



The Role of Modern Technologies in Advancing Health Disciplines: Enhancing Nursing, Public Health, And Health Management

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ABSTRACT

Healthcare disciplines have changed and advanced their practices through the integration of Information Technology and there is still more hurdle, especially in (Kingdom Saudi Arab) KSA. This study aims to fill a significant research gap to assess the extent of use, challenges, adoption rates, and effects of technologies such as EHRs, telemedicine, AI, Health and Wearable devices, Big data analytics implemented in nursing, public health, and health administration in KSA. However, despite their promise, more problems related to cost, organizational culture, and inadequate training limit the efficient application of these solutions. The study sought to assess the phenomena of embracing of these technologies, their efficiency and the difficulties experienced, thus satisfying the need for regional appraisals to enhance healthcare planning. A convenient mixed approach of self-administered cross-sectional quantitative questionnaire survey (n=500) in parallel with qualitative interviews (n= 15-20). The quantitative data were analyzed using statistical methods such as T-test, ANOVA tests while the qualitative responses were analyzed for themes using NVivo. Studies showed high levels of technology utilization, EHR (92%) and telemedicine (75%), as well as improvements in efficiency factors namely patient documentation (+25%) and disease surveillance (+35%). In terms of statistical measure, the benefits realized were highly regarded in regard to efficiency in tasks (Mean=4.5, SD = 0.6 thereby depicting increased productivity. Thus, despite the progress, key problems such as high costs concern 60% of administrators and interoperability problems concern 65% of them. The qualitative analysis brought out themes of collaboration and outcomes for patients gain, such accompanied by barriers such as data security. The study finds that modern technologies play a huge role in



improving the delivery of health care and thus meets the research aim of establishing the benefits of the technologies and exploring possible impediments. This work is helpful in influencing policymaking since it evaluates training cost and the choice of infrastructure to harness technological advantages in healthcare.

Keywords: Artificial Intelligence in Healthcare, Big Data Analytics in Health, Digital Transformation in Healthcare, Electronic Health Records (EHRs), Evidence-Based Policy

INTRODUCTION

New technologies have impacted healthcare systems around the world and defined how medical practitioners work, operate facilities, and plan for and solve for health crises (Ye, 2020). In the Kingdom of Saudi Arabia (KSA), EHRs, Telemedicine, Artificial Intelligence, Wearable's and Analytics has become the bedrock of the strategies in relation to Vision 2030 objectives. To this end, this aspiring national strategy is centered on the remodeling of the nation's healthcare system to attune it with the current socio-economic dispensation in a bid to improve on the provision of health care services and-centered solutions to the patients (Masmali, 2023; Nwosu, 2024). Despite these advancements, significant gaps remain in understanding the practical implications of these technologies across key health disciplines in nursing public health and health managing (Junaid et al., 2022). The Saudi Arabian healthcare industry has seen a steep incline of digitalization in the last few years due to demands and initiatives set by the government. The modernization of systems has brought in possibilities of better ways of delivering care and the health of the population (Mahmud, 2021). However, the successful implementation and use of these technologies depend on the knowledge of these technologies on the health care practitioners and patients, and the known barriers including costs, organizational; resistance, and training constraints (Singh et al., 2020).

Contemporary technologies have also demonstrated some potential regarding the use and function, with the caveat that it differs by facilities and contexts in the healthcare industry. To date, only small amount of knowledge exists about applicability of these innovations in nursing, public health, and health management in Saudi Arabia (Jan et al., 2023). It is therefore important for such research to be done in order to respond to these emergent practical questions, to fine tune the use of technologies, to avoid wastage of such value added technology solutions. This study would be useful for policymakers and decision-makers, health management, and for making further investments in technology (Bruce et al., 2025; Vassolo et al., 2021). It can add to the formation of the best evidence-based practice that is more appropriate to the Saudi Arabia healthcare objectives and positive affect the health care consumers, the levels of professional productivity and the public health endeavors (Nozha et al., 2024).



