitoring and evaluation systems through performance statistics, surveys, community monitoring and quality assurance techniques. The Health Statistics Information Portal facilitates the flow of physical and financial performance from the District to the State level and then to the Centre by using a web-based HMIS interfaces (GOI, HMIS portal, 2012).

The HMIS web portal was launched by MoHFW on 21st October, 2008 to enable capturing of public health data from both public and private institutions in rural and urban areas across the country. The portal is envisaged as a "Single Window" for all public health data for the MoHFW. The MoHFW was initially bring in place HMIS up to the District level and now being expanded to the lower level facility (NHSRC Manual, 2010).

CONCLUSION AND EMERGING ISSUES OF HMIS

1. There is no delineation of work among human resource at state district and sub-district level for utilization of data and the assigned purpose. There is data overload but no analysis at different levels with minimal sign of consumption of data at the generation level. The issues relating to HMIS are not discussed at ground level for improvement of the MCH using HMIS.

2. Based on the contextual analysis, the implementation of HMIS needs improvement for better output particularly in tracking mother and child care in Odisha.

3. Presently, HMIS data interpretation is 'target oriented' and solely dependent on raw facts, figures and statistical analysis. Interpretations are not sensitive to social groups, cast, gender, and marginalization. There is need of disaggregation of data for better performance. The good reproductive health outcomes mean different things to different groups, in different social contexts, but HMIS has to address considering the local context.

4. Though there is HMIS, its utilization in training program should be adopted for betterment at state, district and sub-district levels. It is obvious that NRHM programs addressing the maternal and child care, needs rigorous training for their implementation with the help of HMIS.

5. Despite a huge investment in developing, monitoring and evaluation of specific national health programs, the state is falling behind in meeting MDGs particularly, 4 & 5 that are holistic and integrated in nature.

6. There are doubts on utilization of HMIS as an effective tool for planning, managing and decision making at policy level. The policies need more rigorous inputs from inferences of HMIS. The feedback mechanism for improvement of HMIS is not well defined.

REFERENCES

1. Government of India, Ministry of Health and Family Welfare. (2005).NRHM Mission Document (2005-12). New Delhi Available from NRHM/Documents/Mission_ Document.pdf. Last accessed on 25 Aug 1, 12.

2. Government of India, Ministry of Health and Family Welfare. (1946). Report of the Health Survey and Development Committee. New Delhi: Manager of publications.

3. Yasnoff, W.A., O'Carroll, P.W., Koo, D., Linkins, R. W., & Kilbourne, E. M. (2000). Public Health Informatics: Improving and Transforming Public Health in Information Age. *Journal of Public Health Management 2000; 6:*67-75.

4. Government of India, Planning commission. (2008). Planning Commission Report of the working group on Health Informatics and telemedicine for the eleventh plan (2007-2012), New Delhi. Available from: http://www.planingcommission.nic.in /aboutus/committee/ wrkgrp11/wg11_heainfo.pdf . Last accessed on 17 Aug on 2012 Aug 1.

5. Zodpey, S. P., & Negandhi, H. N. (2008). Contemporary Issues in Public Health Governance – An Indian Perspective. *Indian Journal of Public Health*, 52, 96–99.

6. O'Brien, D. G., & Yasnoff, W. A. (1999). Privacy, Confidentiality, and Security in Information Systems of State Health Agencies. *American Journal of Preventive Medicine 16, no. 4,*351–358.

7. Athavale, A. V., &, Zodpey, S. P. (2010). Public Health Informatics in India: The Potential and the Challenges. *Indian Journal Public Health; Volume: 54, Issue Number: 3;* 131-136.

8. Panjamapirom, A., & Musa, P. F. (2010).Health Management Information System Governance, Policy, and International Perspectives: HMIS Globalization through E-Health.

9. WHO. (1990).Maternal health and safe motherhood programme: progress report 1987–1990. Geneva: World Health Organization.

10. WHO. (2006). Reproductive health indicators: guidelines for their generation, interpretation and analysis for global monitoring. Retrieved from http://www. http://whqlibdoc.who.int/publications/2006/924156315X_eng.pdf. Last accessed on 17 Dec, 12.

11. WHO. (2004). Developing health management information systems: a practical guide for developing countries. Retrieved from http://whqlibdoc.who.int/publications/2004/ 9290611650.pdf. Last accessed on 17 Dec, 12.

12. Husain, Z. (2011). Health of the National Rural Health Mission. *Economic and Political Weekly Vol XLVI No 4.*

13. Ramani, K. V. (2004). A Management Information System to Plan and Monitor the Delivery of Health-care services in government hospitals in India. *Journal of Health Organization and Management. Vol. 18 No. 3.*

14. Khan, K. S., Wojdyla, D., Say, L., Golmezoglu, A.M., & Look, P. F. A. V. (2006). WHO analysis of causes of maternal death: a systematic review. *Lancet; 367: 1066–74.*

15. Bodavala, R. (1998). *Evaluation of Health Management Information System in India: Need for Computerized Databases in HMIS*. Boston: Harvard School of Public Health. Retrieved from http://www.hsph.harvard.edu/research/takemi/files/rp176.pdf on 19th Dec 2012.

16. Government of India, Ministry of Health and Family Welfare. (2010). HMIS Managers' Manual: User Manual for Web Portal & DHIS2, NHSRC, New Delhi.

17. World Health Organization. (2007). Maternal Mortality in 2000: Estimates developed by WHO, UNICEF and UNFPA, WHO, Geneva; 4:16. Available at http://www.wh o. in t/whosis/mme_ 2005 .pdf. Last accessed on 25 Nov, 12.