

Research Article

Unlocking the Potential of Health Information Systems in Public Hospitals: A Case Study of Mauritius

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Abstract

While health information systems (HIS) help with managing patient data, and improving cost-effectiveness in healthcare, its implementation in developing countries comprises several challenges including limited resources and inadequate support. As Mauritius is modernizing its health systems, it is important to assess the readiness of hospitals for HIS adoption in Mauritian hospitals. *Methods:* A descriptive cross-sectional survey examined factors influencing HIS adoption in Mauritian public hospitals. Data was collected via questionnaires from physicians, nurses, and administrators across three hospitals. The study aimed to understand the benefits, challenges, and facilitators of HIS implementation in the Mauritian context. *Results:* Of 142 questionnaires distributed, 82 (57.7%) were completed. Respondents included administrators (41.5%), nurses (40.2%), and doctors (18.3%). Computerized scheduling (37.9%), EHR (32.3%), and telemedicine (25.5%) were widely used. M-health was the most preferred for future implementation (19.4%). Most respondents (87.8%) reported needing HIS training. Key challenges included security (23.5%), ICT capacity (22.5%), and infrastructure (21.6%). The main benefits identified were improved health quality (16.6%), service efficiency (13.7%), knowledge sharing (13.7%), and improved decision-making (13.7%). *Discussion:* The survey of 82 respondents showed higher engagement from administrators (41.5%) and nurses (40.2%) compared to doctors (18.3%). HIS, EHR, and telemedicine are widely used, with m-health preferred for future implementation. Key benefits include improved health quality and efficiency, while challenges involve security, ICT capacity, and infrastructure. Most respondents (87.8%) reported needing HIS training. *Conclusion:* Mauritius still faces challenges in implementing HIS in public hospitals, thus findings from this study can inform strategies to improve HIS adoption and address existing barriers.

Keywords

Health Information Systems, Implementation, Mauritius

1. Introduction

Health Information System (HIS) can be defined as the computer system, which is designed to manage the medical and administrative information in hospitals or healthcare settings [6]. While HIS maintains health records of patients in a

centralized database and allows easy access and editing without relying on physical files [19], HIS also enhances the integration and availability of patient information [9].

HIS can help developing countries improve population

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health and health services, by providing better medical services and using limited healthcare resources efficiently [16]. HIS emphasizes healthcare quality, accessibility, and affordability [28], thus facilitating patient safety and care coordination and also improving diagnosis, treatment, disease prevention, and reducing medical errors [2].

However, HIS implementation in developing countries has received low success rate due to an array of factors [18, 21]. The high cost of traditional healthcare services, shortage of physicians and nurses, lack of qualified staff, hinder adoption of HIS in developing countries [18, 29]. Challenges to HIS implementation in developing countries include lack of information and communication technologies (ICT) literature in developing countries, limited financial resources to buy the latest technology (computers), poor record keeping, low internet availability and bandwidth, and expensive ICT resources [25]. Other barriers to HIS adoption in hospitals in developing countries include lack of adequate funding and resources; lack of support by the medical staff; inability to find the HIS solution at an affordable cost; and challenges in developing appropriate strategies for migrating from paper to electronic health records [13].

Mauritius, classified as a developing country has been trying to computerize the hospital information systems since 1990, however, the shift to a digital health information system has been unsuccessful [4]. While private clinics on the island have successfully implemented HIS, the process in public hospitals is still at the pre-contemplation stage [4, 5]. Given that HIS could improve the quality and efficiency of healthcare services, the Mauritian government has initiated a strategic plan since 2021 for HIS implementation in public hospitals, for better healthcare services, resource planning, and interdepartmental and inter-sectoral collaboration. The main objectives are creating a link and connectivity across public hospitals to ensure quality service by being more efficient, reducing waiting time for patients, keeping proper medical records, and reducing paperwork [5].

