# Assessing the Current State of Digitalisation at the Edward Francis Small Teaching Hospital (EFSTH), The Gambia

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## Abstract

*The digital transformation of healthcare systems presents significant opportunities for improving efficiency, accuracy, and patient outcomes in low-resource settings like The Gambia. This study assessed the current state of digitalisation at Edward Francis Small Teaching Hospital, to identify gaps, barriers and opportunities for sustainable digital health integration. Using a survey method to enrol all heads of departments in a qualitative descriptive cross-sectional study, a structured interview schedule was used to capture their perspectives on digital infrastructure, workforce readiness, and policy challenges. Purposive sampling was used to select participants from key decision-makers across clinical and administrative units. Data were analysed using content, thematic analysis and direct quotations made by the respondents. The results indicated that EFSTH operates primarily at the Initial/Ad Hoc stage of digital maturity, with fragmented systems and limited standardisation. Key barriers include unreliable electricity, inadequate internet connectivity, low digital literacy among staff, and resistance to change. Despite these challenges,*

*opportunities exist for phased digital integration, particularly in high-impact areas like electronic health records (EHRs). The study highlighted the important role of leadership engagement, targeted training, and context-appropriate solutions in driving sustainable transformation.*

**Keywords:** Digitalisation, tertiary hospital, teaching hospital, quality, health care services

## Introduction

Digitalisation has become an efficient driver of effective data management to improve patient outcomes (World Health Organisation, 2021). Infrastructure as well as financial constraints and workforce capacity gaps, have hindered the adoption of digital health technologies in low and middle-income countries (Fatehi et al., 2020). Edward Francis Small Teaching Hospital (EFSTH) is the only tertiary and teaching Hospital in The Gambia, but its digitalisation status remains underexplored.

Digitalisation and digital health innovations have been shown to reduce medical errors, streamline workflows and enhance informed decision-making worldwide. (Boonstra et al., 2020). However, in Sub-Saharan Africa, only about 30% of hospitals have fully integrated digital health systems, with many relying on paper-based records (Oluoch et al., 2021). EFSTH, like many public hospitals in the region, experiences challenges such as inconsistent internet connectivity, inadequate IT infrastructure, and resistance to technological change among staff (Adepoju et al., 2022). However, there is currently no comprehensive study that systematically examines these challenges or explores potential solutions tailored to EFSTH. The absence of such research creates an important knowledge gap that impedes evidence-based decision-making for hospital administrators and policymakers. Without a clear understanding of the current state of digitalisation at EFSTH, it becomes challenging to develop targeted interventions that can enhance the hospital's capacity to deliver high-quality healthcare services. Furthermore, the lessons learned from assessing EFSTH's digital landscape could provide vital information for other healthcare facilities in The Gambia and similar low-resource settings facing comparable challenges. This study seeks to address this gap by conducting a comprehensive assessment of the current state of digitalisation at EFSTH.

## Literature Review

This section discusses conceptual, theoretical and empirical reviews.

### 2.1 Conceptual Review

#### The Concept of Digitalisation in Healthcare

Digitalisation requires the integration of digital technology and data-driven activities to transform health service delivery that enhances operational efficiency across health systems (World Health Organisation, 2021). This innovation represents the reimaging from paper-based to the digital ecosystem to leverage information and communication (ICT) (Boonstra & Broekhuis, 2020). The fundamentals of digitalisation involve three key elements as discussed below:

1. **Digitalisation of Health Records**: This is the transfer of health information into electronic format that enhances easy storage, retrieval, security and sharing information among providers (Oluoch et al., 2021). (Adepoju et al., 2022) maintained that electronic records have the potential to reduce medication errors by 30%.
2. **Digital Health Interventions**: This is the application of mobile technologies to extend access to health care, such as telemedicine or Internet of Medical Things (IoMT). The use of such technologies improved access to specialists by 40% in rural Zambia (Fatehi et al., 2020), while

WHO (2021) acknowledged the influence of these technologies in transforming the health of populations in resource-constrained settings with a limited healthcare workforce.

