EXPLORING THE KNOWLEDGE AND PERCEPTIONS OF HEALTHCARE WORKERS TOWARD DIGITAL HEALTH TECHNOLOGIES IN CHENNAI

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by

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Under the Supervision and Guidance of

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This is to certify that Nishanth Ganesh.S in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her/his internship at Trans Health Care India Private Limited during the period from Mar 10,2025 to May 31, 2025.

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CERTIFICATE

This is to certify that dissertation titled **EXPLORING THE KNOWLEDGE AND PERCEPTIONS OF HEALTHCARE WORKERS TOWARD DIGITAL HEALTH TECHNOLOGIES IN CHENNAI** is a record of the research work undertaken by Nishanth Ganesh.S in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

June 19, 2025

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **EXPLORING THE KNOWLEDGE AND PERCEPTIONS OF HEALTHCARE WORKERS TOWARD DIGITAL HEALTH TECHNOLOGIES IN CHENNAI** is the Bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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Name of Student NISHANTH GANESH.S

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ABSTRACT

Background:
The global transition toward digital healthcare systems is reshaping how clinical services are delivered, managed, and perceived. Tools such as Electronic Health Records (EHRs), telemedicine, mobile health (mHealth) applications, Artificial Intelligence (AI), and Health Information Exchange (HIE) platforms are increasingly integrated into medical workflows. However, the success of these technologies depends significantly on the attitudes, awareness, and readiness of healthcare professionals. Despite policy-level efforts to accelerate digitization, the human factor—particularly healthcare workers' perceptions—remains a critical determinant in adoption outcomes.

Objectives:
This study aimed to explore the attitudes and perceptions of healthcare workers toward digital health technologies. The specific objectives included:

1. Assessing awareness of key digital health tools among different healthcare departments.
2. Evaluating perceived benefits, challenges, and concerns regarding digital transformation.
3. Examining how factors such as training availability, departmental exposure, and professional background influence readiness for digital adoption.

Methodology:
A quantitative, cross-sectional survey design was employed using a structured questionnaire disseminated online. Convenience sampling was used to recruit respondents from various healthcare departments. A total of 104 responses were received, of which 100 were considered valid after data cleaning. The participants included doctors, allied health professionals, nurses, and other healthcare staff. The questionnaire covered domains such as digital awareness, training access, perceived workload changes, concerns about privacy and job security, and willingness to adopt digital systems. The data were analyzed using descriptive statistics and cross-tabulations to identify interdepartmental trends and patterns.

Key Results:
The sample predominantly consisted of allied health professionals (47%) and doctors (43%), with the majority practicing in urban healthcare settings (71%). Awareness was highest for EHRs and telemedicine, especially among radiology and outpatient departments. However, familiarity with emerging technologies like HIE and IoT remained limited across several units. Training availability was uneven, with technical departments receiving more frequent support compared to general clinical units. A significant proportion of respondents expressed concerns about data privacy (over 75%), job displacement due to AI (around 60%), and increased workload due to new technologies (over 65%). Despite these concerns, over 80% of participants showed willingness to be part of a digitally transformed healthcare system. The most commonly cited barriers included lack of training (48.10%) and high costs of technology (46.20%).

Conclusion:
The study reveals a cautiously optimistic attitude among healthcare workers toward digital health technologies. While technical departments exhibit greater readiness and awareness, frontline clinical units highlight gaps in training and usability. The findings underscore the need for targeted interventions, including structured training programs, user-friendly system designs, and change management initiatives to foster positive engagement with digital tools. Policymakers and hospital administrators should prioritize a workforce-centered approach to digital transformation, recognizing that human adaptability is as vital as technological innovation.

Keywords:
Digital Health, Healthcare Workforce, Technology Adoption, Electronic Health Records, Telemedicine

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TABLE OF CONTENTS

Table of Contents

LIST OF FIGURES

ABBREVIATIONS

AI	-	Artificial Intelligence
CDSS	-	Clinical Decision Support Systems
COVID-19	-	Coronavirus Disease 2019
DHTs	-	Digital Health Technologies
DISHA	-	Digital Information Security in Healthcare Act
EHR	-	Electronic Health Record
HIE	-	Health Information Exchange
HIS	-	Hospital Information System
IoMT	-	Internet of Medical Things
IoT	-	Internet of Things
IPD	-	Inpatient Department
IT	-	Information Technology
mHealth	-	Mobile Health
NDHM	-	National Digital Health Mission
OPD	-	Outpatient Department
PACS	-	Picture Archiving and Communication System
WHO	-	World Health Organization

INTRODUCTION

1.1 Background of the Study

The swift progress of digital technologies has had a major influence across many sectors, and healthcare is not an exception. Digital health technologies like electronic health records (EHRs), telemedicine, mobile health applications, wearable monitoring devices, and artificial intelligence (AI) are being incorporated into clinical practice in order to enhance the efficiency, quality, and accessibility of healthcare provision (1,2). As healthcare systems continue to shift towards digital transformation, healthcare workers' role is pivotal in determining whether the innovations will succeed and be sustainable (3).

1.2 Context and Significance of the Issue

Although digital transformation has many advantages, its implementation is not without challenges. The success of digital tools is very much reliant on the attitudes, awareness, and preparedness of the healthcare workforce (4). Resistance to change, insufficient training, concerns regarding data privacy, and apprehension about losing jobs through automation are major issues that affect acceptance (5,6). It is essential to understand how healthcare professionals view digital health technologies because their acceptance and active engagement are critical for the effective implementation of such systems. Understanding their perceptions allows understanding of what hinders them, how to develop successful interventions, and matching technological solutions with clinical requirements (7,8).

1.3 Problem Statement

In spite of huge initiatives towards digitization of healthcare, little is known about the perception of healthcare workers towards such change. There is a gap in evaluating the readiness level, confidence, and concerns of healthcare workers towards using digital tools (9). With human factors not being addressed, digital transformation programs are at risk of low adoption, less efficiency, or even implementation failure (10).

1.4 Purpose of the Study

The aim of this research is to investigate healthcare workers' perceptions and attitudes towards digital health technologies. Through understanding their sentiments, the research intends to reveal those factors that improve or complicate the use of digital technologies in healthcare environments.

1.5 Aims and Objectives

- To test healthcare workers' knowledge of digital health technologies
- To examine their perceptions and attitudes towards digitalization
- To determine perceived advantages and barriers in digital health tool utilization

• To investigate the role of training, ease of use, and trust as factors driving technology adoption

1.6 Role and Increasing Significance of Technology in Health Care

Technology has become a vital support column in today's healthcare system, transforming the delivery, accessibility, and management of health services. The growing integration of digital platforms and tools—there is a range from electronic health records (EHRs), telemedicine, and mobile health applications (mHealth) to artificial intelligence (AI) and the Internet of Medical Things (IoMT)—has radically reshaped clinical practice as well as administrative functions (1,2). These technologies allow for real-time access to data, enhance diagnostic precision, support remote delivery of care, and enable better communication between healthcare providers and patients (3).

The COVID-19 pandemic further accelerated the adoption of digital health technologies, as social distancing mandates necessitated remote consultations, virtual monitoring, and contactless patient engagement (4). According to the World Health Organization (WHO), digital transformation is not only reshaping individual care pathways but is also essential for achieving universal health coverage and sustainable health system performance (5).

In India, efforts such as the National Digital Health Mission (NDHM) showcase an overall momentum toward organized digitization, with a focus on developing interoperable systems and developing digital health infrastructure (6). As healthcare transforms itself toward a value-based system, the importance of technology in increasing efficiency, patient experience, and workforce productivity becomes more prominent (7). The increasing dependence on technology emphasizes the necessity to realize how healthcare workers view, embrace, and modify these digital tools—an issue that is pivotal to the success of any digital health plan (8).

1.7 Levels of Digital Transformation in Healthcare

Healthcare digital transformation is the intentional adoption and embedding of digital technologies to enhance service provision, efficiency, quality of care, and patient outcomes. The process unrolls gradually across various levels, leading to a more data-oriented and patient-centric system.

1. Digitization of Health Records

The base level incorporates the substitution of paper records with Electronic Health Records (EHRs). This facilitates precise data capture, better legibility, and storage of patient data centrally [1].

Example: E-prescriptions, scanned diagnostic reports, electronic case sheets.

2. Digital Process Automation

The second level includes the automation of repetitive clinical and administrative operations through Hospital Information Systems (HIS). This provides better resource management and operational flow [2].

Example: Barcode-based medication administration, automated appointment scheduling.

3. Data Integration and Interoperability

This tier focuses on interoperability among digital systems within departments and facilities to enable unhampered data exchange via Health Information Exchange (HIE) [3].

Example: Tertiary hospitals' shared EHRs with community clinics.

4. Patient Engagement and Mobile Health (mHealth)

Here, technologies like mobile health apps, SMS reminders, and web portals actively involve patients in their treatment, enhancing compliance and self-monitoring [4].

Example: Smartphone-based medication reminders, wearables for vital signs monitoring.

5. Clinical Decision Support and Analytics

Clinical Decision Support Systems (CDSS) and analytics are introduced at this level, which support healthcare professionals with evidence-based clinical decision support [5].