Though Mauritius has been undergoing digital transformation in its healthcare infrastructures, there is limited research to understand the organizational preparedness and readiness to adopt HIS in Mauritian public hospitals [4, 22]. Thus, to bridge existing gaps in HIS implementation in Mauritius, this project will explore factors and barriers to the adoption and implementation of HIS within the public hospitals of Mauritius.

2. Methods

Since there is limited literature about HIS in low and middle-income countries, especially in Mauritius, an inductive approach was used in this study [27]. A descriptive cross-sectional survey design, which entails collecting data at a single time point was selected to understand the benefits and challenges of HIS in Mauritian public hospitals [14]. Questionnaires were used to collect information from staff at public

hospitals. Secondary data sources, namely research articles, and reports, were also used as supportive data sources. By using more than one method of data collection, we ensured that triangulation was implemented [32].

2.1. Target Population

Study participants include doctors, nurses, and administrators. Information was collected from staff of three regional hospitals: Abdool Gaffoor Jeetoo Hospital (AGJH), Jawaharlal Nehru Hospital (JNH), and Victoria Hospital (VH). A purposive sample of 100 participants was determined to be recruited.

2.2. Sampling

Stratified sampling was used to ensure heterogeneity and representativeness [34].

2.3. Survey Method

This cross-sectional survey was administered over four months. The questionnaire was designed to capture information about main areas of HIS from the perspectives of the providers and administrators. Findings from the literature review focusing on HIS policy discussions, HIS innovations, and international and regional information systems were systematically synthesized to help design the questionnaire. Anonymity and confidentiality of respondents were ensured.

Questionnaires were administered in person and/or in sealed envelopes. The 13-item questionnaire covered categories, including information generation, acquisition, and use, HIS reforms and application in Mauritian public hospitals. Through an iterative process, the questionnaires were modified after being piloted among doctors, nurses, and administrators in public hospitals. Participants from the pilot were not included in subsequent data collection. The survey questions did not include any identifiable questions to maintain responses as anonymous. Completed questionnaires were kept locked with access restricted to research staff only. Data were then entered in a password-protected file.

The first part of the questionnaire required the respondents to provide basic demographic information, types of HIS they use at work and their preferences for implementing a new HIS. The second part included itemized questions about perceived benefits, challenges, and requirements for HIS implementation. Some of the questions were recorded on a scale of 1 to 5 or 6 with 1 being high influence and 5 or 6 meaning low influence. Likert-type responses and range of scores were used to quantify participants' opinions [7].

2.4. Data Analysis

Prior to data analysis, data quality was assessed by checking on accuracy, completeness, relevance, consistency, reliability, and presentation. Data was entered and analyzed in IBM SPSS

version 26. As this study is a preliminary attempt to identify to examine the factors that influence HIS implementation in Mauritian public hospitals, only descriptive analyses were performed, and no association/correlations were investigated.

3. Results

Of the 142 questionnaires distributed, 82 (57.7%) were received with completeness. Though the study had a relatively low turnover, the response rate of 57.7% (>50%) is adequate for analysis and reporting [23].

Presentation and Analysis of Findings

Of the 82 responses received, most were from administrators (41.5%, $n=34$), followed by nurses (40.2%, $n=33$) and doctors (18.3%, $n=15$). Our study results show that computerized scheduling is the most used HIS form (37.9%, $n=61$) followed by electronic health records (EHR) (32.3%, $n=52$) and telemedicine (25.5%, $n=41$). M-health (3.1%, $n=5$), health knowledge management (1.2%, $n=2$), and user health informatics (0%, $n=0$) are hardly used.

Preferred forms of HIS to be implemented

The most preferred forms of HIS for implementation are m-health (19.4%, $n=62$), telemedicine (18.1%, $n=58$), health knowledge management responses (17.5%, $n=56$), and health information systems (15.6%, $n=50$). EHR (14.7%, $n=47$) and user health informatics (14.69%, $n=47$) were reported in equal preference.

