Towards Data-Driven Models for Diverging Emerging Technologies for Maternal Services in Child Health and Neonatal In Sub-Saharan Africa

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Abstract

The highest rates of maternal and under-five mortality are seen in Sub-Saharan Africa. The arrival of the coronavirus epidemic in 2019 made the difficulties already present in the area worse by taxing the health systems, limiting travel, and redirecting resources to the pandemic's containment. The Sustainable Development Goals for maternal and child mortality were not met by the region, and it is likely that they will not be met as well. Many SSA countries implemented digital technologies to educate pregnant and nursing women, schedule doctor visits, remind mothers and expecting moms of their appointments, and collect data on patients and their ailments in an effort to improve maternal and child health outcomes.

Keywords: Data-driven healthcare; Under-five mortality; maternal mortality; Emerging technologies; Pervasive healthcare; Sub-Saharan Africa

Introduction

The applicability and shortcomings of the digital MNCH systems in SSA are identified, and a data-driven strategy is proposed for integrating new technologies into MNCH services in SSA in order to better utilise data and increase the availability, effectiveness, and quality of MNCH care [1]. In this study, the PRISMA approach was employed. The study revealed that there are no data-driven models for monitoring pregnant women and under-five children under five [2]. Using the available digital health tools, which primarily rely on SMS and websites, in Sub-Saharan Africa, Hence, real-time, omnipresent, pervasive, and data-driven healthcare are not supported by the SSA's current digital health systems [3]. The non-real-time monitoring of pregnancies, education, and information sharing are where they are most useful [4]. SSA may continue to have the highest and most unacceptable rates of maternal and under-five mortality rates worldwide unless new and more effective strategies are introduced [5]. The paper makes workable recommendations on how to successfully implement emerging technologies to deliver data-driven healthcare for MNCH in SSA, as well as lessons learned from other regions [6]. Sub-Saharan Africa continues to be one of the places in the world with unacceptable high rates of maternal and under-five mortality despite the introduction of mobile applications, websites, and short messaging service-based technology for antenatal and maternal, neonatal, and child health care [7].

Discussion

In terms of maternal and infant mortality, the region fell short of the Millennium Development Goals, and it is likely that it will fall short of the Sustainable Development Goals as well4, with coronavirus disease receiving priority in health measures [8]. The current digital systems for MNCH in SSA do not support pervasive and data-driven healthcare for pregnant women and children since they do not permit real-time and continuous health monitoring of the women and kids [9]. According to data, the SSA area understands the value of digital technologies in antenatal and MNCH care. Through the emergence of programmes like Wired-Mothers, MomConnect, and Chipatala Chapa foni [10]. Yet, because they are SMS-based, these systems are designed for education and information sharing. They don't offer data-driven

models for antenatal care services or facilitate remote and real-time monitoring. 5 As a result, efforts to reduce mother and child mortality to acceptable levels by digital interventions have not been successful. Due to travel limits and resource redistribution, it is essential to have digital systems that offer remote healthcare services with the introduction of COVID-19. A well-functioning healthcare system must make use of all the data at its disposal to enhance service delivery, offer evidence-based healthcare, and make the required adjustments to improve the system's quality, accessibility, and efficiency. Although the region has the worst health outcomes in terms of maternal and under-five mortality, this is the case in SSA's digital health systems for maternal, neonatal, and child health because they use standard information systems for data collection without applying diverging data-driven digital models to improve on the three aims of healthcare institutions.

Conclusion

Any healthcare institution's performance depends on pursuing three goals efficiency, proactive treatment, and facilitation of admittance into the healthcare system upon identification of a need. These three goals are quality ensuring effective care and improving patient experience. These objectives highlight the difficulty faced by healthcare organisations in meeting the demands of an increasing patient population while working with constrained labour and financial resources. Digital health can assist in enhancing these aims by reducing limitations like location and time with ubiquitous and omnipresent healthcare. SSA countries adopted digital health because they saw its importance in attaining the three goals of healthcare institutions. To provide data-driven MNCH care and advance these three goals, they are not fully utilising the data gathered by these technologies. Given the

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importance of data in computerised decision-making, the continued fulfilment of these goals necessitates a shift from pure digital health to data-driven healthcare yet, the gathered epidemiological information is not being used to improve the quality, effectiveness, and accessibility of maternal, neonatal, and child health care and to inform patient treatment. To the best of the researchers' knowledge, no review study that focuses on digital health for MNCH care in SSA and suggests data-driven methods to the same has been published. Hence, the goal of this study was to locate digital MNCH systems in SSA.

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Conflict of Interest

None

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