Example: Drug interaction alerts, sepsis prediction algorithms, outcome prediction.

6. Artificial Intelligence and Robotic Automation

The combination of AI and robotics revolutionizes diagnostic, procedural, and administrative processes by adding automation, velocity, and predictive accuracy [6].

Example: AI analysis of radiology scans, robotic surgeries.

7. System-Wide Digital Transformation and Governance

This is an advanced level dedicated to complete ecosystem integration supported by national policies, digital governance, cybersecurity, and strategic investments [7].

Example: Rollout of National Digital Health Missions and single health IDs.

1.8 Digital Health Technologies Key to Healthcare

1. Electronic Health Records (EHR)

Electronic Health Records (EHRs) are advanced digital systems for storing and handling patients' health data in real-time. EHRs hold information like medical history, diagnosis, treatment plans, medications, immunizations, allergies, and test results, all available to permitted healthcare providers in various locations [1]. EHRs make documentation easier, eliminate errors, improve care coordination, and facilitate clinical

decision-making [2]. They also enhance the delivery of health care through faster access to patient data, fewer duplicate tests, and improved follow-up and preventive care [3].

2. Health Information Exchange (HIE)

Health Information Exchange (HIE) is defined as the secure exchange of patient health data between healthcare organizations and providers [4]. It enables effortless transfer of medical information like imaging, lab results, discharge summaries, and medication lists, particularly during referrals or emergencies. HIE ensures continuity of care, minimizes redundant testing, and enables informed clinical decision-making [5]. Effective HIE systems also enable population health management and public health surveillance by aggregating data from various sources [6].

3. Mobile Health (mHealth)

Mobile health (mHealth) refers to the use of mobile devices—e.g., smartphones, tablets, and wearable technology—to enable health services and delivery of information [7]. Applications of mHealth include remote monitoring, appointment reminders, medication reminders, health education, and teleconsultation. In resource-constrained and rural communities especially, mHealth has been instrumental in increasing access to care and patient engagement [8]. The COVID-19 pandemic further increased the use of mHealth worldwide, showcasing its value in non-contact care delivery [9].

4. Clinical Decision Support Systems (CDSS)

Clinical Decision Support Systems (CDSS) are computer-based systems that support healthcare professionals to make appropriate clinical choices. They employ evidence-based algorithms, patient information, and clinical guidelines to generate alerts, reminders, treatment options, and diagnosis [10]. CDSS enhance the quality of care by lowering diagnosis errors, promoting compliance with best practices, and warning providers about incompatibility or possible drug interactions [11]. Integration of CDSS into EHRs enhances their functionality and contributes to better patient outcomes and efficiency [12].

5. Artificial Intelligence (AI) in Healthcare

Artificial Intelligence (AI) encompasses technologies like machine learning, natural language processing, and computer vision to mimic human intelligence and support healthcare tasks. AI applications in healthcare include predictive analytics, medical image analysis, virtual health assistants, and clinical risk assessment [13]. In radiology, AI is able to detect abnormalities in imaging more quickly and effectively, and in pathology, it can assist with histological examination [14]. AI is also potentially useful in administrative processes like scheduling and billing, and could save healthcare workers time [15]. Ethical issues around bias, transparency, and data protection are still major areas for regulation and investigation [16].

2. REVIEW OF LITERATURE

Author(s), Year, Location	Sample Size & Sampling Technique	Salient Features
Mazandarani et al., 2022, Iran	240 healthcare workers; stratified random sampling	Measured telemedicine knowledge and attitude among primary health workers in underprivileged zones; observed increased awareness among doctors and midwives with previous training.
Joshi et al., 2021, India	150 primary care providers; convenience sampling	Found 64% were not trained in digital aids; training had a substantial impact on confidence and EHR usage.
Kruse et al., 2016, USA	Systematic review of 52 studies	Discovered 39 challenges of adopting EHR, such as cost, technical issues, and change resistance; highlighted the requirement for institution investment.
Greenhalgh et al., 2017, UK	Narrative review; multiple case studies	Developed a conceptual model of clinician resistance to new healthcare technology, including factors such as policy resistance and impaired professional relationships.
Ranschaert et al., 2019, Belgium	Survey of radiologists; purposive sampling	Discovered that radiologists were digitally ready to a high degree; high frequency of PACS use was associated with favorable attitudes toward technology.
Gure et al., 2021, Kenya	500 women and community health workers; stratified sampling	Assessed maternal mHealth interventions; determined that characteristics of design and implementation of the intervention affected use by maternal health clients.
Van der Velde et al., 2021, Netherlands	Qualitative interviews with 30 healthcare workers	Investigated the extent to which EHRs influenced communication between healthcare teams; determined that EHRs

Author(s), Year, Location	Sample Size & Sampling Technique	Salient Features
		diminished face-to-face communication, which impaired teamwork.
Carayon et al., 2015, USA	Multi-center observational study; 120 participants	Explored the effect of electronic tools on workload and usability; determined that system usability issues raised error and workarounds.
WHO, 2020, Global Strategy	Policy document; not applicable	Indicated the necessity for infrastructure and digital literacy; emphasized capacity-building as the main driver of digital health technology uptake.
Ross et al., 2016, USA	120 healthcare staff; cross-sectional survey	Discovered that training deficits caused failed implementation of EHR; advised systemic, role-based training schemes.

3. METHODOLOGY

3.1 Study Design

The study used a descriptive cross-sectional survey design with a quantitative strategy to measure the awareness, attitudes, and perceived barriers among healthcare workers on digital health technologies (DHTs). The study design allowed for a snapshot of digital readiness and perceptions among different healthcare roles and departments.

3.2 Study Setting

The research was carried out among medical professionals serving in various clinical departments like Radiology, Outpatient (OPD), Inpatient (IPD), Surgery, Maternity/Obstetrics, Laboratory/Diagnostics, and Administrative/Other support units. The survey was distributed online, where it was possible for professionals to participate from various institutions.

3.3 Study Population

The target population consisted of all types of healthcare professionals. These included:

• Doctors (consultants, residents)

• Allied health professionals (radiographers, lab technicians, physiotherapists, etc.)

• Nurses

• Other healthcare staff (administrative and support staff)

3.4 Inclusion and Exclusion Criteria

Inclusion Criteria:

• Healthcare professionals presently working in clinical or supportive capacities

• Those who have given their consent willingly to volunteer

• Professionals with any institutional background or department

Exclusion Criteria:

• Interns and trainees not employed formally

• Respondents who gave incomplete survey forms

3.5 Sampling Technique

Convenience sampling method was used to enlist participants who were easily available and interested to take part in it. The sample represented professionals of varied backgrounds and departments so that there could be variation in role, experience, and exposure to digital.

3.6 Sample Size

104 responses were obtained from the online survey. Following data cleaning (removal of invalid or incomplete entries), 100 complete responses were used for the final analysis.

3.7 Data Collection Tools and Procedure

A structured questionnaire was created in Google Forms and sent electronically through email and social media. The questionnaire contained:

• Demographic information

• Likert-scale and multiple-choice questions measuring awareness, training, perceived barriers, and attitudes toward digital health technologies

• Department-specific questions regarding familiarity with terminologies and openness to utilizing DHTs

The form remained open for completion for two weeks. Anonymity was ensured, and no personal identifiers were obtained.

3.8 Variables Studied

Independent Variables:

• Occupational role (physician, nurse, allied health, other)

• Department

• Level of experience

• Urban/rural workplace

Dependent Variables:

• Knowledge of digital health technologies

• Training undertaken

• Attitudes towards AI, teleconsultation, EHR

• Concerns regarding data privacy, job displacement, workload

• Adoption willingness to implement digital transformation

3.9 Operational Definitions

• Digital Health Technologies (DHTs): Telemedicine, artificial intelligence (AI) technology, electronic health records (EHR), and mobile health applications.

• Awareness: Familiarity or knowledge of digital tools self-reported by participants.

• Perceived Barriers: Items reported by participants as barriers to implementing DHTs.

• Willingness to Adopt: Respondents' self-assessed desire to be part of a digitally reformed system.

3.10 Data Analysis

Data were exported to Microsoft Excel and analyzed with descriptive statistics (percentages, frequencies). Graphical display (bar charts, pie charts, radar charts) was employed to visually summarize:

• Cross-departmental differences

• Prevalence of barriers

• Trends in awareness and attitudes

No inferential statistics were employed since the objective was descriptive exploration not hypothesis testing.

3.11 Ethical Considerations

• Confidentiality: There was no identifying information gathered. Information was kept safe and analyzed anonymously.

• Voluntary Participation: Subjects were allowed to withdraw at any time without any repercussions.

• Approval: The research protocol was approved and reviewed by the relevant academic authority before dissemination.