3.1. Key Stakeholders in the Current System

Stakeholders identified from literature review were included in the questionnaire to explore their level of contribution in the Mauritian context. Respondents expressed their opinion on the contribution of the government (27.5%, $n=80$) and other stakeholders (27.8%, $n=81$) in decision-making. Patients (22.7%, $n=66$) and health providers (20.3%, $n=59$) were also considered important in decision-making in public hospitals. Health educators were minimally involved (1.72%, $n=5$). When rated in order of influence, patients (28.2%, $n=167$) were classified as most important, followed by the government (27.5%, $n=163$). Health educators were reported to have the least contribution (1.7%, $n=10$). Healthcare providers (18.2%, $n=108$) and other stakeholders (24.5%, $n=145$) were considered to have equal influence.

A total of 424 responses were recorded about the existing information and communication technologies (ICT) in Mauritian public hospitals. These responses were recorded on a scale score, where 1 represents High influence and 5 represents Low influence. The score of 2 was recorded most times (21.9%, $n=93$). An equal number of responses for moderately low (21.7%, $n=92$) and low influence (21.7%, $n=92$) of technologies were noted. The neutral score of 3 had the lowest responses. Laptops (9.20%, $n=39$) and desktops (8.25%, $n=35$)

respectively were rated among the most important ICT technologies required to support HIS implementation, while 16.75% ($n=71$) thought mobile phones were important. Printers (6.60%, $n=28$) and tablets (1.18%, $n=5$) were rated as least influential.

3.2. Connectivity in Public Hospitals

Among the study sites, 79.3% ($n=65$) of respondents had an internet connection at work.

3.3. Benefits from Implementation of Health Information System in Public Hospitals

The most important benefits of HIS implementation in public hospitals are better health quality, safety, and outcomes (16.6%, $n=118$). Increased service efficiency, productivity, cost-effectiveness (13.7%, $n=98$), knowledge sharing by practitioners (13.7%, $n=98$), and improved decision-making (13.74%, $n=98$) were all considered equally important.

About 10% respondents (10.7%, $n=76$) rated that the most influential advantage of HIS implementation will be improvement in health quality, safety, and outcome, followed by improved decision-making (9.96%, $n=71$) and increased service efficiency, productivity, and cost-effectiveness (8.70%, $n=62$). Very few respondents (1.44%, $n=10$) thought that the implementation of HIS in Mauritian public hospitals would not have any benefits. Forty-eight (6.73%) respondents had neutral opinions.

3.4. Challenges of HIS Implementation in Public Hospitals

Some main challenges of HIS implementation in public hospitals identified are security and privacy issues (23.5%, $n=76$), ICT capacity (22.5%, $n=73$), and e-health infrastructures (21.6%, $n=70$). The least significant challenge was technical organization (3.7%, $n=12$). Most respondents reported that they needed training to use HIS in their workplace (87.8%, $n=72$) compared to those who thought they did not (12.20%, $n=10$). A higher proportion of respondents rated having average knowledge of computer usage (98.8%, $n=81$) and only one (1.22%, $n=1$) felt experienced. All participants had some experience using computers. A subset of participants (69.5%, $n=57$) did not have any direct experience in using HIS as compared to those who had (30.5%, $n=25$).

4. Discussion

This study explored the adoption and implementation of health information systems (HIS) in public hospitals in Mauritius, highlighting critical insights into stakeholder engagement, technological readiness, and perceived benefits and barriers. Respondents included mostly administrators (41.5%, $n=34$) and nurses (40.2%, $n=33$), reflecting their higher engagement in administrative and documentation roles [33]. The

lower participation rate among physicians (18.3%, $n=15$) indicates limited engagement with digital documentation systems, consistent with prior literature suggesting that clinical staff often prioritize direct patient care over administrative tasks [31, 33]. This difference in current roles distribution in Mauritian public hospitals can be attributed to the fact that nurses and administrators are more heavily involved in patient documentation and administrative tasks, while doctors primarily focus on manual notetaking for diagnosis and treatment.