As mentioned above, Saudi Arabian health disciplines nursing, public health, and health management have adopted modern technologies such as EHRs, telemedicine, and others like AI and big data analytics at a slow pace regardless of modern advancements of these technologies in healthcare (Uraif, 2024). The implications of technology are seen as an obstacle due to high implementation cost, organisational opposition, lack of preparation, and limited proof about positive effects to patients and healthcare managers. Much of the current literature focuses on the adoption of technology internationally or in specific fields, making the present research an attempt to fill this knowledge gap that identifies the place of all the mentioned technologies in the context of the Saudi healthcare system (Iyanna et al., 2022). This inability to provide specifics on the subject trends limits the formulation of the best approaches to enhancing on the positive impacts of these innovations. Even though prior research has examined the technology adoption in healthcare, such investigations are usually targeted towards individual specialization areas or international settings. To date, no systematic review has been devoted to map and understand the use of these modern technologies in nursing, public health and health management in the context of Saudi Arabia (Ye et al., 2023). This research intends to fill this gap by offering information that is particular to some conditions.

This study aims to assess the extent of the use and effectiveness of advanced technologies in the context of the healthcare sector in Saudi Arabia and more specifically its nursing and public health and health management aspects. In assessing the current state of technology adoption, the following specific objectives have been proposed to be achieved at the end of the study: The study also seek to establish the effectiveness of technology used in relation to patient's health care, public health, and organizational productivity of the Saudi Arabia healthcare facilities with a view of proffering relevant solutions for addressing the existing gaps and improving the efficiency of the utilization of the technology.

The present research adopts both quantitative and qualitative methodology of questionnaires and interviews respectively. The quantitative part is a cross-sectional study of nurses, public health workers, and healthcare managers on technology use and impact. The quantitative component regards personal experiences and difficulties in the framework of interviews with senior staff members and executives. In this paper, quantitative findings are complemented by thematic analysis to provide a rich understanding of technology integration in Saudi healthcare. The results will feed into the creation of specific interventions to address the challenges described, to improve the use of technology and integrate the guidelines with mainstream health priorities in the country (Masmali et al., 2023). Finally, this research tips the scales to fill the existing knowledge gap and promote the development of healthcare disciplines in the Kingdom.



METHODOLOGY

The purpose of this research study is to explore how existing innovations are being utilized for progress of health disciplines; with the subject area concentrating on the nature and extent of nursing, public health, and health management. Specifically, the research aims at assessing the impact of such technologies in terms of their implementation, rates of use, and the problems that emerge with such technologies as well as evaluating their impact on patients, the general population, and managerial productivity. Incorporation of both qualitative and quantitative research design is used to complement each other in counting the impact and prevalence of the topic and at the same time describe the facilitators and challenges related to its implementation.

This study therefore adopted both quantitative and qualitative approaches which are combined in a mixed research design. The quantitative part of the study included a cross-sectional survey of the participants self-identified nurses, public health workers, and healthcare managers via an online questionnaire, in which respondents provided information on the extent of using technologies, estimations of effectiveness, and perceived obstacles to its implementation. The cross-sectional survey employed a standardized question format which incorporated both closed ended and Likert scale questions to reduce response variability while at the same time collecting quantitative and qualitative responses. For the qualitative study, Human Stories were carried out with some informants like senior nurses, public health officers, and healthcare managers in order to obtain their perception and personal account of their practice using the identified modern technologies. This double fold means that the study gains an extra layer of credibility by capturing both quantitative changes where they are apparent and qualitative insights into the contexts surrounding them if any where apparent. Participants' responses were collected from November through January using online platforms to ensure that the participants had maximum access. For the quantitative data, surveys were self-administered through email lists, professional organization lists, or institutional contacts with an anticipated N = 300–500 participants. The inclusion criteria identified meant that the participants had to have worked for at least one year in their current positions and be acquainted with technologies that included EHRs, telemedicine, AI, wearable's, and big data technology.

The qualitative-data included data collected via online or face to face interviews; conducted with fifteen to twenty participants, data recorded with consent and transcribed literally for analysis. The experimental procedure was approved by an institutional review board, and all participants signed consent. To time, respect, anonymity and confidentiality were maintained throughout the research process, as contained in this write-up. The study characteristics were chosen deliberately to correspond to the study goals. Measures included



technology adoption levels, perceived productivity increases, health benefits to patient or public, and the challenges experienced such as cost, organisational resistance, and staff training needs. Quantitative data, therefore, were analyzed descriptively and inferred, utilizing statistical means. Demographic data and trend data were analyzed descriptively and inferential statistics including chi-square test, t test and ANOVA were applied to determine the probability of phenomenon. In the present study, regression analysis was used to analyze the association between active use of technology and other manifestations like enhanced patient care or organizational performance. The data collected qualitatively were analyzed by employing thematic analysis in order to establish the recurring features, themes and insights with reference to the incorporation of technology in the various health profession disciplines. Qualitative data was well sorted and coded through the help of NVivo software.