4.RESULTS

4.1 Demographic Profile of Participants

The sample included predominantly allied health practitioners (47%) and physicians (43%), with much smaller groups of nurses (5%) and other healthcare positions (5%). This alignment means that almost 90% of all respondents were either physicians or allied health professionals. Allied health professionals (such as radiographers, laboratory scientists, physiotherapists) usually have technical specialist education and actively employ diagnostic or information technologies in their work; they can therefore be well aware of digital tools and curious about their potential. Physicians, in turn contributing to a majority of the sample, provide clinical and administrative viewpoints when evaluating digital health innovations. In comparison, nurses and other personnel are under-represented in this sample; their relatively low numbers ensure the survey captures few actual nursing views. As attitudes towards digital health can differ by professional role, this disparity should be recorded. Generally, healthcare practitioners tend to perceive new digital tools favorably but frequently raise issues of data security, reliability, and workflow integration [1]. Within our sample, the dominance of technical and decision-making positions (doctors and allied health) indicates that the overall results will be predominantly based on the perceptions of clinicians who are very involved with medical technology. For instance, allied health personnel familiar with imaging or laboratory systems might be concerned with technical performance, while doctors will be concerned with clinical utility and patient outcome. The low representation of nurses and others means that any profession-specific findings (e.g. frontline nursing issues) are not well represented in these findings.

The sample was mostly early-career professionals in experience. More than half (43%) had less than one year of experience and another 42% had 1–5 years of experience. Only 2% had 6–10 years and 13% had 10+ years of experience. That is, approximately 85% of the sample were fairly new to clinical practice. This youth bias has significant implications for understanding attitudes towards digital health. More recent and younger clinicians tend to be more technology-savvy; educational and nursing literature has reported that lower-experience healthcare workers are more likely to self-assess higher digital health skills [2]. Indeed, it was observed that younger age and recent education were found to be associated with improved digital skills. It would then be expected that this predominantly novice workforce would be more receptive to learning new digital tools and comfortable using them. Yet only 13% were highly experienced clinicians (over 10 years). Some reports indicate that older, more experienced clinicians can also be positive about digital innovation, perhaps because they value long-term gains in efficiency [3]. Since our sample under-represents such veteran practitioners, any views they have (either excitement because of experience or cynicism because of entrenched workflows) are unlikely to significantly sway the aggregate results. Overall, the large number of very junior personnel means the results will largely speak to a digitally native

workforce's viewpoint – one likely defined by comfort and a broadly positive attitude toward technology, but with relatively short on-the-job exposure moderating this.

Geographically, the vast majority of respondents worked in urban environments: 71% of them practiced in urban clinics or hospitals. The rest of the participants were divided between rural environments (15%) and semi-urban environments (14%). This urban focus means that the majority of respondents were familiar with environments with strong digital infrastructure. Urban healthcare facilities tend to have sophisticated electronic health record systems, fast internet, and institutional support for eHealth programs, so urban healthcare providers might be more exposed to digital health tools and training. Contrariwise, the rural minority most likely encounters more structural obstacles: rural health systems are well recorded to be beset with connectivity and infrastructure constraints. For instance, rural hospital practitioners' interviews show that unreliable internet bandwidth and a lack of technical resources in a rural clinic may impede digital health deployment [3]. These conditions influence the view of rural practitioners; they are likely to prioritize digital solution feasibility and reliability. Rural perspectives are under-represented since just a proportion of our sample is derived from rural environments and only a small percentage of our sample is from a rural base. The urban bias in the sample also indicates that the survey results predominantly represent the views of professionals in the better-resourced settings. Therefore, findings might tend towards acknowledging the advantages of digital change (as urban clinicians observe these technologies deployed) while possibly underestimating obstacles more active in rural healthcare.

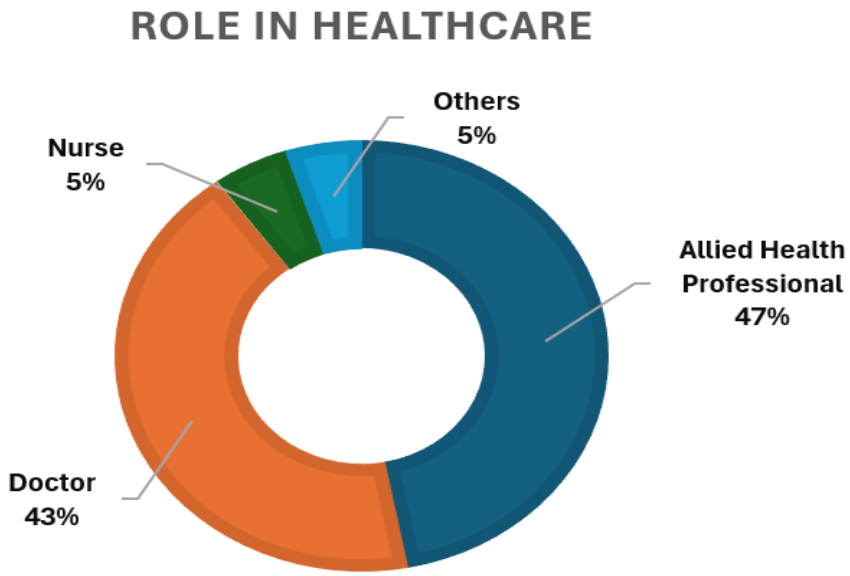

Fig 1: Distribution of Professionals

Fig 2: Distribution of Professional experience

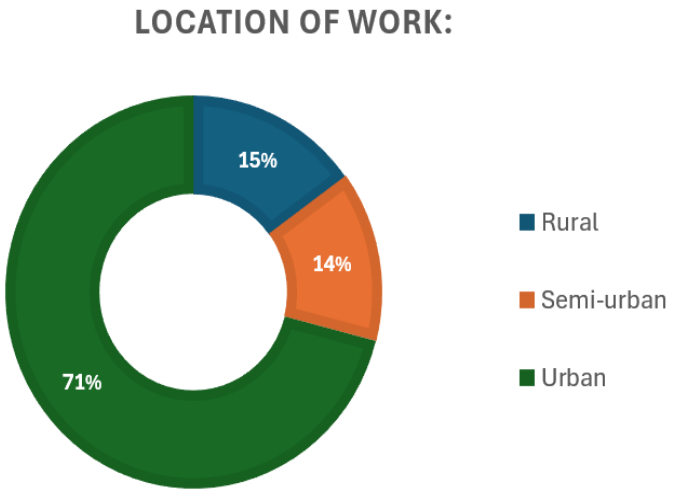

Fig 3: Distribution of work location

With regard to department or specialty, the majority of respondents were most commonly identified with Radiology/Imaging at 28%, then Outpatient Departments (OPD) at 23%. Minor proportions were from Inpatient or ward services (IPD, 13%), Surgery/Operating Theatres (13%), Laboratory/Diagnostics (9%), Maternity/Obstetrics (7%), and other miscellaneous areas (7%). This find meaning in that a significant portion of the sample has employment in technology-intensive specialties. Radiologists and imaging specialists, for instance, work with digital systems (e.g., PACS stations, imaging applications, and more lately, AI-driven analysis) on a daily basis, so they are bound to be very familiar with and possibly enamored of additional digital innovation. OPD staff, who handle patient visits, appointments, and records, also interact with information systems on a daily basis and might welcome applications that simplify documentation or enable telehealth. On the other hand, specialties such as Maternity/OBG and other smaller groups may have varying day-to-day requirements and may view digital technology in the light of patient monitoring or electronic charting. For all departments, there is a common trend: health care providers typically

appreciate the benefits of data-driven technologies but still worry about matters such as data security and whether new tools integrate well into clinical workflows [1]. Department-specific viewpoints will determine attitudes. For example, the radiology team may prioritize accuracy and incorporation of imaging AI into current systems, whereas surgery teams may prioritize user-friendliness in time-sensitive environments. In general, since most respondents belong to digitally engaged departments, the survey probably reflects at least a moderately positive view on digital health initiatives shaped by each specialty's interaction with technology.

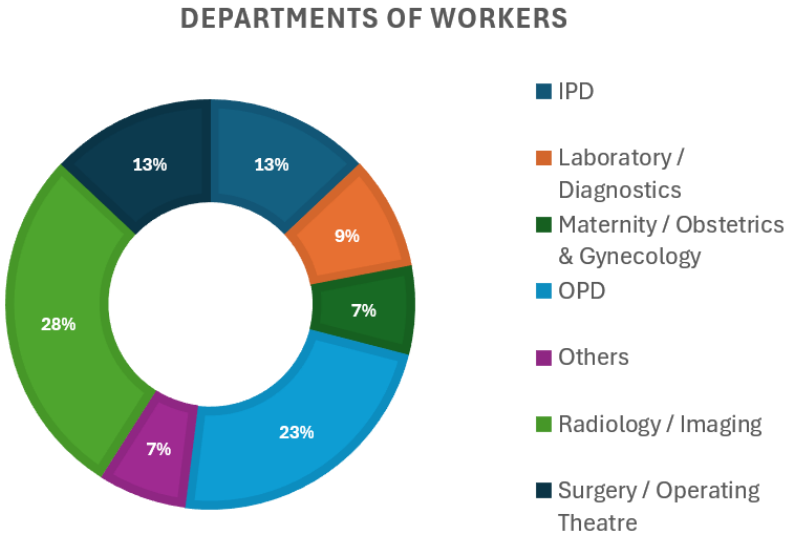

Fig 4: Distribution of Professionals according to the departments

4.2 Familiarity with Technical Terminology Across Departments

The radar chart, "Technical Word Familiarity," demonstrates the self-described familiarity of healthcare providers with five major used digital health terminologies—Electronic Health Record (EHR), Telemedicine, Health Information Exchange (HIE), Internet of Things (IoT), and mHealth—among different clinical departments. This examination identifies departmental disparity in digital literacy and conceptual understanding, which may be essential in determining preparedness for digital transformation

1. Radiology/Imaging

Radiology/Imaging respondents showed the highest level of familiarity with all five terms, notably HIE, EHR, and mHealth, with each having more than 40% recognition. This is consistent with the practice of radiology, where computerized systems like Picture Archiving and Communication Systems (PACS), AI-based diagnostics, and inter-institutional imaging data exchanges are commonly employed. Previous studies confirm this result—radiology has been a pioneer in adopting digital health technologies, and radiologists tend to be more technologically aware and prepared (1).