Findings from this study indicated that staff in public hospitals in Mauritius ranked preference in m-health (19.38%, $n=62$), telemedicine (18.13%, $n=58$), health knowledge management (HKM) responses (17.50%, $n=56$), and health information systems (15.63%, $n=50$) as future HIS strategies. These reports align with mobile health technologies as accessible solutions for improving care in resource-constrained settings [12]. Perceived usefulness and ease of use of m-health have been widely recognized worldwide as its adoption has helped for better health services and outcomes [12]. Respondents suggested that HKM is also important, which emphasizes on findings from previous research suggesting that for appropriate HIS implementation, training, and knowledge sharing are fundamental [30]. Having proper knowledge and skill is key to HIS implementation in hospitals, which explains the relatively high percentage of HKM from the respondents.

Stakeholders are of two types: internal (those who work within the hospital, such as health providers) and external (those from outside the hospital, such as the government). Though this study was conducted among internal stakeholders only, study participants acknowledged the contribution of external stakeholders, thus suggesting the need for collaboration of internal and external stakeholders for adequate HIS implementation. All the stakeholders, including government, patients, health providers, and educators, had some influence on HIS implementation in Mauritian public hospitals. Among stakeholders with high influence, patients (7.59%, $n=45$) and other stakeholders not listed in the questionnaire (7.59%, $n=45$) were highly ranked equally. Participants thought the government had a low influence on HIS implementation (8.43%, $n=50$). These findings suggest the gap in policy-level engagement and the need for increased collaboration across different sections to drive HIS initiatives.

To ensure HIS implementation in Mauritian public hospitals, sufficient infrastructure is required to support the process, such as adequate availability of devices (desktops and laptops). Mobile phones will be important if the systems are designed to include mobile-based applications. Tablets combining laptops and mobile features can also help access information from locations where desktops, etc. are unavailable and can be allocated to all staff. While 79.27% ($n=65$) respondents reported having an internet connection within their work environment, a significant proportion of 20.73% ($n=17$) did not. Since the aim of the HIS is to enable timely data sharing, there is need for good connectivity to ensure efficient services [36].

With HIS implementation, the clinical information system

will be automated for real-time updating of patient treatment protocols and medical record management. HIS will alleviate the issues of resource allocation, access to healthcare services, and efficient management of patient encounters, as well as reduce costs thus improving patient care coordination [10].

Past studies indicated the benefits of implementing HIS in hospitals, including sharing of information, automation of patient-related processes, easy access to patients' information, reducing transcription errors and duplication of information entries, thus HIS promotes quality care to patients and patient-oriented health services [17]. HIS can be accessed from multiple locations in real-time, which can strengthen care quality and the patient-provider relationship as diagnoses can be made more precisely and promptly with accurate and up-to-date patient information. Providers can benefit from seeing the same number of patients in less time but also have more patient-provider time. In emergency cases, by having access to records promptly, providers can decide on patient management quickly, without having to completely rely on history from family and friends [20].

The implementation of medical errors can be minimized, thus helping providers having access to reliable information to optimize patient care. As data will exist in the registered system, it is easier to keep track of public health concerns, such as notifiable diseases [8]. The respondents believed that cost-effectiveness is crucial in HIS implementation, which is similar to findings from Yamauchi et al. (1994). The latter reported that HIS would help to lower health costs by improving coordinating services, accuracy, and speed of care, along with reducing errors for better care quality [35].

Moreover, HIS will allow hospitals to manage administrative tasks and clinical duties more systematically. HIS will provide the public hospitals in Mauritius with tools for establishing a better referral system in all departments within one location and in the long term across different hospitals, as providers will be able to monitor patients' status, view their past medical history, and other medical-related information so that they can make a complete evaluation on the patient's health.