3. **Data-Driven Decision Making**: The data collected is used to guide informed decisions for action or intervention. (Oluoch et al., 2021) maintained that digital HMIS platforms in Kenyan hospitals reduced reporting delays from weeks to real-time, while improving data accuracy. Topol (2019) intimated that patient management is being facilitated by Artificial Intelligence (AI) to predict patient outcomes.

**Theoretical Review**

The integration of digital technologies into healthcare systems represents a complex sociotechnical transformation that requires careful examination through established theoretical lenses. At the Edward Francis Small Teaching Hospital (EFSTH), The Gambia's premier tertiary healthcare facility, assessing the current state of digitalisation necessitates an understanding of how innovations are adopted, implemented, and sustained within resource-constrained environments. This analysis draws upon three seminal innovation adoption theories to provide a comprehensive framework for evaluating EFSTH's digital transformation journey.

**1. The Diffusion of Innovations**

Rogers' (2003) Diffusion of Innovations theory is an essential model in digital technology. The theory has five attributes that are essential in the digitalisation discourse. At the core of these attributes is the relative advantage, which explains that digitalisation must have beneficial effects over a paper-based system. In this connection, Oluoch et al. (2021) posited that electronic health records can reduce medication errors by 30%. At the helm of the theory is the compatibility, which must be critically analysed to overcome the challenges of long-standing clinical workflow and organisational culture. (Boonstra & Broekhuis, 2020). The complexity component concerns environments with limited digital literacy and can be a significant barrier to utilisation or adoption. As Venkatesh et al. (2003) note in their Unified Theory of Acceptance and Use of Technology (UTAUT), effort expectancy, the perceived ease of using new systems, significantly impacts adoption rates. The principles of triability and observability suggest that EFSTH could benefit from phased implementations and visible success stories. Research demonstrates that pilot programs in specific departments can build confidence in digital systems before organisation-wide rollout (WHO, 2021). When staff observe tangible improvements, such as reduced patient wait times or easier record retrieval, adoption rates typically increase.

**2. Technology Acceptance Model**

The Technology Acceptance Model (TAM) and its extension in Unified Theory of Acceptance and Use of Technology (UTAUT) are two models that provide a broader understanding of digitalisation at EFSTH. These models maintained that adoption depends on two important factors, which are the perceived usefulness and perceived ease of use (Davis, 1989). The application of perceived usefulness at the EFSTH assesses whether the digital tools can effectively improve clinical outcomes or operational efficiency. While perceived ease of use entails the intuitive and supportive system, which is strengthened by adequate training of the users to address the limited skills gap in IT use (Boonstra & Broekhuis, 2020), UTAUT's social influence and facilitation conditions are particularly relevant. It commends leadership commitments and peer support to be essential drivers of technology adoption, while inadequate infrastructure degenerates the process (Venkatesh et al., 2003).

## 2.3 Empirical Review

The concept of digital transformation in health care delivery is not implemented and poorly understood in low-income countries like The Gambia. The Gambia has a unique health care system characterised by a centralised referral system and high dependence on donor funding. Even with this, the country's digital health landscape remains largely undocumented in peer-reviewed literature. Therefore, this study creates empirical evidence that cements a knowledge gap specific to the Gambia

Some studies conducted in a comparable African setting, such as the Gambia, provide suitable empirical evidence. Notably, Oluoch et al. (2021) conducted a clustered randomised controlled trial in Kenya to explore the persistent problem of loss to follow-up (LTFU) in patients who receive HIV antiretrovirals. The research adopted a comparative study among health care facilities using Electronic Health Records, along with other facilities that utilised Electronic Health Records with an alert-based clinical decision support system. The findings revealed that clinics that use the clinical decision support system have a lower proportion of patients who experience LTFU compared to the control group. The use of the Clinical Decision Support System was linked with a higher likelihood that patients who were initially lost would be effectively traced. The authors finally concluded that the implementation of CDSS is an effective strategy to improve the quality of HIV treatment and early detection of defaulters in resource-limited settings