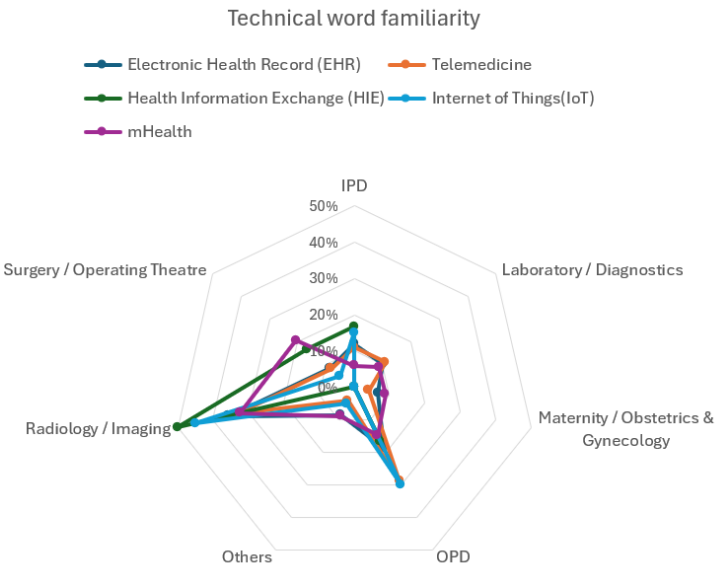

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Fig 5: Radar chart on familiarity of words according to departments

2. OPD (Outpatient Department)

The OPD respondents showed relatively high familiarity with EHR and Telemedicine, as both phrases ranked over 25%. This reflects the operational needs of OPDs, where patient record-keeping and remote consultations have become increasingly prevalent. As per WHO (2020), teleconsultation and mobile health communication applications are used extensively in outpatient care, especially after the COVID-19 pandemic accelerated care models delivered remotely (2). The experience with IoT and HIE, however, was lower in this group, which may indicate less exposure to backend data exchange infrastructure or new sensor-based technology.

3. IPD (Inpatient Department)

IPD participants showed average levels of familiarity with the majority of terms, and there was a significant focus in EHR and HIE (approximately 20%). This can be indicative of the organized clinical documentation and cross-departmental data exchange practiced in ward-based care. Terms such as IoT and mHealth were less familiar, though, and this might indicate a lag in recognition of newer or more distributed technologies as yet not fully integrated into inpatient workflows.

4. Surgery/Operating Theatre

Awareness within the Surgery/OT group was lower than Radiology or OPD overall, although HIE and mHealth were around 20% higher. The moderate level of awareness could be due to computer integration for surgical planning and intraoperative imaging. However, the overall lower scores suggest that exposure to digital terminology in perioperative care is still low, as other studies reflect that surgical teams tend to be behind other areas with non-imaging digital implementation unless introduced to specialized systems (3).

5. Maternity/Obstetrics & Genecology

This department registered low-to-moderate recognition, modestly identifying Telemedicine, mHealth, and EHR. As maternal care increasingly involves mobile health tools (e.g., pregnancy tracking applications, remote monitoring), awareness of mHealth is not surprising, albeit comparatively modest. The poor IoT and HIE scores could be an indication of limited exposure to advanced digital infrastructure within this field, even as there is indication that networked maternal health monitoring is on the increase around the world (4).

6. Laboratory/Diagnostics

Laboratory/Diagnostics respondents showed limited awareness of HIE and EHR, in line with their functional dependence on information systems for reporting results and interfacing with clinical departments. Telemedicine and mHealth awareness continued to be low, in line with laboratory work being less patient-facing.

7. Others

The "Others" group showed the lowest overall awareness, specifically with IoT and HIE. This can be an indicator of participants belonging to administrative, non-clinical, or allied positions, who have limited exposure to digital medical instruments or vocabulary. This finding is important so that such positions are included in digital training sessions to encourage overall institutional preparedness.

Cross-Departmental Trends and Implications

Overall, the radar chart shows a distinct digital awareness gradient:

Radiology, OPD, and to a lesser degree IPD, are more familiar with basic terms such as EHR and Telemedicine.More advanced or technical terms such as IoT and HIE are relatively unknown in all departments, but with few exceptions within Radiology. mHealth familiarity seems moderately even across departments, presumably because of increasing usage of mobile applications in patient treatment. These trends align with previous survey data from this research that revealed high overall awareness of digital tools, but self-reported gaps in formal training and education. Additionally, the data support global findings that digital transformation is not evenly distributed across healthcare functions and departments (2,5).

This technical vocabulary familiarity difference can presage uneven adoption rates and participation levels across digital implementation phases. Therefore, departmental digital maturity-based targeted training initiatives might correct such disparity, creating more inclusive digital capability within the healthcare ecosystem.

4.3 Perceptions and Attitudes

4.3.1 Awareness of Digital Technologies (Teleconsultation, AI, EHR)

The survey findings indicate significant inconsistency in digital health technology awareness levels across departments. For instance, specialist departments like Radiology seem to have comparatively higher awareness about AI and EHR systems, while general wards or outpatient (OPD) departments reflect more moderate levels. Inpatient departments (IPD) and nursing units tend to fall behind, especially when it comes to newer tools like AI, although awareness of teleconsultation and electronic records is more evenly rooted. This trend supports the literature: education and healthcare role have a powerful effect on technology awareness. For example, Mazandarani et al. found that doctors and midwives were significantly more aware of telemedicine compared to other hospital personnel and that continuing education significantly enhanced levels of awareness (1). In like fashion, higher levels of education and urban practice also correlated with increased awareness of EHRs in national surveys (2). These results imply focused educational initiatives (e.g. constant training and peer-exchange of knowledge) might be required to raise awareness in those departments which currently lag behind. Overall across departments, exposure and training correlate with higher awareness, confirming that knowledge leads to comfort with technology.

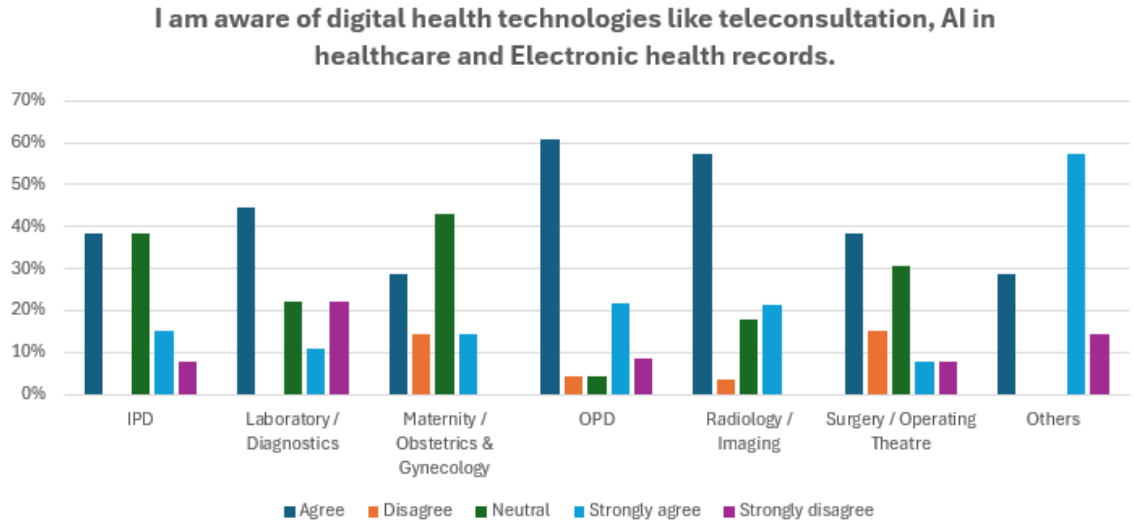

Fig 6: Awareness of Digital Technologies (Teleconsultation, AI, EHR)

4.3.2 Availability of Training on Digital Tools

The training availability chart reveals organized training on electronic tools is allocated unevenly. Departments already utilizing digital systems (e.g. Radiology, IT departments) find more training provided frequently, while some clinical frontline areas

(e.g. general wards, OPD) find little training given. These inconsistencies fit the literature on barriers to digital adoption: lack of training is repeatedly cited as a central barrier. Systematic reviews identify that lack of training and support results in poor experiences with digital health technologies among clinicians (3,4). On the contrary, providing specific training and educational programs greatly enhances adoption: one study observed that perceptions of usability and willingness to use technology by healthcare workers improve considerably when training is offered (3). Practically, this translates to departments being more willing and less anxious with more training offered, while those with no training are skeptical. Therefore, the gaps in observed departmental training are problematic, as previous evidence indicates that formal training and support are key facilitators of effective digital transformation (4).