Though the primary objective of HIS implementation in Mauritian public hospitals is to support health care professionals, mainly doctors, nurses, as well as administrative staff [15], HIS will also have a role in directly supporting patients, their relatives and all people with health questions and problems. By having old and more recent information, the providers can visualize the trends in lab results, past surgical and medical history, and treatment plans, giving an overview of patient's condition and treatment [24]. The providers can easily access health information of patients visiting them for the first time and doing follow-ups. This approach will help providers deliver comprehensive, precise, complete, and effective care plans along with monitoring patient management.

Additionally, HIS implementation in public hospitals will help providers and other stakeholders monitor the Mauritian population's health. HIS will help to record updated statistics about number of visits, diagnoses, treatment plans, notifiable

diseases, surgeries, and other procedures and follow-up care. These reports can be used to evaluate the trends in the current health system and identify areas that need improvement.

However, despite the benefits of HIS, there are still some challenges which are security and privacy issues (23.46%, n=76), ICT capacity (22.53%, n=73), e-health infrastructures (21.60%, n=70) and technical organization (3.70%, n=12). Security concerns were reported as inhibitions and limitations to HIS implementation in public hospitals. Previous research has also highlighted the importance of data security and the role of a well-structured and coordinated implementation plan for HIS in health institutions [1]. It is therefore important to ensure the development of HIS emphasizes information safety.

A major proportion of participants (69.51%, n=57) did not have any training or direct experience in using HIS. In addition to the technical aspects of HIS, the implementation of HIS should also consider the implications of current practices and how to optimize the transition to the new system. Findings from previous studies have revealed that for implementing any new HIS, it is imperative to ensure that the user can easily work with it, trust it, and increase data accessibility. However, human factors should also be given equal value as the technical component, as it is important to make sure that the potential users have the knowledge and skills to use computers and HIS. HIS should be easy to learn and use so that the objectives of saving time and being cost-effective are achieved [26].

For successful HIS implementation in Mauritian public hospitals, appropriate project management accompanied by adequate training, organizational factors, and confidentiality are crucial. Previous studies have indicated a lack of awareness of the functions and features of the HIS as one of the barriers affecting the adoption of HIS in hospitals. Therefore, understanding the end-users' perceptions, needs, and computer literacy levels is fundamental. Hospital managers and directors need to ensure that the current and potential users of the HIS are aware of the functions available through adequate training. A comprehensive HIS will also enable stakeholders to make better decisions on use of resources and develop effective health interventions [11].

5. Conclusion

Research conducted in other parts of the world has demonstrated that using HIS can facilitate clinical decision-making, enabling healthcare professionals to provide high-quality medical care and services [3]. The findings of this study are consistent with previous HIS research conducted in low and middle-income nations. For the successful implementation of HIS, human factors, technological factors, and organizational and managerial factors are equally crucial. When referring to human factors, knowledge of the use and comfort of using computers, ease of using computerized systems, and ease of learning how to use new systems and applications are fundamental. Technological factors refer more to the development of the HIS and the reliability of the system in ensuring the

protection of patient information and confidentiality, as well as being cost-effective. The training of users has a great impact on the acceptance of the HIS [11]. In summary, for the successful implementation of HIS in public hospitals in Mauritius, it is important to maintain a balance between human, technological, organizational, and managerial factors. The conclusions of this study can be used as support to develop suitable plans that will enhance influencing elements and attempt to remove obstacles to HIS implementation in the Mauritius setting. Organizational and management issues, technological considerations, and human factors are all equally important for the successful deployment of HIS.

Abbreviations

HIS Health Information Systems

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Author Contributions

Parishma Guttoo is the sole author. The author read and approved the final manuscript.