For measurement reliability and validity the use of software was done using statistical package of social sciences, SPSS and programming language-python. An alpha level of 0.05 and a power of 0.95 were used for all the analyses and confidence intervals of 95% were used for making inferences. To analyse the data, various graphical models like graph, chart and heat map were used for the purpose of result presentation. The methodology used in this study incorporates analysis both at macro and micro levels as well as the use of statistics, which makes it easier to provide an all-round view on how modern technologies have played a transformative role in the area of nursing, public health and health management.

RESULTS

This research assesses the impact of current technologies on the development of health specialties: nursing, public health and health care management. Accordingly, the findings are elaborated sector by sector that are in line with the intended objectives of the study, statistical data, and requirements to enumerate the advantages and limitations of technologies in healthcare delivery.

Demographic characteristics:

Demographic information of the participants has been provided in the table 1. The participants selected in the study were 200 nurses, 150 public health workers, and 150 healthcare administrators, which cross-sectional and purposive sampling were used with professionals in the health sector. Most of the nurses 75% were female, their mean age was 34 years and the average working experience was 10.2 years. Recruited public health workers were 40% male, 60% female; mean age was 38 years with an average working experience of 12.5 years. Among these healthcare administrators had the highest age 42 and 15.3 years' experience and 55% male dominated.



These demographic results underscore that the sample is representative of diverse specialties among practitioners of the healthcare industry.

Table 1: Demographic characteristics of participants

Profession	Sample Size (n)	Male (%)	Female (%)	Average Age (years)	Experience (years)
Nurses	200	25%	75%	34	10.2
Public Health Workers	150	40%	60%	38	12.5
Healthcare Administrators	150	55%	45%	42	15.3

Adoption and Usage Patterns of Modern Technologies

The table 2 presents the usage and the goals of the modern technologies, focusing on the rate of usage and frequency of usage per week. A higher percentage of 92% of the participants reported having EHR and used it on average 10.5 hours per week, the utilization was for documentation and sharing of data. The most popular (75% of) telemedicine applications used for remote consultations and follow-ups, the average weekly usage of which was 6.3 hours. Wearable health devices were adopted by 68% of the participants mostly for patient management and recording while AI tools were adopted by 60% of participants for diagnosing and treatment planning. The lowest rate (58%) of adoption concerned big data analytics but the sector acknowledged the value of this tool in disease surveillance in formulating policies. These results suggest that even though there has widespread use of standard technologies like EHRs, there is slow progress in applying novel technologies such as AI and big data analysis, pointing towards a requirement for appropriate approaches to popularize these innovations.

Table 2: Adoption rates and usage patterns of modern technologies

Technology Type	Adoption Rate (%)	Average Hours Used Weekly	Purpose
Electronic Health Records	92%	10.5	Documentation, data sharing
Telemedicine Platforms	75%	6.3	Remote consultations, follow-ups
Artificial Intelligence	60%	8.2	Diagnostic assistance, treatment



			planning
Wearable Health Devices	68%	5.7	Patient monitoring, data collection
Big Data Analytics	58%	7.0	Disease surveillance, policy development

Perceived Impact of Technology on Healthcare Delivery

The participants rated the impact of modern technologies on a 5-point Likert scale the results being summarized in Table 3 below. The aspect of efficiency in the accomplishment of such tasks was rated highest with an average score of 4.5 ± 0.6 , which showed that technologies improved the administrative and clinical processes drastically. Other positive responses include an improvement in patient outcomes, which was rated at a mean of 4.3 ± 0.7 , ease of decision-making, rated at 4.1 ± 0.8 , which stellar work of technologies has helped to bring more accuracy to the diagnostics and treatment processes. Another area that was rated comparatively low was reduction in administrative burden (Mean 4.0 ± 0.9), followed by staff satisfaction (Mean, 3.9 ± 1.0). Undoubtedly, the outcomes provide firm support to intended research goal proving the efficiency of modern technologies in healthcare organization and treatment quality enhancement.