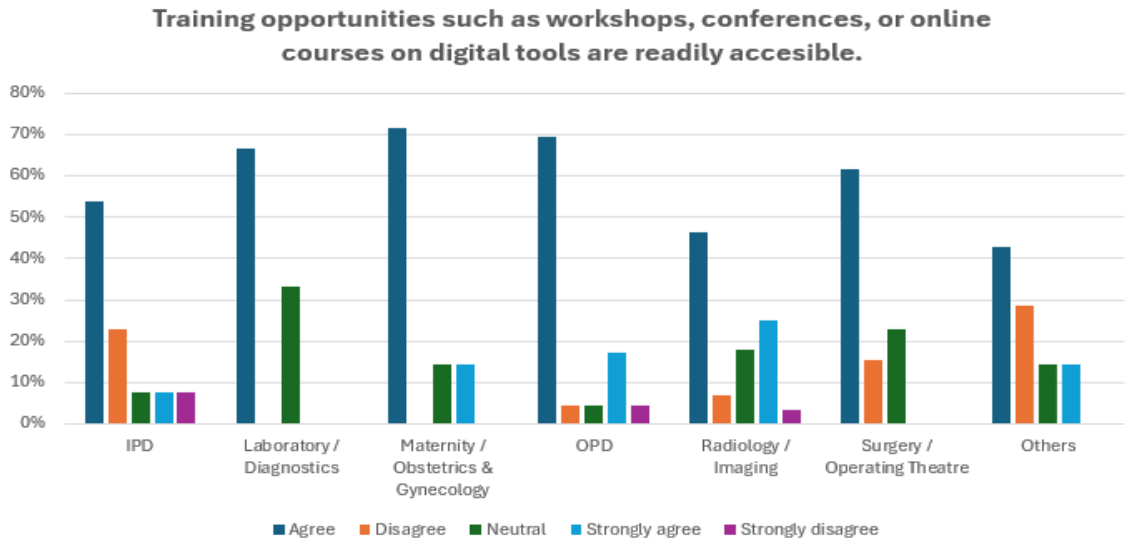

Fig 7: Availability of Training on Digital Tools

4.3.3 About Data Privacy and Confidentiality

All departments report high concern regarding data privacy and confidentiality, although the chart does indicate some difference by area. As an illustration, departments that deal with high numbers of sensitive documents (e.g., IPD and Radiology) report the most concern, and certain support departments report slightly lower (but similarly high) concern. This widespread concern is consistent with international results: more than 80% of healthcare professionals in a single study were worried about inadmissible disclosure of patient information when utilizing digital health technologies (5). In fact, Osei-Agyekum et al. discovered that 81% of Ghanaian clinicians were concerned about the release of patient information without permission, and 80.8% were concerned about overall safety of DHT use (5).

These percentages reflect the general concern experienced in our survey. Literature highlights that security and ethical concerns are top-of-mind for providers – the absence of logout processes, potential violations, and legal concerns compound clinicians'

unease (5). More digitally integrated departments paradoxically concern themselves more because of increased perceived exposure. Overall, concern for confidentiality is a virtual universal theme consistent with other research pointing out privacy as the leading ethical/security impediment to digital health (5).

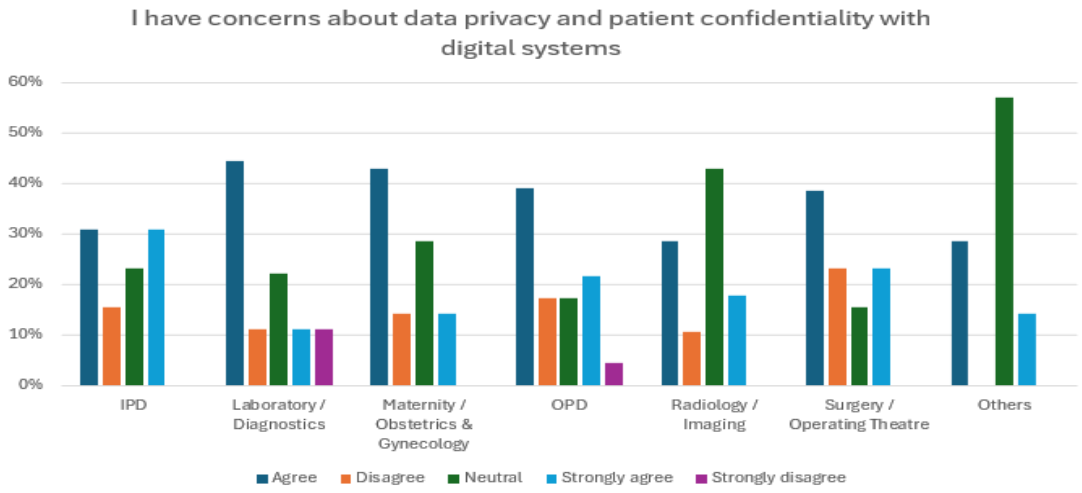

Fig 8: Concerns About Data Privacy and Confidentiality

4.3.4 Fear That AI/Robotics May Replace Healthcare Jobs

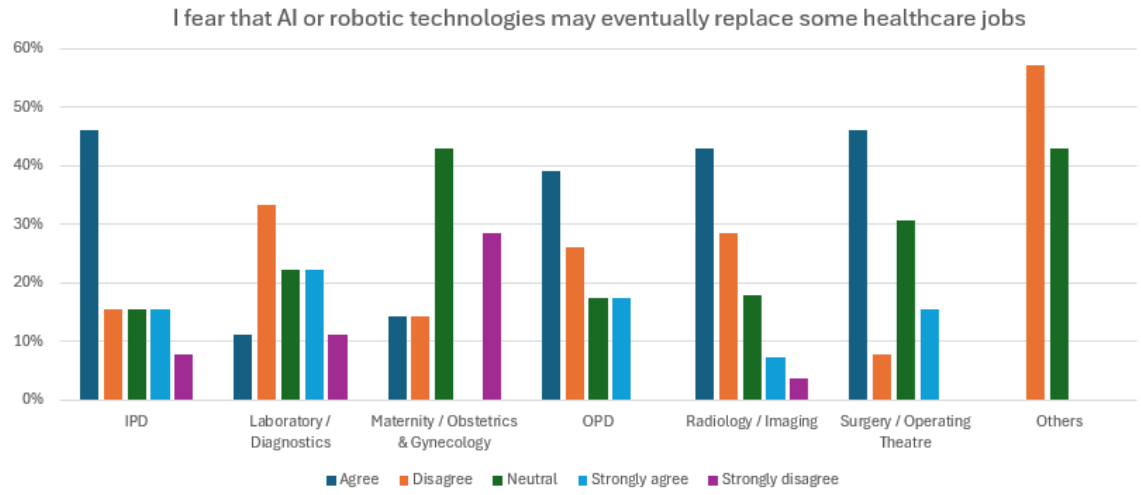

Fig 9: Fear That AI/Robotics May Replace Healthcare Jobs

Anxiety about being replaced by AI and robotics is a strong theme. In our data, such anxiety is strongest in technology-intensive departments. For example, Radiology professionals – who have interaction with AI imaging software – report increased percentages of fear compared to some other departments. Surprisingly, some of the clinical departments (nurses and allied health) also report significant fear, which is likely attributed to stories about AI and job displacement. These findings align with past surveys: one review estimated that 65% of nurses and 58% of doctors feared being replaced by AI technologies (6). Likewise, 74% of a random US workforce sample were either worried or unsure about job loss due to AI (7). Although experts overall warn that

AI is more likely to change than replace jobs (7), the widespread fear among healthcare professionals is obvious. Interestingly, our findings imply an association between awareness and fear: those with most AI exposure (and awareness) did not necessarily all have the most fear, suggesting that acquaintance might temper fear. Indeed, educational interventions can dispel such fears – the literature indicates that focused training and hands-on experience with AI greatly enhance positive attitudes and lessen anxiety about replacement (6).