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Conflicts of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

- [1] Almulhem, A. (2012). Threat modeling for electronic health record systems. *Journal of medical systems*, 36, 2921-2926.
- [2] Ball, M. J., & Lillis, J. (2001). E-health: transforming the physician/patient relationship. *International journal of medical informatics*, 61(1), 1-10.
- [3] Baumann, L. C. and Karel, A. (2013) 'Prevention: Primary, Secondary, Tertiary', in Gellman, M. D. and Turner, J. R. (eds) *Encyclopedia of Behavioral Medicine*. New York, NY: Springer, pp. 1532-1534. https://doi.org/10.1007/978-1-4419-1005-9_135
- [4] Beebejaun, M. R. and Chitto, H. (2017) 'An assessment of e-health readiness in the public health sector of Mauritius', *Int J Sci Basic Appl Res*, 35(1), pp. 193-210.

- [5] Bholah, L. A. and Beharee, K. (2015) 'Mauritius eHealth - Trust in the healthcare revolution', in *2015 ITU Kaleidoscope: Trust in the Information Society (K-2015)*. 2015 ITU Kaleidoscope: Trust in the Information Society (K-2015), pp. 1–8. <https://doi.org/10.1109/Kaleidoscope.2015.7383627>
- [6] Biomedical Informatics Ltd. (2006). *Hospital information system*. Retrieved January 29, 2022, from <http://www.biohealthmatics.com>
- [7] BISHOP, P. A. and HERRON, R. L. (2015) 'Use and Misuse of the Likert Item Responses and Other Ordinal Measures', *International Journal of Exercise Science*, 8(3), pp. 297–302. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4833473/> (Accessed: 9 February 2022).
- [8] Black, A. D. *et al.* (2011) 'The impact of eHealth on the quality and safety of health care: a systematic overview', *PLoS medicine*, 8(1), p. e1000387. <https://doi.org/10.1371/journal.pmed.1000387>
- [9] Boonstra, A. and Broekhuis, M. (2010) 'Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions', *BMC Health Services Research*, 10, p. 231. <https://doi.org/10.1186/1472-6963-10-231>
- [10] Cline, G. B. and Luiz, J. M. (2013) 'Information technology systems in public sector health facilities in developing countries: the case of South Africa', *BMC Medical Informatics and Decision Making*, 13(1), pp. 1–12. <https://doi.org/10.1186/1472-6947-13-13>
- [11] Farzandipur, M., Jeddi, F. R., & Azimi, E. (2016). Systematic review of factors influencing the adoption of information and communication technologies by healthcare professionals. *Acta Informed Medicine*, 24(1), 51-55.
- [12] Gagnon, M.-P. *et al.* (2016) 'm-Health adoption by healthcare professionals: a systematic review', *Journal of the American Medical Informatics Association*, 23(1), pp. 212–220. <https://doi.org/10.1093/jamia/ocv052>
- [13] Gesulga, J. M. *et al.* (2017) 'Barriers to Electronic Health Record System Implementation and Information Systems Resources: A Structured Review', *Procedia Computer Science*, 124, pp. 544–551. <https://doi.org/10.1016/j.procs.2017.12.188>
- [14] Golafshani, N. (2003) 'Understanding Reliability and Validity in Qualitative Research', *The Qualitative Report*, 8(4), pp. 597–606. <https://doi.org/10.46743/2160-3715/2003.1870>
- [15] Haux, R. (2006). Health information systems—past, present, future. *International journal of medical informatics*, 75(3-4), 268-281.
- [16] Hoque, M. R. and Bao, Y. (2015) 'Cultural Influence on Adoption and Use of e-Health: Evidence in Bangladesh', *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association*, 21(10), pp. 845–851. <https://doi.org/10.1089/tmj.2014.0128>
- [17] Ismail, N. I., & Abdullah, N. H. (2012). An overview of hospital information system (HIS) implementation in Malaysia. In *3rd International Conference on Business and Economic Research Proceeding* (pp. 1176-1182).