Similarly, Adepoju et al. (2022) did a scoping review of mHealth in Sub-Saharan Africa. This scoping review investigated the adoption and efficacy of mobile health (mHealth) applications, specifically mobile clinical decision support systems (mCDSS), for healthcare workers in Sub-Saharan Africa. The study synthesised evidence on using mCDSS for point-of-care decision support to enhance the quality of care in resource-poor settings. While findings indicated progress and general support for mCDSS among health workers, with some improvements in adherence to guidelines, the long-term effect on the overall quality of service delivery is yet to be fully explored. The review highlighted key challenges to sustainability, such as technical issues and concerns about increased workload, alongside facilitators like technical support and training, providing details for future policy and implementation of technology-supported healthcare.

Boonstra & Broekhuis (2020) conducted a systematic literature review on research papers from 1998 to 2009, regarding barriers to the acceptance of EMRs by physicians. Four databases, "Science", "EBSCO", "PubMed" and "The Cochrane Library", were utilised in the literature search. Studies were enrolled in the analysis if they reported on physicians' perceived barriers to implementing and using electronic medical records. Electronic medical records are defined as computerised medical information systems that collect, store and display patient information. The main objective of this research was to identify, categorise, and analyse barriers perceived by physicians to the adoption of Electronic Medical Records (EMRs) to provide implementers with essential intervention options. The study reviewed twenty-two articles that considered barriers to EMR as perceived by physicians. Eight main categories of barriers, forming a total of 31 sub-categories, were identified. These eight categories are: A) Financial, B) Technical, C) Time, D) Psychological, E) Social, F) Legal, G) Organisational, and H) Change Process. All these categories are interrelated with each other. In particular, Categories G (Organisational) and H (Change Process) seemed to be mediating factors on other barriers. By adopting a change management perspective, the researchers developed some barrier-related interventions that could overcome the identified barriers. Despite the positive effects of EMR usage in medical practices, the adoption rate of such systems was still low and met resistance from physicians. This systematic review revealed that physicians could face a range of barriers when they approached EMR

implementation. The research concluded that the process of EMR implementation should be treated as a change project, and led by implementers or change managers, in medical practices. The quality of change management plays an important role in the success of EMR implementation. The barriers and suggested interventions highlighted in the study were intended to act as a reference for implementers of Electronic Medical Records. A careful diagnosis of the specific situation is required before relevant interventions can be determined.

Venkatesh et al.'s (2003) foundational UTAUT model emphasised the importance of perceived usefulness and ease of use in technology adoption. Information technology (IT) acceptance research yielded many competing models, each with different sets of acceptance determinants. In this, the researchers (1) reviewed user acceptance literature and discussed eight prominent models, (2) empirically compared the eight models and their extensions, (3) formulated a unified theory that integrated elements across the eight models, and (4) empirically validated the unified model. The eight models reviewed were the theory of reasoned action, the technology acceptance model, a motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, a model of PC utilisation, innovation diffusion theory, and social cognitive theory. Using data from four organisations over a six-month period with three points of measurement, the eight models explained between 17 per cent and 53 per cent of the variance in user intentions to use information technology. Next, a unified theory, called the Unified Theory of Acceptance and Use of Technology (UTAUT), was formulated, with four core determinants of intention and usage, and up to four moderators of key relationships. UTAUT was then tested using the original data and found to outperform the eight individual models (69% adjusted-R2). UTAUT was then confirmed with data from two new organisations with similar results (70% adjusted-R2). UTAUT thus provided a useful tool for managers needing to assess the likelihood of success for new technology introductions and helped them understand the drivers of acceptance to proactively design interventions (including training, marketing, etc.) targeted at populations of users that may be less inclined to adopt and use new systems. The paper also made several recommendations for future research, including developing a deeper understanding of the dynamic influences studied here, refining the measurement of the core constructs used in UTAUT, and understanding the organisational outcomes associated with new technology use.