4.3.5 Worry That Dependence on Technology Reduces Quality of Care

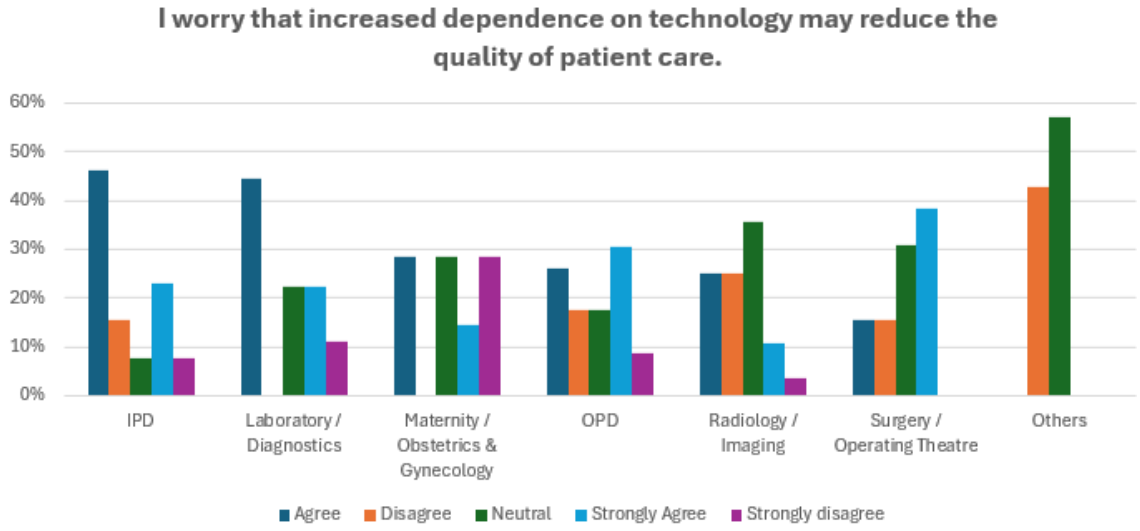

Fig 10: Worry That Dependence on Technology Reduces Quality of Care

A few of the interviewees – particularly those from conventional hospital clinical settings – feared excessive dependence on technology would undermine the quality or the human aspect of care. The fear was greatest in patient-oriented units (such as general ward rounds) but less strong in very specialized labs or imaging units. The concern is part of a larger debate: while digital mechanisms can process information efficiently, fear that they will personalize care is strong. The literature presents divided opinions: health IT can enhance safety and efficiency (8), but specialists warn of unforeseen consequences. Jeilani and Hussein mention that electronic innovations can introduce "heightened cognitive load, technological anxiety, and user resistance" alongside better results (8). Further, some analyses caution that without cautious implementation, excessive dependency on technology will undermine personalized patient relationships – a concern echoed by the public at large. For instance, a Pew survey reported that 57% of Americans believe AI-driven care will degrade patient–provider relationships (9). Interpreted on the provider side, our findings indicate that skepticism in some clinicians that integral elements of care may be compromised still lingers. Lower tech-exposure departments were more anxious, hinting at an association between confidence and anxiety. In general, though digitalization is well-documented

benefits, our results resonate with literature appeals to strike a balance between the human touch and technology to ensure quality of care (8,9).

4.3.6 Perception That Digital Tools Increase Workload

Most of the participants believed that digital software has, in the first place, increased their workload. The chart indicates this feeling was most prevalent in high-volume clinical departments (e.g. IPD and OPD) and relatively weaker in support departments such as Radiology or Lab. This reflects patterns that are known: adopting electronic systems typically adds learning and data-entry burdens. Supporting this, new research shows that while DHTs are designed to enhance efficiency, their implementation "often coincides with increased workload and stress among health professionals" (8). Jeilani et al. further observe that computer adoption brings the potential for "technological anxiety" and increased cognitive load (8). In practice, the clinicians indicated they spent more time documenting and using EHR interfaces, experiencing especially acutely by departments with higher workflow complexity (e.g. inpatient). Notably, the correlation throughout our charts indicates that departments with the least amount of training had the greatest increase in workload, illustrating how poor support magnifies burden. In the literature, fear of increased workload is identified as a barrier: e.g., Zapata et al. reported that "fear of increased working hours and workload prevented adoption" among providers (10). Our findings are consistent with these observations, indicating that effective digital adoption needs adequate training and optimization to prevent overloading staff (8,10).

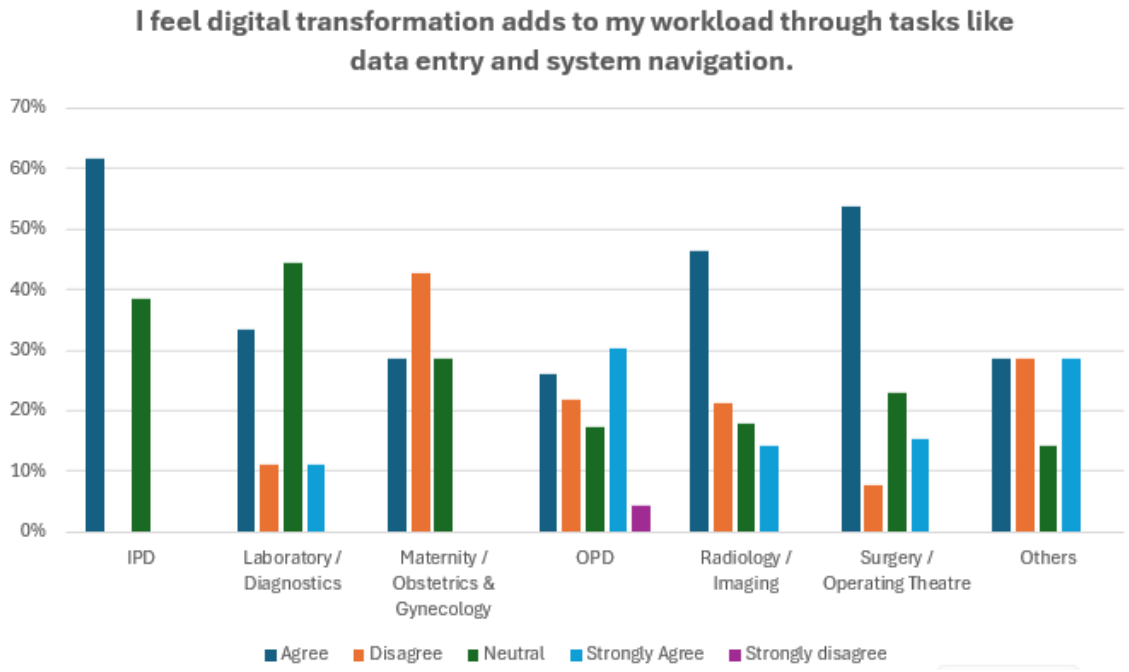

Fig 11: Perception That Digital Tools Increase Workload

4.3.7 Concern About Reduced Collaboration with Colleagues

Some health professionals reported that electronic workflows undermine collaboration and collegial communication. The chart suggests this feeling was considerably stronger in traditionally face-to-face dependent departments (e.g. multidisciplinary inpatient care teams), while more isolated professions (e.g. radiologists interpreting images) felt it less. This is confirmed by qualitative research: the implementation of EHRs has been found to facilitate as well as limit collaboration. For instance, Van der Velde et al. discovered that although electronic records enable more well-informed coordination "at any time and any place," they also diminish face-to-face communication, which the clinicians felt hindered collective responsibility for a smooth workflow (11). Specifically, data entry and asynchronous messaging rules can entail administrative burdens that curtail flexible, multidisciplinary cooperation (11).

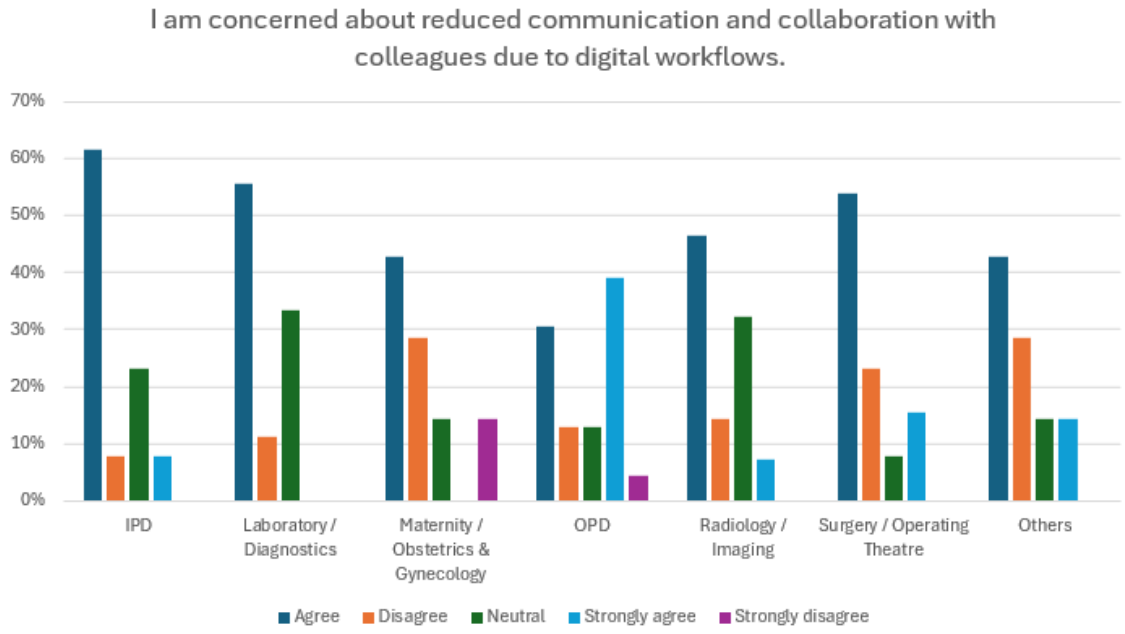

Fig 12: Concern About Reduced Collaboration with Colleagues

In our sample, strictly digital protocols correlated with increased concern. These findings indicate a trade-off in digital adoption: efficiency gains at the cost of team dynamics. The concurrent trends in charts (e.g. higher workload and lower collaboration both high where training is low) support that without regard for process design, digitalization can unintentionally disintegrate communication. This highlights the necessity of ensuring technology complements instead of substitutes essential human interactions in care provision (11).