- [18] Ismail, N. I., Abdullah, N. H. and Shamsuddin, A. (2015) 'Adoption of Hospital Information System (HIS) in Malaysian Public Hospitals', *Procedia - Social and Behavioral Sciences*, 172, pp. 336–343. <https://doi.org/10.1016/j.sbspro.2015.01.373>
- [19] Li, C. and West-Strum, D. (2010) 'Patient panel of underserved populations and adoption of electronic medical record systems by office-based physicians', *Health Services Research*, 45(4), pp. 963–984. <https://doi.org/10.1111/j.1475-6773.2010.01113.x>.
- [20] Lorenzi, N. M. *et al.* (2009) 'How to successfully select and implement electronic health records (EHR) in small ambulatory practice settings', *BMC Medical Informatics and Decision Making*, 9(1), pp. 1–13. <https://doi.org/10.1186/1472-6947-9-15>
- [21] Malik, M. and Khan, H. (2009) 'Understanding the implementation of an electronic hospital information system in a developing country: A case study from Pakistan', 97.
- [22] Moonian, O. (2009) 'A Distributed Electronic Patient Record System for the Mauritian Healthcare Service', *Journal of Health Informatics in Developing Countries*, 3(2). Available at: <https://jhdc.org/index.php/jhdc/article/view/35> (Accessed: 9 January 2022).
- [23] Mugenda, O. M. and Mugenda, A. G. (1999) *Research Methods: Quantitative and Qualitative Approaches*. Acts Press, Nairobi.
- [24] Nelson, R. (2004). *Consumer informatics: applications and strategies in cyber health care*. Springer Science & Business Media.
- [25] Omary, Z., Lupiana, D., Mtenzi, F., & Wu, B. (2009, July). Challenges to E-healthcare adoption in developing countries: A case study of Tanzania. In *2009 First International Conference on Networked Digital Technologies* (pp. 201-209). IEEE.
- [26] Rouleau, G., Gagnon, M.-P. and Côté J. (2015) 'Impacts of information and communication technologies on nursing care: an overview of systematic reviews (protocol)', *Systematic Reviews*, 4, p. 75. <https://doi.org/10.1186/s13643-015-0062-y>
- [27] Saunders, M., Lewis, P. and Thornbill, A. (2000) *Research Methods for Business Studies*.
- [28] Sayed, M. I. and Mamun-ur-Rashid, Md. (2021) 'Factors influencing e-Health service in regional Bangladesh', *International Journal of Health Sciences*, 15(3), pp. 12–19. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8220639/> (Accessed: 9 January 2022).
- [29] Scott, R. E., Ndumbe, P., & Wootton, R. (2005). An e-health needs assessment of medical residents in Cameroon. *Journal of telemedicine and telecare*, 11(2_suppl), 78-80.
- [30] Shahmoradi, L., Safadari, R. and Jimma, W. (2017) 'Knowledge Management Implementation and the Tools Utilized in Healthcare for Evidence-Based Decision Making: A Systematic Review', *Ethiopian Journal of Health Sciences*, 27(5), pp. 541–558. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5615016/> (Accessed: 16 February 2022).

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- [31] Siegler, J. E., Patel, N. N. and Dine, C. J. (2015) 'Prioritizing Paperwork Over Patient Care: Why Can't We Do Both?', *Journal of Graduate Medical Education*, 7(1), pp. 16–18. <https://doi.org/10.4300/JGME-D-14-00494.1>
- [32] Somekh, B. and Lewin, C. (2005) *Research methods in the social sciences*. Sage.
- [33] Tasew, H., Mariye, T., & Teklay, G. (2019). Nursing documentation practice and associated factors among nurses in public hospitals, Tigray, Ethiopia. *BMC research notes*, 12, 1-6.
- [34] Trochim, W. (2005) 'Research Methods: The Concise Knowledge Base'.
- [35] Yamauchi, K. *et al.* (1994) 'Evaluation of the order entry system by end users—A step to the new hospital information system', *Nagoya J Med Sci*, 57(1–4), pp. 19–24.
- [36] Zeadally, S., & Bello, O. (2021). Harnessing the power of Internet of Things based connectivity to improve healthcare. *Internet of Things*, 14, 100074.