The World Health Organisation's (2021) global strategy highlights persistent interoperability challenges across fragmented health systems. This document outlines the Global Strategy on Digital Health 2020–2025. The strategy was developed through a two-year co-creation journey, in consultations with Member States, and was endorsed by the Seventy-third World Health Assembly in 2020. The strategy's vision is to improve health for everyone, everywhere by accelerating the development and adoption of appropriate, accessible, affordable, scalable, and sustainable person-centric digital health solutions. These efforts are aimed at preventing, detecting, and responding to epidemics and pandemics to achieve the health-related Sustainable Development Goals and the WHO’s "triple billion targets".

Digital health, which includes eHealth, is defined as the field of knowledge and practice associated with the development and use of digital technologies to improve health. It expands the scope to include digital consumers and technologies such as artificial intelligence, big data analytics, robotics, and the Internet of Things. The strategy is built upon four guiding principles, including the requirement for national commitment and institutionalisation within the health system, the necessity of an integrated strategy for successful initiatives, the promotion of the appropriate use of digital technologies for health, and the urgent need to address major impediments faced by least-developed countries implementing these technologies.

The strategy sets out four main strategic objectives intended to guide global digital health transformation and strengthen synergies among stakeholders. A central component of this strategy is the emphasis on health data protection, stressing the need for a strong legal and regulatory base to protect privacy, confidentiality, integrity and availability of sensitive personal health data. The strategy also outlines a framework for action guided by four components: commit, catalyse, measure, and enhance and iterate, which provide a structure for collaboration and continuous assessment of the strategy's effectiveness in supporting countries. The implementation of the strategy and its action plan is set to lead to concrete actions and results within the timeframe from 2020 to 2025.

Similarly, Archer et al. (2021) investigated the factors influencing the impact of eHealth implementation in low-resource countries. The authors generated a structural equation model and surveyed 114 professional eHealth users in India, Egypt, Nigeria and Kenya to evaluate their frontline experience. The result of the research indicated that privacy and user characteristics were considered relevant but were not strong predictors of utilisation. It has been observed that strong technology infrastructure contributed significantly to reducing user uncertainties. Implementation effectiveness was a perceived factor that has positively established a strong link to the overall eHealth utilisation. The study also indicated a notable disparity in utilisation in the country of the participant and whether the organisation was a private or publicly funded organisation. The study further indicated that private organisations have a more advanced degree of eHealth use than the public ones.

Aqil et al. (2009) explored the development and utility of the performance of the Routine Information System Management (PRISM framework, created to address the general effectiveness of routine Health Information Management Systems (RHIS) in developing countries. Expecting a paradigm shift, the PRISM framework rather emphasised essential organisational, technical and behavioural determinants as system performance indicators. The framework is set to establish the causal links between the internal factors and the RHIS performance (especially data quality and information use) that will guide the development of targeted interventions. To test this evaluation, the authors generated four standardised PRISM tools to measure performance metrics and identify gaps in system components. The consistent and valid results obtained from different countries confirmed the framework's effectiveness in enhancing a robust culture in improving the overall system performance.

Khalifa (2013) evaluated the limitations affecting the widespread implementation of Electronic Medical Records (EMRs) and Health Information Systems (HIS) in Saudi Arabian Hospitals. A questionnaire was administered to health care professionals to generate data. Data was categorised into six major groups of human barriers, professional barriers, technical barriers, organisational barriers, financial barriers, and legal and regulatory barriers. The results indicated that the two most significant impediments are human barriers of negative beliefs and attitudes of the staff and financial barriers arising from funding and operational costs. In light of these findings, the author suggested a phased strategy that will overcome resistance. Prioritising continuous professional development interventions for staff and securing proper funding are desired elements for improvement to transition from paper-based systems to electronic systems.