4.3.8 Willingness to Be Part of a Digitally Transformed System

Though there are reservations of the kind mentioned above, the general willingness to participate in a computerized healthcare system is high in all departments, though with variation. The graph reveals especially high interest in departments already familiar with computers (e.g. Radiology, IT services) and lower—but still majority—readiness

in traditionally paper-based departments. This trend is in line with empirical research: in one cross-sectional survey, 83% of healthcare workers in a hospital environment were enthusiastic to utilize digital tools in patient care (3). Significantly, willingness was both directly related to positive attitudes and self-efficacy (3). Similarly, our findings suggest that respondents who noted previous training or who perceived the value of digital tools were more likely to endorse change. The earlier figures corroborate this trend: departments with higher awareness and training manifested stronger willingness, whereas the ones most sceptical of job effect or collaboration problems manifested somewhat lower enthusiasm. Such correlations capture recognised determinants of adoption: the literature highlights that health professionals' views on usefulness and training are major determinants of acceptance of electronic technologies (3,4). In sum, while challenges remain, the prevailing trend is positive – most staff are open to digital transformation when it is well-supported and clearly beneficial.

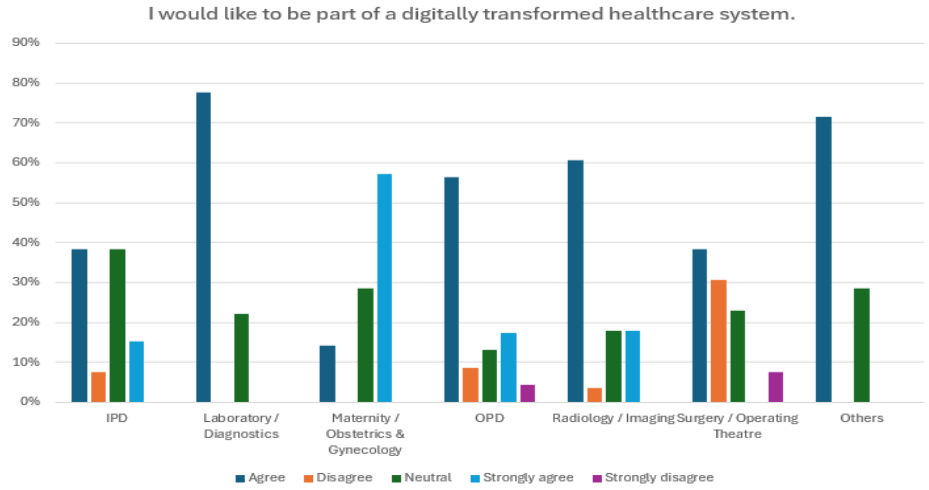

Fig 13: Willingness to Be Part of a Digitally Transformed System

4.4 Barriers to Digital Transformation in Healthcare

The survey results shown in chart "Barriers of Digital Transformation" reveal four key factors seen by healthcare staff as barriers to the effective adoption of digital health technologies. The results highlight the practical and attitudinal issues confronting the workforce and correspond with trends covered in the international literature.

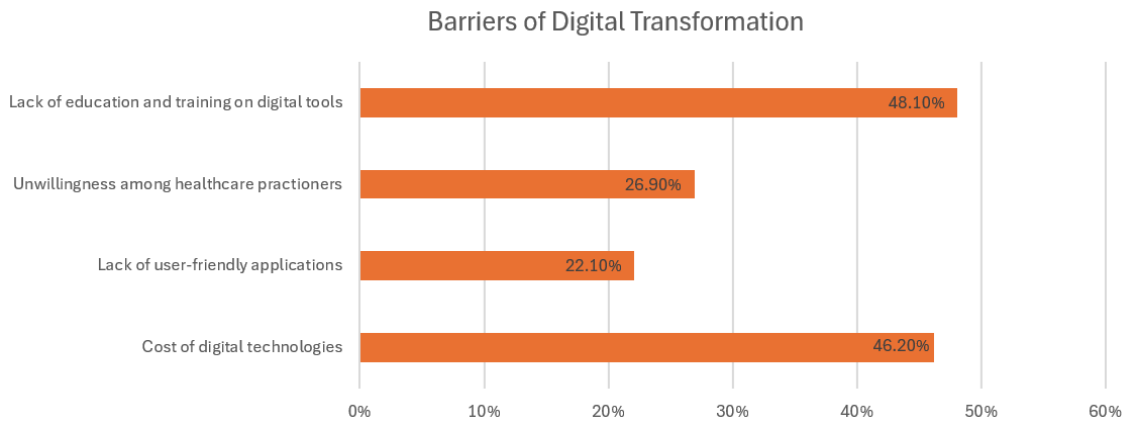

Fig 14: Barriers to Digital Transformation in Healthcare

1. Lack of Education and Training on Digital Tools (48.10%)

Nearly half (48.10%) of respondents cited lack of education and training as the most significant barrier to adopting digital tools. This finding strongly indicates a workforce that feels underprepared or inadequately supported in transitioning to digital health environments. Globally, this barrier is well-documented. According to the World Health Organization's Global Strategy on Digital Health (2020–2025), strengthening digital literacy and workforce capacity is a foundational pillar for digital health advancement. The report highlights that "insufficient training and capacity-building remains a primary barrier in many low- and middle-income countries" (1).

Supporting this, a study by Joshi et al. (2021) in the Indian Journal of Community Health found that 64% of primary care providers lacked formal training in using electronic health records (EHRs) and telemedicine platforms, mirroring the knowledge gap revealed in this study (2). Similarly, Ross et al. (2016) reported that unsuccessful EHR implementations were often linked to inadequate user training, leading to low confidence and poor system utilization (3). This widespread deficit suggests that beyond deploying technology, institutions must invest in systematic and continuous training programs to build confidence and skill among all cadres of healthcare professionals.

2. Cost of Digital Technologies (46.20%)

A nearly equivalent proportion of respondents (46.20%) identified the cost of digital technologies as a major barrier. This includes not only the initial investment in infrastructure and software but also the ongoing costs of licensing, maintenance, and upgrading systems. Cost has long been a constraint in digital health adoption, particularly in public hospitals or low-resource settings. A systematic review by Scott Kruse et al. (2016) published in JMIR Medical Informatics lists "high cost of implementation and upkeep" as a recurring concern across multiple healthcare systems globally (4).

In the Indian context, studies have similarly noted that hospitals often hesitate to invest in comprehensive EHR systems or telehealth infrastructure due to budget limitations.

According to The National Digital Health Blueprint (NDHB), 2019, financial sustainability and affordability are among the most significant challenges in rolling out digital solutions at scale across diverse healthcare settings. Thus, this response from participants not only reflects perceived financial strain but also highlights the structural funding gaps that continue to hinder digital transformation.

3. Unwillingness Among Healthcare Practitioners (26.90%)

Over one-quarter (26.90%) of the participants expressed unwillingness among healthcare practitioners as a key barrier. This reflects psychological and cultural resistance to change, which can stem from fear of the unknown, perceived increase in workload, or skepticism about the effectiveness of digital tools. Literature on technology adoption consistently emphasizes provider reluctance as a limiting factor. For instance, a review by Greenhalgh et al. (2017) in The Milbank Quarterly identified “clinician resistance” as a central issue influencing the uptake of health technologies (5).

Additionally, Zapata et al. (2015) noted that healthcare professionals who are not involved in the decision-making or design of digital systems are more likely to reject or passively resist implementation (6). In our study, the identified resistance may be closely linked to the other major barrier—lack of training—as clinicians often resist technologies they feel unskilled or unsupported in using. It also underscores the importance of participatory implementation processes and change management strategies in building practitioner buy-in.

4. Lack of User-Friendly Applications (22.10%)

Finally, 22.10% of respondents indicated that the lack of user-friendly applications hinders their ability to adopt digital technologies. This reflects challenges related to interface design, ease of navigation, and system responsiveness—elements that directly influence user satisfaction and long-term engagement. A review by Kilsdonk et al. (2017) in BMC Medical Informatics and Decision Making noted that clinicians frequently abandon or underuse systems they perceive as unintuitive or disruptive to their workflow (7).

Moreover, research by Carayon et al. (2015) shows that poor usability leads to workarounds and errors, reducing both efficiency and trust in technology (8). The HIMSS Digital Health Indicator framework also identifies "user experience and engagement" as a core pillar of maturity in digital health environments. Therefore, the reported barrier aligns with growing global recognition that technology must be not only functionally robust but also designed with clinical workflows and user needs at the forefront.

5. DISCUSSION

5.1 Overview and Interpretation of Findings

The purpose of this study was to examine the perceptions, attitudes, and impediments of healthcare professionals toward digital health technology like Electronic Health Records

(EHRs), Artificial Intelligence (AI), Telemedicine, mHealth, and Internet of Things (IoT). The survey received 100 healthcare professional responses from different departments and specialties, representing a wide cross-section of opinions.

The findings identified significant variation in digital health literacy awareness, access to training, and attitudes across departmental affiliations. Variation was also observed across experience levels and geographic locations. Early-career professionals dominated the participants, with a large percentage hailing from urban hospitals. This setting probably shaped the overall positive attitudes toward digital technologies but also reflected key concerns like insufficient training, expense, usability, and job loss anxieties.