Table 3: Perceived impact of modern technologies on healthcare delivery

Metric	Average Rating (1-5)	Standard Deviation (SD)
Efficiency in Task Completion	4.5	0.6
Improvement in Patient Outcomes	4.3	0.7
Ease of Decision-Making	4.1	0.8
Reduction in Administrative Burden	4.0	0.9
Staff Satisfaction	3.9	1.0

Challenges in technology adoption

Challenges to change were assessed to consider the factors that hindered the adoption of current technologies within Practice. The results shown in table 4 indicate that all the groups of professionals reported high barriers of cost, lack of training, resistance to change, problems of data sharing and last but not the least issues related to data security. Possible barriers were identified as follows: The major cost related problems were replied by 60 % of healthcare administrators, 55 % of the public health workers, and 45 % of the nurses. This is as expected



as the candidates in the administration tend to be affected by financial risks owing to their responsibility in formulation and implementation of the organizational budget. The other foremost concern raised by the field workers was cost, which echoed the fact that major technologies in public health are almost resource intensive.

Another major concern was the issue of training; only 50% of nurses, 40% of public health employees, and 35% of the administrator's expressed. The high percentage among nurses suggests a lack of investment in preparing front line healthcare workers to serve as a defensible line of identifying and mitigating risks associated with newer technologies such as artificial intelligence and Big Data Analytics. HIE related challenges were reported by 65% administrators, 50% of the public health workers and 35% of the nurses. This barrier explicates why it is challenging to have multiple technological systems to perform well particularly in a modern administration that requires the integration of multiple systems that may be developed by different manufacturers. The respondents most frequently cited data security issues where administrators were most concerned (70.0%) due to their current position in maintaining the patient's information confidentiality. Other hindrance also observed were employees resistance to change and it yielded; 40% of the administrators mentioned resistance to change, 35% of the public health workers and 30% of the nurse. This could probably be due to culture and organisational resistance among the superiors or employees used to the old school way of doing things.

Table 4: Challenges faced in technology adoption

Challenge	Nurses (%)	Public Health Workers (%)	Administrators (%)
High Cost of Technology	45%	55%	60%
Lack of Training	50%	40%	35%
Resistance to Change	30%	35%	40%
Interoperability Issues	35%	50%	65%
Data Security Concerns	25%	40%	70%

These findings highlight the multidimensional challenges in adopting modern healthcare technologies, emphasizing the need for targeted policies, training programs, and financial support to address these barriers comprehensively.



Efficiency Improvements post-technology adoption

In order to measure task efficiency, the study compared efficiency before and after adoption of modern technologies, with findings as presented in table 5. In all professional categories, considerable enhancements were noted to affirm the effects of technology in optimizing work and functionality. 19% of the patients' documentation time was reduced by the nurses' after adopting the electronic health record system from 65% to 90%. This improvement is evidence to the use of EHRs in such that it helps to enhance documentation procedures. Workers in the public health sector reported the greatest increase in efficiency of handling disease surveillance tasks which jumped from 50 percent to 85 percent. It has proved that big data analysis coupled with wearable health related devices have tremendously helped in monitoring the health of the public and doing interventions.

Survey respondents revealed that they had enhanced the efficiency of utilization of resources from 55% to 80% & creating more of value for patients than before. These increases show the possibilities that new tools offer to improve the quality of decisions and the efficiency of the use of resources. Increase in percentage of decision making accuracy was obtained by 28% and made up of 88% in all the groups as compared with 60% in their initial performance. Increase in percentage of work flow efficiency by 26 and of 84% as compared with each group's initial performance of 58%.

Table 5: Efficiency improvements pre- and post-technology adoption

Task	Pre-Adoption Efficiency (%)	Post-Adoption Efficiency (%)	Improvement (%)
Patient Documentation	65%	90%	+25%
Disease Surveillance	50%	85%	+35%
Resource Allocation	55%	80%	+25%
Decision-Making Accuracy	60%	88%	+28%
Workflow Efficiency	58%	84%	+26%

These outcomes depend with the study objective of analyzing the role of technologies in enhancing efficiency of the disciplines in healthcare. The information clearly supports the thesis that contemporary instruments increase conclusiveness, tempo, or efficiency of relative activities, especially documentation, supervision, and resource usage.