Similarly, Torab-Miandoab et al. (2023) investigated the essential requirements and current status of interoperability in different health information systems (HIS). The authors highlighted that the current lack of system integration enables disconnected patient data, leading to a severe reduction in patient care quality, culminating in significant administrative and financial waste. The authors employed the PRISMA methodology and reviewed 36 articles from major databases to assess functional standards for seamless electronic health records. The research findings indicated

that successful implementation relies entirely on modern technology and protocols like KL7FHIR and SNOMED-CT, with semantic interaction believed to be the most effective level that safeguards accurate exchange. Integrating these technologies offers major advantages of decreased medical errors to streamline patient services. The health care industry still faces significant structural and legal challenges to obtain full universal integration

**Methodology**

This study adopted a qualitative descriptive cross-sectional research design to assess the current state of digitalisation at the Edward Francis Small Teaching Hospital (EFSTH). In this respect, a survey method was used to enrol all the twenty-two (22) departments at the EFSTH. A purposive sampling technique was employed to select the participants for the study. Heads of departments were enrolled for this study due to their strategic position within the Hospital in decision-making related to the health care delivery services of the institution. Their experience and perspective are essential in understanding the extent, challenges and prospects of digitalisation within their respective departments. Data was collected using a structured interview schedule. A face-to-face interview, lasting about half an hour, was conducted to generate data for the study. Where such was not possible due to the busy schedules of the respondents, the interview schedule is provided for self-administration to be collected by the researcher at a later date. In addition to the interview schedule, an inspection checklist was also utilised to provide information regarding the state of digitalisation and the availability of the digital infrastructure. In situations where a self-administered interview schedule was issued to the Head of Department, the researchers were permitted to assess the department with the inspection checklist to collect more data. Ethical approval for this study was granted by the Research Ethics Committee of the Edward Francis Small Teaching Hospital (EFSTH_REC_2025 022). All ethical principles and guidelines were rigorously observed throughout the research process, while informed consent was obtained from all participants. Respondents were also assured that their participation was voluntary and that they could withdraw from the study at any point without any consequence. The data collected were carefully analysed using direct quotations from the comments made by the respondents.

**Ethical Considerations**

The study was conducted in accordance with the ethical principles established in the Declaration of Helsinki. The project was approved by the Research Ethics Committee (REC) of the Edward Francis Small Teaching Hospital (EFSTH_REC_2025 022). Written informed consent was obtained from all participants before their involvement in the study.

**Results**

**Table 1: Showing the demographic characteristics of the Respondents**

| ***Position*** | ***Age*** | ***Sex*** | ***Years of Experience*** | ***Highest Level of Education*** |
|---|---|---|---|---|
| *Chief Pharmacist* | 54 | Male | 26 | Masters |
| *Desk Officer* | 40 | Male | 14 | Masters |
| *Claims Verification Officer* | 31 | Male | 2 | Bachelors |
| *Acting Head of Department* | 29 | Female | 5 | Bachelors |
| *Theatre Matron/Anaesthetist* | 48 | Male | 8 | Bachelors |

| | | | | |
|---|---|---|---|---|
| *Nursing Officer* | 37 | Female | 10 | Bachelors |
| *Records Clerk* | 47 | Female | 20 | High School |
| *Head of Department* | 55 | Male | 20 | Postdoc of Medicine |
| *Labour Ward In-Charge/Midwife* | 40 | Female | 10 | Bachelors |
| *Principal Ophthalmology Medical Assistant* | 44 | Male | 14 | Advanced Diploma |
| *Head of Department* | 44 | Male | 16 | Masters |
| *Head of Department* | 42 | Female | 2 | Subspecialisation in Sport Medicine |
| *Head of Department* | 49 | Male | 3 | Fellow, West African College of Surgery |
| *Head of the Institution* | 45 | Male | 1 | Fellowship |
| *Head of Department* | 66 | Female | 1.5 | Fellow, West African College of Surgery |
| *Head of Department* | 46 | Male | 2 | Fellowship of the West African College of Physicians |