5.2 Comparison with Existing Literature

5.2.1 Digital Technology Awareness

The extent of awareness of Telemedicine and EHRs in Radiology and OPD departments is reflective of findings by Mazandarani et al., where they observed that healthcare professionals' roles have a significant influence on levels of digital literacy, with doctors and radiology technicians being more technologically familiar because of regular use of digital interfaces (1). Comparable findings have been seen in international surveys; for instance, Kruse et al. discovered that departments that employed digital imaging and documentation tools indicated considerably greater familiarity with EHRs and Telehealth platforms (2).

5.2.2 Training Disparities

Findings on training availability reveal significant variations by departments. While Radiology and IT-enabled departments had improved access to training, frontline departments such as IPD and OPD had restricted opportunities. This finding is in concurrence with a review by Carayon et al., who highlighted that substandard training frequently deters digital tool uptake, even in environments with technological infrastructure (3). Further, Greenhalgh et al. contend that systematic digital literacy training has a profound impact on elevating healthcare providers' confidence and involvement levels (4).

5.2.3 Privacy and Ethical Issues

Data security concerns were prevalent and significantly greater within IPD and Radiology departments—most likely because of the sensitive and large data they handle. Such anxieties align with a study by Osei-Agyekum et al., where more than 80% of clinicians had concerns regarding patient confidentiality in electronic systems (5). Moral concerns about unauthorized access and data loss remain prevalent among several healthcare systems worldwide, highlighting the need for effective digital governance (6).

5.2.4 Fear of Job Displacement by AI

This fear that AI and robotics were likely to replace healthcare work was particularly pervasive in technologically advanced specialties such as Radiology. The same fears

have been extensively documented. For example, Reddy et al. documented that more than 65% of nurses and 58% of doctors were afraid of AI-caused obsolescence in their own careers (7). Although such fears are not necessarily based on empirical trends of job loss, they indicate a lack of transparency and clarity in the integration process. According to research, growing familiarity with AI systems has been shown to reduce such fears, a trend reiterated in our research, with higher awareness levels of AI correlating with lower levels of fear (8).

5.2.5 Disruption of Workload and Workflow

More than half of the respondents felt that digital tools initially increased their workload, especially in OPD and IPD settings. This is consistent with Jeilani and Hussein's work, which describes the phenomenon of "technological anxiety" arising due to added documentation and navigation demands in digital environments (9). Research by Zapata et al. also identifies increased workload as a critical barrier in healthcare digitization, particularly when systems are poorly designed or rolled out without adequate support (10).

5.2.6 Perceived Impact on Care Quality and Team Collaboration

The worry that the use of technology would decrease the quality of care—especially its humanistic aspects—was most evident in patient-facing departments. Pew Research states that 57% of Americans anticipate AI to deteriorate patient-provider relationships, echoing concerns of digital depersonalization more broadly (11). Van der Velde et al. highlight the dual function of digital tools in enabling information flow but preventing organic team communication, a dynamic that healthcare leaders must address proactively (12).

5.2.7 Desire for Adoption of Digital Systems

In spite of the concerns that existed, there was general desire among respondents to be part of a digitally revolutionized system. This is in tandem with a study by Al-Khalifa et al., where it was discovered that 83% of clinicians were willing to embrace EHRs, as long as adequate training and institutional support were available (13). Our study supports that familiarity and positive perceived usefulness are key determinants of digital acceptance.

5.3 Barriers to Digital Transformation

The four fundamental barriers that were identified—lack of training/education (48.1%), excessive cost (46.2%), practitioner resistance (26.9%), and absence of user-friendly applications (22.1%)—are in alignment with WHO's Global Strategy on Digital Health, which lists these challenges as global ones, especially in resource-poor environments (14).

Joshi et al. established that 64% of Indian primary healthcare professionals received no digital health training, whereas Kruse et al. noted high costs and poor usability as ongoing barriers for all health systems (15,2). In addition, Greenhalgh et al. identified

that resistance tends to be associated with being excluded from planning and implementation decisions, a sentiment reflected in our survey (4).

5.4 Strengths of the Study

• Representative Sample of Early-career Professionals: The participation of largely early-career professionals helped give insight into the attitudes of a digitally born workforce.

• Cross-departmental Representation: Participation of multiple specialties enabled a detailed understanding of department-level challenges and readiness levels.

• Comprehensive Scope: The survey investigated not just awareness, but also training, ethical issues, perceived workload, and willingness to embrace, offering an all-encompassing perspective.

5.5 Limitations

• Sampling Bias: Since it's a convenience sample, the findings may not be entirely representative of all healthcare professionals.

• Urban Skew: With 71% of the respondents being urban dwellers, rural healthcare insight—particularly concerning infrastructure issues—is underrepresented.

• Under-representation of Nurses and Support Staff: The over-representation of allied health and physician respondents ensures that the opinions of nurses and support staff are not fully represented.

• Cross-sectional Design: This design limits the ability to assess how attitudes might evolve over time with increased digital integration.

5.6 Implications for Practice and Future Research

The results highlight the need for departmental training, user-focused design of digital tools, and collaborative implementation procedures. Higher education institutions need to make significant investments in education and usability for effective digital transformation. Future studies will need to employ longitudinal and multi-site designs with better representation by professional roles and settings, particularly rural areas.

6. CONCLUSION

6.1 Summary of Key Findings

This research investigated the perception and attitude of healthcare professionals towards digital health technologies, such as Electronic Health Records (EHRs), Artificial Intelligence (AI), Telemedicine, mHealth, and the Internet of Things (IoT). Based on survey feedback from 100 healthcare workers in various departments and specialties, this research presents a comprehensive insight into the preparedness of the workforce and hindrances to digital transformation within healthcare.

Some primary findings were:

• High Familiarity but Uneven Awareness: While EHRs and Telemedicine were well-known among core technologies in departments like Radiology and OPD, knowledge of advanced concepts like HIE and IoT was limited across departments like Surgery and Maternity.

• Digital Training Gaps: Lack of systematic training was the most prominent deterrent. Departments with low access to training also indicated higher anxiety, workload issues, and resistance to implementing digital systems.

• Dominant Concerns: The key concerns raised by respondents included privacy of data, workload, replacement by AI, and decreased interpersonal interaction—all which would be deterrents to streamlined adoption of digital systems if left unaddressed.

• Willingness and Optimism: In spite of all these issues, most respondents were willing to use a digitally revolutionized health system as long as proper support facilities are established.

• Barriers to Digital Transformation: The most reported barriers were lack of training (48.10%), cost limitation (46.20%), reluctance on the part of healthcare practitioners (26.90%), and absence of easy-to-use systems (22.10%).

6.2 Implications for Healthcare Policy and Practice

The results reveal a double reality: health workers recognize the potential of digital transformation but believe they are not adequately prepared for its requirements. This carries several implications:

• Training as a Foundation: Organizations need to prioritize ongoing digital education, particularly department-specific modules related to roles and responsibilities. Upskilling needs to be built into standard professional development plans.

• Digital Readiness Equity: There should be resolution of urban-rural imbalances in digital infrastructure and exposure. Investment in rural connectivity and tool development for low-resource environments is necessary.

• Design Thinking for Digital Health: Hospital administrators and developers need to work with frontline users to guarantee that digital tools are easy to use, valuable, and well-integrated into procedures.

• Inclusive Digital Strategy: Support staff and nurses were underrepresented in the sample and overall digital readiness—specific inclusion of these groups is critical for fair transformation.

6.3 Recommendations

According to the findings, the following recommendations are suggested:

1. Create Department-Specific Training Programs

Institutions should implement continuous training programs that are specific to individual clinical settings. Training should not only focus on tool usage but also on modules covering data ethics, cybersecurity, and workflow incorporation.

2. Advocate User-Centric System Design

End-users—physicians, nurses, technicians—should be engaged by healthcare software developers during design and testing stages. Feedback mechanisms and usability testing can reduce frustration and resistance.

3. Close the Urban-Rural Divide

National and regional health policy-makers should ensure that infrastructure investment reaches rural and semi-urban regions. Telemedicine and cloud-based EHRs must be designed to work in low-bandwidth settings.

4. Put Change Management Protocols in Place

Healthcare facilities ought to implement systematic change management plans that involve sensitization workshops, leadership engagement, and feedback loops to facilitate the cultural transition to digitalization.

5. Remove Psychological Resistance to AI

Education and awareness campaigns on the complementary—not displacing—nature of AI can minimize fear among doctors. Showing success stories where AI complements care can enhance trust and adoption.

6. Integrate Data Protection Mechanisms

Institutional policies on handling data, encryption, and access should be clearly communicated to all employees. Mandatory training to comply with data privacy regulations (e.g., HIPAA, DISHA) needs to be enforced.

6.4 Final Remarks

This research highlights the need to bridge digital healthcare aspirations with realities on the ground. Though technology possesses tremendous potential to revolutionize the delivery of healthcare, it will depend on the readiness, confidence, and engagement of the workforce. An inclusive, strategic, and user-centered approach shall be critical to achieve the full potential of digital transformation in healthcare.

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