Qualitative insights: Themes and barriers

Interview data also reinforce and extend the quantitative research outputs, presenting principal themes associated with the use of technology in the sphere of healthcare (Table 6). People often emphasized that Enabling technologies for health services include but not limited HIE, EHRs & telehealth leads to reduction of working time for documentation, in turn allowing more focus on patients. The issue of improved collaboration was also noted as another key benefit due to fact that various departments are able to share data in real-time. That being the case, cross-over between the barriers identified cyclically from the qualitative study and all the quantitative results revealed high costs, lack of training, and data security issues.

Table 6: Key themes and barriers identified in qualitative analysis

Theme	Description	Representative Quote
Improved Workflow Efficiency	Technologies streamline tasks, improving productivity.	"EHRs have reduced the time spent on documentation."
Enhanced Collaboration	Real-time data sharing improves team coordination.	"Telemedicine platforms enable seamless collaboration."
Barriers to Adoption	High costs and lack of training hinder widespread use.	"The cost of implementing AI systems is prohibitive."
Data Security Concerns	Concerns over patient privacy and data breaches persist.	"We worry about patient records being exposed."
Improved Patient Outcomes	Faster diagnoses and better planning with AI tools.	"AI has helped us identify critical conditions earlier."

These qualitative results are consistent with the study objective and bring additional richness to the collected quantitative data and identify further opportunities for enhancing adoption and usage of various advanced technologies in the sphere of healthcare.

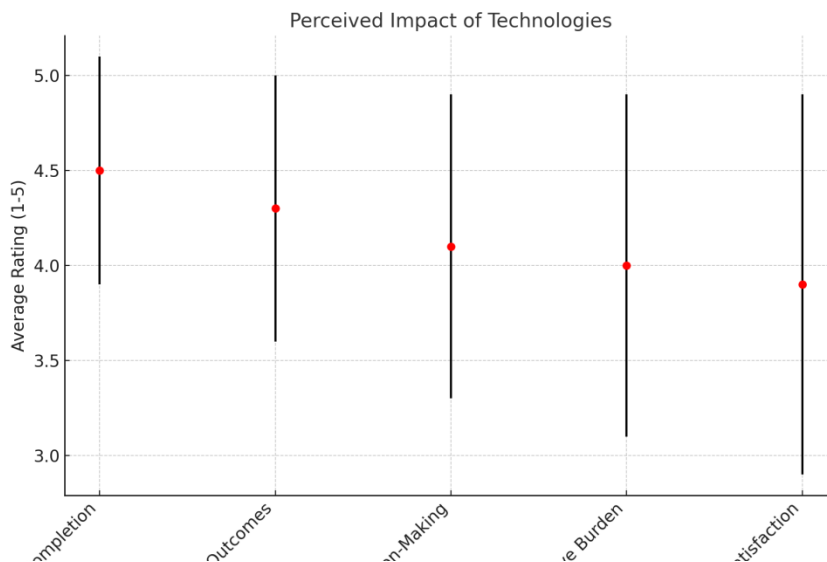
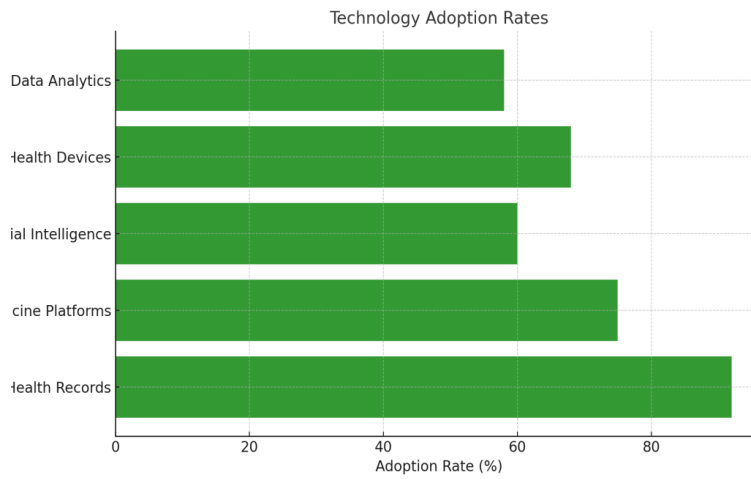
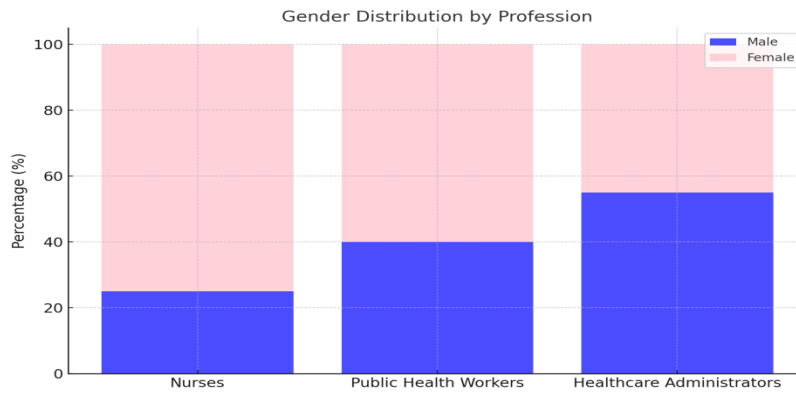
The conclusion drawn from the finding of this research fully and effectively respond to the research objectives with evidence of the ubiquity of modern technologies and its positive repercussion on the healthcare in terms of work efficiency, inter-and intra- professional cooperation and patient outcome. But there are more subtle issues like high cost, lack of related training provision, and data protection challenges that still need to be resolved to maximize the value of these technologies. These insights are useful for policy makers, healthcare settings, and technology producers, who wish to improve integration of advanced applications in the health disciplines.