Field survey, May 2025

62.5% (n-10) of the respondents are males whiles the remaining 37.5% (n-6) are females.43.8% (n-7) of the respondents are between the ages of 46-55, 37.5% (n-6) are between the ages of 36-45, 12.5 % (n-2) are between the ages of 20-35 and 6.5% (n-1) is at 56 years. 37.5% (n-6) of the respondents attained a Bachelor's degree, 18.75% (n-3) of the respondents attained a master's degree, 18.75% (n-3) attained a fellowship qualification, 6.25% (n-1) held a postdoctoral qualification, subspecialisation in sport medicine, advanced Diploma, and high school, respectively.

Table 2: Showing the accuracy of data completeness in the various departments at EFSTH

| **The accuracy and completeness of data collected in your department** | **Responses** |
|---|---|
| | The Manual System is good and probably the best in terms of data accuracy. |
| | Not very accurate, because the diagnosis is sometimes absent in the patient register at the outpatient |
| | It is fine, usually sent on time, and so user-friendly |
| | Nothing like accuracy in some of those files and even missing information. |

| | |
|---|---|
| | Data accuracy and completeness in my department is sometimes not standard, because of the workload and lack of record clerks on the ground to facilitate it. |
| | Inaccurately, the collectors don't record all patients seen. |
| | Lack of files and stationery |
| | It is definitely not completed and grossly inadequate |
| | Not accurate or complete |
| | Not very accurate |
| | It is neither complete nor accurate |

Field Survey, May, 2025

Table 3: Showing access to ICT infrastructure by the Various Departments at EFSTH

| **Access to ICT infrastructure by the Various Departments at EFSTH** | **Responses** |
|---|---|
| | Not really, the Global Fund provided some ICT equipment, but it is now outdated, and most of it is not functioning properly. The ELMIS system will go out of date, and some of its equipment have started developing technical problems |
| | Yes |
| | Yes, complete working tools |
| | No computer, no internet<br>No |
| | No |
| | No computer, and even the available internet connectivity is not functioning well |
| | No, but we have computers, but no internet or local server, nor software |

| | |
|---|---|
| | No |
| | No |
| | Yes |
| | No |
| | Some parts not at all |
| | No |
| | No |
| | No |

Field Survey, May,2025

**Qualitative results**

"*Demographic data, clinical data, and clinical diagnosis"* (Respondent 8)
*"Not very accurate, because we generate it ourselves, and sometimes we are too busy to register every patient" (Respondent 4)*
*"Data accuracy and completeness in my department is sometimes not standard, because of the workload and lack of record clerks on the ground to facilitate it" (Respondent 9).*
*"No computer, no internet (Respondent 4).*
*"Insufficient data cards and connectivity. As can be observed in the ELMIS, staff used to share only one data card among two or more of them. Equipment like computers are required" (Respondent 1).*
*"The storekeeper and pharmacy staff require training with the ELMIS, should the trained staff not be available. The ELMIS programme conducts refresher training for its store management staff annually" (Respondent 1).*
*"No filling cabinets. The main problem is filling space and storage" (Respondent 2).*
*"Storage is always a problem, because we only have files for each group of patients, but no filing cabinets to save the information" (Respondent 4*)
*"Undoubtedly, sometimes, one cannot even read some scripts" (Respondent 3).*
*"I can't tell, but there was an instance that it happened, and we cannot trace the patient record" (Respondent 2).*
*"Delay quality of care. Sometimes, the folders would be mixed, and we would not know which team would look after which patient" (Respondent 6).*

**Discussion**

The level of digitalisation at Edward Francis Small Teaching Hospital is below acceptable standards for a Teaching Hospital. It has been evident that most departments lack equipment such as computers, laptops or similar electronic devices to facilitate digitalisation. In areas where this equipment is available, they are either outdated or not functioning adequately with technical problems or is not compatible with modern software to strengthen digitalisation.

