

# **ABSTRACT**

## **Introduction**

In the current digital era, technology has greatly impacted the healthcare sector, transforming the way healthcare systems function. The utilization of digital health solutions offers numerous advantages, including streamlined processes, enhanced patient care, and improved healthcare outcomes. Nevertheless, the seamless integration and interoperability of these digital systems present a notable challenge.

The National eHealth Guidelines and Standards (NeHGS) were initially published in 2016 in Sri Lanka to align the implementation of health information systems with the national health information policy. However, with the changing ICT landscape and the post-COVID era, a review was conducted in 2021, leading to the publication of the National Digital Health Guidelines and Standards (NDHGS) v2.0. Similar policy documents have been published globally by various countries, as well as by WHO and the Commonwealth. Despite the mandated adoption of NDHGS v2.0 across the country by the Ministry of Health, the adoption and implementation of these guidelines and standards have faced challenges within the socio-technical systems of the healthcare system. Therefore, there is a timely need to identify gaps in the NDHGS v2.0 and validate or appraise them with prospective stakeholders in the digital health ecosystem. The primary objective is to appraise, assess the implementability and relevance of NDHGS v2.0 in facilitating interoperability in Sri Lanka. In this context, the application of Structuration Theory (ST) is identified as an approach to analyze the complexities and interactions among entities in the digital health ecosystem.

Moreover, this research is to investigate the obstacles encountered during the implementation and adoption of the guidelines and standards, encompassing technical, organizational, and policy-related barriers. By gaining a comprehensive understanding of these challenges, it becomes possible to identify effective strategies and recommendations to overcome them. The goal is to cultivate a more interoperable digital health ecosystem in Sri Lanka, facilitating seamless information exchange and promoting better healthcare outcomes.

## **Methodology**

The study was done in three phases. In phase one, an online survey distributed among potential adopters to identify the adopters of any versions of the NDHGS. In phase two, an appraisal of NDHSG v2.0 using AGREE-HS tool by subject matter experts were performed. In phase three, randomly selected one representative from every category of stakeholders (who were willing to participate in the interview) were interviewed using semi structured interview technique. Recorded interview transcribed to individual word documents and a thematic analysis was done using NVivo 14 trial version.

## **Results**

In phase one, total of 78 responses were received through an online survey. 40 respondents had adopted any version of NDHGS and 28 respondents among them were willing to participate in the interview in phase 3. For the study, 8 participants (who were willing to participate in the interview) were selected for interviews, with each participant representing one of the eight categories of stakeholders who had adopted any version of the NDHGS.

The quality of the NDHGS v2.0 gets only 22.5% overall score, and it failed in quality as per the appraiser's decision using the AGREE-HS Tool.

Mandating the NDHGS is necessary to ensure interoperability and to ensure quality and lay a strong foundation while mandating restricting innovation and adding a layer of bureaucracy. Most opinion favors of facilitating interoperability to make seamless data exchange which leads to improving care coordination. There are difficulties in implementing the NDHGS v2.0 as it is because it lacks in alignment with interoperability standards and satisfying technical requirements. Furthermore, it lacks in clarity, feedback mechanism, stakeholder engagement and experience in real-world scenarios. Mostly identified challenges includes, compatibility and interoperability concern, limited awareness and understanding of guideline, lack of technical expertise, cost, and resource constraints in implementing guideline, lack of monitoring evaluation mechanism in place, resistance to change and sense of disruption to existing workflow. Mostly identified solutions include, implement comprehensive awareness, training, and capacity building, securing enough resources, establish interoperability align with updated NDHGS, establish monitoring and evaluation framework and actively involve stakeholders in developing guidelines.

## **Conclusion.**

This dissertation enhances the comprehension of the role played by digital health standards in fostering interoperability. It offers valuable insights into the advantages, obstacles, gaps, and future recommendations for promoting a more efficient and interoperable digital health ecosystem in Sri Lanka. By tackling the identified challenges and implementing the suggested strategies, stakeholders can harness the potential of digital health solutions to enhance healthcare outcomes, improve patient experiences, and streamline healthcare delivery.

## **Recommendations.**

Align the future versions of National Digital Health Guidelines and Standards with the Sri Lankan Digital Health Blueprint to ensure consistency and coherence between the two frameworks. Enhance the implementability of the guidelines by providing clear and practical guidance, including step-by-step instructions and concrete examples for implementation. Establish a dedicated and dynamic website specifically for publishing the guidelines, ensuring easy access for stakeholders. Foster continuous education and capacity building initiatives to support the effective implementation of the guidelines. Implement a robust monitoring and evaluation practice to assess the impact and effectiveness of the guidelines. Establish a feedback mechanism that encourages stakeholders to provide input, suggestions, and lessons learned regarding the implementation of the guidelines. Provide capacity building opportunities on best practices for implementing the guidelines. Promote active stakeholder engagement throughout the process of guideline development and implementation.

By implementing these recommendations, it is expected that the updated National Digital Health Guidelines and Standards will be better aligned with the Sri Lankan Digital Health Blueprint, more effectively implemented, and supported by a robust ecosystem that facilitates continuous learning, feedback, and stakeholder engagement.