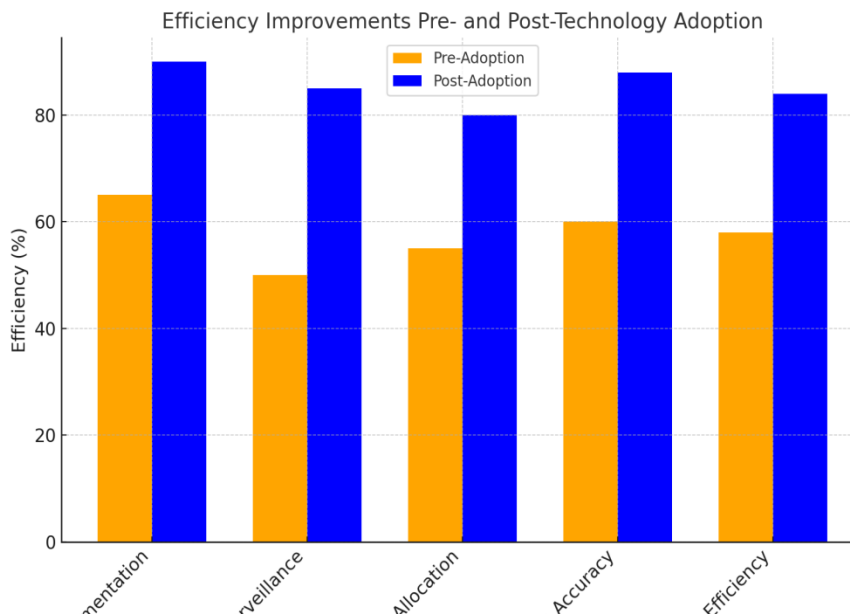
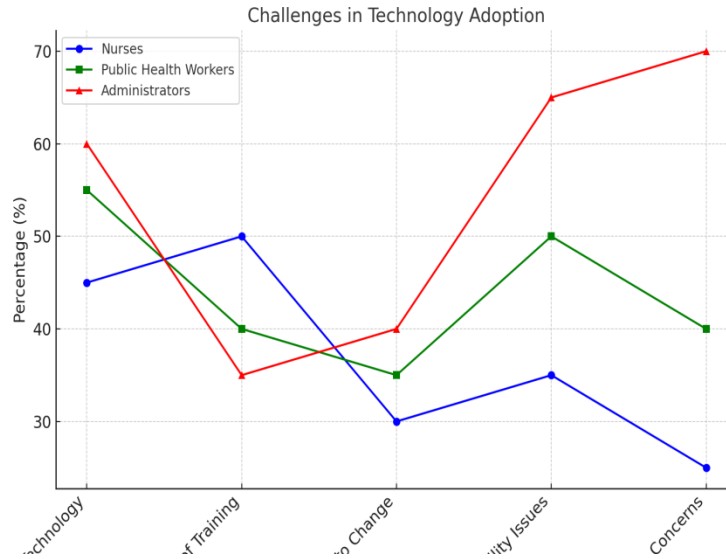