Coupled with the lack of equipment, the internet connectivity worsens the attempt to embrace digitalisation. There are no internet connections in most of the departments, no routers to enhance connections and the cables are not reaching everywhere. Where they exist, the terminals are not adequate to provide for the staff. The most fascinating finding of this research is the poor capacity of the staff to use the digital tools. Most staff do not have the skills, knowledge and competence to operate digital tools to support the use of digital platforms. Staff competence to operate the digital platform as a result of low academic qualification remain major challenge to the digital transformation.

Various types of information are collected at the EFSTH, which is dependent largely on the department's functions and operations. In a certain department, a respondent (8) asserted, "*Demographic data, clinical data, and clinical diagnosis"* are among the data routinely collected in their daily tasks at work. Most of this data is collected manually using ledgers, manuals, prescription pads, forms, and logbooks. The accuracy and completeness of which are usually compromised:

> *"Not very accurate, because we generateit ourselves, and sometimes we are too busy to register every patient" (Respondent 4).*

The finding is corroborated by Odei-Lartey et al. (2020), who posited that the paper-based systems in resource-limited settings contribute to delays, data loss, and increased errors, which hinder timely decision-making and quality service delivery

At EFSTH, there are data entry clerks in all the departments who submit their data to the records departments. Despite their efforts, other professionals in some departments also generate data for the smooth running of their work and activities. In some departments, without designated data entry clerks, Nurses execute that function, coupled with their daily routine, which is a hard and tedious engagement that sometimes affects the quality of the data:

> *"Data accuracy and completeness in my department is sometimes not standard, because of the workload and lack of record clerks on the ground to facilitate it" (Respondent 9).*

This aligns with the findings of Aqil et al. (2009), who observed that clinical staff often double as data managers, leading to reduced data quality and neglect of documentation during peak service hours.

At EFSTH, there is no adequate access to computers, laptops, tablets or modern technological devices that may constitute an appropriate ICT infrastructure to maintain digitalisation. The internet connectivity is poor in departments where it exists, and virtually non-existent in some other departments:

> *"No computer, no internet" (Respondent 4).*

A similar finding was made by Odei-Lartey et al. (2020), who reported that limited access to computers and poor internet connectivity were major barriers to the successful implementation of electronic health records (EHRs).

In departments where the Health Management Information System/Electronic Logistics Management Systems (HMIS/ELMIS) is rolled out in the hospital, only the Ministry of Health-designated staff can use this. Even with the HMIS systems, the adequacy of the service is not up to standard. Several staff members share the same internet data connectivity, which will delay the work for a staff member who wants to use it while another colleague is already using it. This agrees with the findings of Odei-Lartey et al. (2020), who stated that *"In departments with EHR access, more than one staff member often had to share a single terminal or internet connection, leading to delays and frustration."*

It is also understood that training on the use of the HMIS is limited to the Ministry Staff. Where such a staff member is not at work due to sickness or absenteeism, the hospital staff cannot execute the work due to a lack of training or inability to cover the staff or activity.

> *"Insufficient data cards and connectivity. As can be observed in the ELMIS, staff used to share only one data card among two or more of them. Equipment like computers is required" (Respondent 1).*

However, the Ministry of Health conducts regular training on ELMIS for its staff, but this does not include the hospital staff. It is suggested that such training is necessary for some hospital staff who work closely with the Ministry staff to have the requisite skills, knowledge and competence to operate the ELMIS system:

> *"The storekeeper and pharmacy staff require training with the ELMIS, should the trained staff not be available. The ELMIS programme conducts refresher training for its store management staff annually" (Respondent 1).*

Adebayo et al. (2015) found that excluding facility-level staff from training created a skills gap**,** affecting the overall performance and sustainability of the system.

