**Evidence Based Library and Information Practice**

# A Landscape Study Highlights the Urgent Need for Evidence Based Strategies to Enable Electronic Health Records Integration in the National Healthcare Systems of Low- and Middle-Income Countries

Kumar, M., & Mostafa, J. (2020). Electronic health records for better health in lower- and middle-income countries: A landscape study. Library Hi Tech, 38(4), 751–767. https://doi.org/10.1108/LHT-09-2019-0179

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**A Review of:**
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**Abstract**

**Objective** – To identify how low- and middle-income countries (LMICs) approached the development of national and subnational electronic health records (EHRs) and to understand the challenges related to EHR research priorities and sustainability.

**Design** – Landscape study consisting of a review of the scientific literature, country-focused grey literature, and consultation with international experts.

**Setting** – Hospitals and healthcare systems within LMICs.

**Subjects** – The 402 publications retrieved through a systematic search of four scientific electronic databases along with 49 publications found through a country-focused analysis of grey literature and 14 additional publications found through consultation with two international experts.

**Methods** – On 15 May 2019, the authors comprehensively searched four major scientific

databases: Global Health, PubMed, Scopus, and Web of Science. They also searched the grey literature and repositories in consultation with country-based international digital health experts. The authors subsequently used Mendeley reference management software to organize and remove duplicate publications. Peer-reviewed publications that focused on developing national EHRs within LMIC healthcare systems were included for the title and abstract screening. Data analysis was mainly qualitative, and the results were organized to highlight stakeholders, health information architecture (HIA), and sustainability.

**Main Results** – The results were presented in three subsections. The first two described critical stakeholders for developing national and subnational EHRs and HIA, including country eHealth foundations, EHRs, and subsystems. The third section presented and discussed pressing challenges related to EHR sustainability. The findings of the three subsections were further explored through the presentation of three LMIC case studies that described stakeholders, HIA, and sustainability challenges.

**Conclusion** – The results of this landscape study highlighted the scant evidence available to develop and sustain national and subnational EHRs within LMICs. The authors noted that there appears to be a gap in understanding how EHRs impact patient-level and population outcomes within the LMICs. The study revealed that EHRs were primarily designed to support monitoring and evaluating health programs focused on a particular disease or group of diseases rather than common health problems. While national governments and international donors focused on the role of EHRs to improve patient care, the authors highlighted the urgent need for further research on the development of EHRs, with a focus on efficiency, evaluation, monitoring, and quality within the national healthcare enterprise.

**Commentary**

Electronic health records (EHRs) can revolutionize the healthcare industry by providing the needed health information to make informed decisions and improve patient care. Access to EHRs is especially critical in low- and middle-income countries (LMICs) that are faced with professional healthcare shortages. A systematic review reported that the main criteria for EHR success includes system functionality, organizational structure and support, and availability of the technical infrastructure (Fritz, 2015). This landscape study confirmed the urgent need to build EHR development models to enable the sharing of meaningful data for better health within LMICs. This study builds on the authors' previous study that investigated strategies for EHR integration within LMICs (Kumar & Mostafa, 2019).

Based on the Joanna Briggs Institute's *Checklist for Systematic Reviews and Research Syntheses* (2017), the study was concise and systematic. The research questions were clearly stated, the tables provided details of the search strategies, and the inclusion and exclusion criteria were specified. The lead author has in-depth knowledge about EHR systems as evidenced by his senior position with the Carolina Population Center at the University of North Carolina at Chapel Hill and over 15 years of global and country-level experience in public health informatics and health information systems.

The scientific database and grey literature searches were organized and systematic. In their quest for a comprehensive and exhaustive search, the authors noted that they received valuable input regarding key phrases and terms from an EHR expert and a health informatics librarian at their university. The investigators used Mendeley, a reference management software tool, to organize and share their publications. However, the study did not provide specific details related to their

critical appraisal process and their methods for minimizing bias in the data extraction. While inclusion and exclusion criteria were presented, the reliability of the study would have been more substantial if they had expanded on their description of the screening process.

Regarding the study synthesis, the authors presented their findings in three subsections with accompanying narratives, but the process for combining the studies was not specified. In addition, the study would have been more robust if there were further details about how they assessed any possibility of publication bias. As a part of their analysis, the authors applied a draft toolkit for health information system evaluation developed by the University of Washington. They reported that the tool did not provide evidence that pertained to EHR development in LMICs. Still, additional information about their methods for applying the instrument would have enhanced the validity and applicability of the results.

The findings of this study may have the potential to assist programs in health informatics and library and information studies that include a data sciences, e-science, or informatics component. In addition, librarians may wish to investigate possible collaborations with system leaders to integrate evidence based knowledge resources within EHRs, including those available by subscription, such as BMJ Best Practice and DynaMed, or freely available, such as PubMed and MedlinePlus. Libraries may wish to consider developing programs that involve librarians who participate in clinical rounds and provide search support. Librarians may also want to consider partnerships with software developers to ensure authority control and consistent use of controlled vocabularies between the library and the EHR systems. This study is an important starting point from which further research will provide more significant insights into the role of EHRs for improving healthcare.

## References

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