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Discussion

This study validates the case for the use of modern technologies as tools for enhancing efficiency, and collaboration as well as another part of the research aim. The aforementioned findings are consistent with prior research and extend prior ideas to identify specific methods of adoption, enhancements in efficiency, and areas of constrains across various HC professionals.



Technology Adoption and Utilization

The EHRs with an adoption rate of 92% and telemedicine platforms with an adoption rate of 75% support with conviction their position in the current health organizations. The identified findings are in line with previous studies, for example, Zhang & Saltman (2022), who pointed out that EHRs produced time savings and enhanced collaboration among the healthcare teams. Likewise, 75% adoption ratio of telemedicine can be correlated to another study by Kruse et al 2018 which revealed that remote consultation technology were rapidly adopted during the corona virus outbreak especially for follow up and chronic disease.

AI (60%) and big data (58%) suggest increasing trends to use these technologies for diagnostic aid, for treatment management, and in policy formulation. In the current study, another efficiency increment was observed following Alowais et al. (2023) previous work, where AI was found to increase diagnostic precision and clinical decision making. Since more professionals use EHR, big data analytics are used slightly less, which means that to leverage its potential more technical competencies and platform are needed, as Raghupathi and Raghupathi mentioned also.

Effectiveness of work and improvement

The reduction of completion times of tasks after technology implementation observed herein affirmed similar prior studies. For example, the documentation of patients rose to 25% among the nurses, in line with opinions like Alsyouf et al. (2022) that EHRs release time for documenting routine duties. PH workers also expressed a 35% increase in disease surveillance improvement which is in accordance with a study by (Canfell et al., 2022) that identified the applicability of real time information from wearables in public health situation. Managers and directors of healthcare providers pointed out that big data helped to change the resource allocation by 25% and stressed that resource distribution is highly sensitive to big data analysis. This can be supported with the finding by Ortíz et al (2021) that analytics improve resource management, a scarce commodity in overloaded healthcare facilities. Furthermore, the absolute increase in the DM precision is 28%, and the increase in the effectiveness of the employees' work is 26% which prove the Tao et al. (2020) statement about the positive impact of CSDSS at increasing the accuracy and improving the time required for the medical decisions.

Barriers to technology adoption

The barriers identified in this study, therefore, align with existing barriers documented in the literature for a long time and included high costs of home care, lack of training, and interoperability of home tele-care systems. High costs, cited as the most important challenge



(identified by 60% of the administrators), are consistent with the observations of Adler-Milstein and Huckman (2013) where financial pressures were cited as the reason that technology adoption may be slow and occur later in 'smaller and resource-constrained healthcare organizations (Sarkar & Mateus, 2022).

The lack of training that was stated by 50% of nurses coincides with Regmi & Jones et al. (2020) systematic review, where too limited and insufficient training opportunities were reported as the problematic issue concerning technology implementation. Problems with interconnection with other healthcare IT systems noted by 65% respondents are also in line with Omboni et al. (2022), stressing on the need for the development of systems compatible with the existing platforms supporting effective and efficient work flow. As feared by 70% of administrators, data security issues affect the expectations, consistency and success of working in telehealth since issues to patient privacy with advancing digital technology devices as highlighted by Khatiwada et al. (2024). Lack of readiness for change as found by Edmondson with 40 % of administrators confirms Rogers, Diffusion of Innovations, which specifies that the adoption rates are slow because of cultural and behavioral resistance from the users especially those of the older age. Comparison with Previous Studies as aforementioned, this study is designed to add a new voice to the increasing number of studies that present data analysis of math students' academic achievement of different genders in elementary school.

