Need for a basic unified Health and Demographic Surveillance System in India: A Public Health View

Running Title: Unified Health and Demographic Surveillance System

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Abstract

Health and Demographic Surveillance System is well established in developed countries. But in India only very few premier institutes are having in their service areas. In the present era of growing information and technology, there is a huge opportunity to develop and implement a simple and a common HDSS through PHCs. This article highlights the present state and future of HDSS in India.

Key words: HDSS, DHS, Demographic Surveillance

Health and Demographic Surveillance System (HDSS) is well established in developed countries [1-3]. For India HDSS is not a new concept. Having continuous surveillance over the health of the population is one of the main tasks of Primary Health Centres (PHCs). At present in the PHCs there is an annual demographic and health survey of the population conducted by the Anganwadi worker, Accredited Social Health Activists (ASHAs) and Auxiliary Nurse Midwives (ANMs) and they maintain these population enumeration details in a census notebook as hard copies. This survey is usually done in March. On the other hand Maternal Child Health activities got a different technical support; where ANMs monitor the maternal health and child health details mainly immunization through Maternal and Child Tracking System (MCTS) [4, 5]. In this MCTS, once the mother is registered a beat plan schedule is being generated by the system to ensure the comprehensive care and immunization of the child through ANMs [4, 5].

In this context in India, through International Network for Demographic Evaluation of Population and Their Health (INDEPT) a unique and comprehensive HDSSs were established in Ballabgarh – AIIMS - NewDelhi, Birbhum – West Bengal and Vadu – Pune [6 - 8]. In these sites not only maternal care, but the details about demographic and other chronic illnesses digitalised. These HDSSs came out with many publications and contributed significantly for public health in India [6 - 8]. A step ahead from these HDSS, Inclen Trust International has developed an advanced Demographic,

Development and Environmental Surveillance System (DDESS), where DHS is linked with Geospatial mapping in a systematic way by demarcating land parcels, with the help of Arc GIS software [9, 10]. This provides additional high quality information on geospatial mapping in public health.

Even though few successful systems of HDSS and DDESS are in place in India, there is a lack of unified HDSS in public health throughout the country. Even today demographic data are maintained as hard copies in PHCs. While the information and Technology has revolutionized and became more accessible and affordable, there is a need for Public Health to adopt and utilized these opportunities. A basic Mobile Application (APP) for HDSS needs to be developed and kept in place for the usage of frontline workers, through which a basic information could be captured. The present smart phones are also capable of capturing the Geospatial coordinates (Latitudes and Longitudes) which will further help the PHC in geospatial mapping of their service area through the APPs.

One of such successful usage of technology in the recent times is usage of "AarogyaSetu APP" in Covid-19 situation. AarogyaSetu APP is both provider as well as end users (beneficiaries) based apps, where people can know the present status of pandemic in their area, their health assessment and Covid-19 testing in the nearby health facility as well as providers can utilize this app for testing and tracking of patients. This gives lot of hope to the public health system in India and there is a huge opportunity to develop a unified app to utilize throughout the country at Primary Health Care level. At the same time public health experts should also be cautious about systematic exclusion of vulnerable population who are having little access to these modern tools.

To conclude there is a lot of hope for modern tools, technology and artificial intelligence to empower the public health workforce to deliver their duties in a smart and efficient way in near future in India.

References

1. Cohen BB, Franklin S, West JK. Perspectives on the Massachusetts Community Health Information Profile (MassCHIP): developing an online data query system to target a variety of user needs and capabilities. J Public Health Manag Pract [Internet]. [cited 2019 Sep 22];12:155–60. Available from: http://www.ncbi.nlm.nih.gov/pubmed/16479229

2. Moehr JR, McDaniel JG. Adoption of security and confidentiality features in an operational community health information network: the Comox Valley experience--case example. Int J Med Inform [Internet]. 1998 [cited 2019 Sep 22];49:81–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/9723805

3. Kenyon A. The College of Physicians of Philadelphia's Regional Community Health Information System Project. Natl Netw [Internet]. 2003 [cited 2019 Sep 22];27:10–1. Available from: http://www.ncbi.nlm.nih.gov/pubmed/12776486

4. Gera R, Muthusamy N, Bahulekar A, Sharma A, Singh P, Sekhar A, et al. An in-depth assessment of India's Mother and Child Tracking System (MCTS) in Rajasthan and Uttar Pradesh. BMC Health Serv Res. BioMed Central Ltd.; 2015;15.

5. Nagarajan P, Tripathy JP, Goel S. Is mother and child tracking system (MCTS) on the right track? An experience from a northern state of India. Indian J Public Health [Internet]. 2016 [cited 2020 Aug 6];60:34–9. Available from: http://www.ncbi.nlm.nih.gov/pubmed/26911215

6. Kant S, Misra P, Gupta S, Goswami K, Krishnan A, Nongkynrih B, et al. The Ballabgarh Health and Demographic Surveillance System (CRHSP-AIIMS). Int J Epidemiol [Internet]. 2013 [cited 2018 Sep 7];42:758–68. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23620380

7. Patil R, Roy S, Ingole V, Bhattacharjee T, Chaudhary B, Lele P, et al. Profile: Vadu Health and Demographic Surveillance System Pune, India. J. Glob. Health. NLM (Medline); 2019. p. 010202.

8. Ghosh S, Barik A, Majumder S, Gorain A, Mukherjee S, Mazumdar S, et al. Health & demographic surveillance system profile: The birbhum population project (Birbhum HDSS). Int J Epidemiol [Internet]. 2015 [cited 2020 Aug 6];44:98–107. Available from: https://pubmed.ncbi.nlm.nih.gov/25540150/

9. Dixit S, Arora NK, Rahman A, Howard NJ, Singh RK, Vaswani M, et al. Establishing a demographic, development and environmental geospatial surveillance platform in India: Planning and implementation. J Med Internet Res [Internet]. Journal of Medical Internet Research; 2018 [cited 2020 Aug 6];20. Available from: /pmc/articles/PMC6231830/?report=abstract

10. Howard NJ, Dixit S, Naqvi HR, Rahman A, Paquet C, Daniel M, et al. Evaluation of data accuracies within a comprehensive geospatial-health data surveillance platform: SOMAARTH Demographic Development and Environmental Surveillance Site, Palwal, Haryana, India. Glob Heal Epidemiol genomics [Internet]. NLM (Medline); 2018 [cited 2020 Aug 6];3:e19. Available from: https://pubmed.ncbi.nlm.nih.gov/30637109/

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