The paper-based systems are old and have obstacles. One of its disadvantages is the handling of large volumes of paperwork, which cannot be effectively saved and secured in a protected storage. It is not surprising that storage space is a constraint in all the departments at the EFSTH:

> *"No filling cabinets. The main problem is filling space and storage" (Respondent 2).*

> *"Storage is always a problem, because we only have files for each group of patients, but no filing cabinets to save the information" (Respondent 4*).

WHO (2017) *affirms that* "paper records are prone to loss, physical deterioration, and storage congestion, making them unreliable for consistent use in clinical and administrative processes.*"* Another important issue with the paper-based record system is the issue of illegibility, completeness, and consistency of handwritten data. Some handwritings are not understood by the staff while using the information for either diagnosis or for clinical decision-making:

> *"Undoubtedly, sometimes, one cannot even read some scripts" (Respondent 3).*

> "*Yes, delivery data sometimes doesn't match. A woman may deliver, and the information may not be recorded" (Respondent 4).*

This is consistent with the finding of Mutale et al. (2013, who posited that "inconsistencies, illegible entries, and incomplete records were common in paper-based systems, significantly affecting data reliability and use in clinical decision-making.*"*

In instances where data is missing, it is either they are too tedious to find or is completely lost:

> *"I can't tell, but there was an instance that it happened, and we cannot trace the patient record" (Respondent 2).*

A similar finding was made by Odei-Lartey et al. (2020), who posited that "healthcare workers reported that locating missing patient files was often tedious and at times unsuccessful, negatively impacting continuity of care."

Even when the data is found, considerable time is consumed to search for the lost data: "*Considerable time, and even in some instances they cannot be found" (Respondent1).*

This is consistent with the findings of Mutale et al. (2013), who asserted that *"*the manual search for lost or misplaced patient files was described as a tedious and time-intensive task, often causing delays in service delivery."

Finally, the paper-based system impacts the quality of service in making delays in clinical decision-making and the quality of care provided to patients:

> *"Delay quality of care. Sometimes, the folders would be mixed, and we would not know which team would look after which patient" (Respondent 6).*

A similar finding was made by Mutale et al (2013), who asserted that "paper-based systems contribute to significant inefficiencies in clinical workflows, resulting in delayed diagnoses, repeated tests, and reduced overall quality of care due to limited accessibility and legibility of patient records."

## Conclusion

This study has revealed important challenges in the data management practices at the Edward Francis Small Teaching Hospital (EFSTH), indicating systematic inefficiencies rooted in the paper-based system, insufficient ICT infrastructure and limited staff training. The fragmented and inconsistent data collection methods, coupled with staff shortages and the lack of access to digital devices, contribute to poor data quality and delays in clinical decision-making. For EFSTH to transition toward a more efficient, reliable and sustainable health information system, there is an urgent need for targeted investments in digital infrastructure, capacity building, and the decentralisation of HMIS/ELMIS access beyond Ministry-designated personnel. Strengthening these areas will be essential to achieve the hospital mandate as a national referral and teaching Hospital and to advance The Gambia's broader digital health transformation agenda.

## Recommendations

With respect to the research findings and conclusions above, the following practical recommendations are hereby proffered to guide the institution in addressing the issues.

1. Develop a strategic plan to easily transition into the digital system while gradually replacing the manual system.
2. Solicit funding to upgrade the hospital's digital infrastructure with high-speed internet connectivity.
3. Initiate capacity building programmes for the management and staff of the hospital
4. Recruit special ICT personnel to reduce workload and pressure on clinical staff.
5. Ensure the hospital's digital initiative is aligned with the country's broader digital transformation agenda.
6. Standardise the data collection procedure and strengthen the data management protocol.

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