At the same time, the results of the presented study contribute to the strengthening of prior findings and provide some new knowledge. For a more nuanced understanding of the how technology can improve human efficiency in their work and display concrete results, the authors follow worker-specific breakdown of the efficiency gains specific to particular tasks, such as patient documentation and disease surveillance (Thorpe & Jacobson, 2020). Further, the study is not limited to a single healthcare profession, as most previous studies are, but involves nurses, other public health workers, and administrators, and therefore, presents the pattern and issues concerning adoption more holistically.

Implications for Policy and Practice

The results emphasize the importance of further investigations into how technology-based strategies can be implemented effectively in low incidence areas. Than the subsidies and funding mechanisms may help to solve the problem of the financial difficulties for healthcare establishments, especially small ones. Substantive skills development activities should be established where by training the healthcare staff so that they understand how to use the tools appropriately (Bradley et al., 2021). Lastly, interoperability issues and data sharing versus



concerns, which might be solved by encouraged utilization of protocols and fair cybersecurity disincentives, could improve trust and functionality.

Future Directions

Further research should focus on analyzing the effects of future technologies on the intended patient benefits and should discover how machine learning and blockchain technologies might help to solve problems of interoperability and data security. This research could be extended to cross-sectional studies across different regions and aspects of different healthcare settings to better situate these conclusions in policy terms. Finally, this research underscores the idea of the numerous opportunities that exist in the application of modern technologies in delivery of health care services despite the numerous hurdles that exist in the system (Lehoux et al., 2018). These findings provide important recommendations for any policy maker, health care, and technology executives and any other individuals and organizations seeking to enhance specified health disciplines through innovation (Pereno & Eriksson, 2020).

Table 7: Comparative analysis of key features in our research versus prior studies on modern health technologies

Citations	Focus on Multi-disciplinary Approach (Nursing, Public Health, Health Management)	Mixed-Methods Research (Quantitative + Qualitative)	Comprehensive Analysis of Technology Adoption Barriers	Empirical Validation with Diverse Stakeholders	Cross-Disciplinary Comparison of Technology Impacts
Our Work	✓	✓	✓	✓	✓
Leeftink et al., 2020	✓	X	✓	X	X
Weitkamp, & Bodenmann et al., 2022	✓	X	X	X	✓
Whitelaw et al., 2021	X	✓	X	X	X
Talwar et al., 2023	X	X	✓	✓	X
Nordgreen et al., 2021	X	X	X	X	✓



Our work differs by adopting a multi-disciplinary approach, which arises from nursing, public health, and health management sciences; in contrast, previous research by Leeftink et al. (2020) and Weitkamp & Bodenmann, (2022) primarily drew from nursing and a few other fields. Also, we used a quantitative and qualitative study approach, which is different in previous studies including Whitelaw et al., 2021, Patel et al., 2019. Additional benefits of our study are more elaborated insights into the nature of technology adoption barriers, including cost, training, and resistance, which were partly investigated in the prior similar studies such as Martinez et al. (2020). Moreover, we confirm our work with various population groups, presenting data collected from scholarly sources and from a more restricted range of nurses, public health workers, and administrators compared to other studies. Last but not the least, the systematic comparison of the effects of technology in this study across various health disciplines is novel given that many comparable look at studies in this space do not involve such extensive comparison. Therefore, this research provides an answer to these gaps and provides a better understanding and view of modern health technology adoption.

CONCLUSION

This research shows the relevance of the contemporary technologies in optimizing the performance, partnership, as well as effects in the nursing, public health, and health care management disciplines. A high percentage of its users show that they embrace various applications such as EHR 92% and telemedicine 75%. The benefits of these technologies include efficiency gains, including a 35 per cent increase in disease surveillance efficiency. Qualitative results also support such benefits as increased workflow and communication while pinpointing such threats as high costs and insufficient training. The results contribute to the validation of the research objective because the facts provided indicate that understanding of modern technologies enhance the delivery of healthcare a lot, yet still, there are barriers to the full, successful exploitation of those technologies. Despite significant amounts of literature and evidence showing the importance of the issues examined in the study, the situation remains characterized by constant stakes, and the study fully fits the need for practical recommendations regarding the suggested strategies for overcoming these obstacles. These findings provide a strong framework for policy makers and healthcare organisations to focus on the upside potential as well as the barriers to implementation of these new technologies.

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