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A Study of Perception of Healthcare Providers and Administrators Regarding Saudi Health Transformation in Riyadh

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Abstract **Background**: Recent years have seen major adjustments to the Saudi healthcare system with the goal of enhancing all individuals' access to high-quality healthcare services. The integration of healthcare providers and services within a certain geographic region is a primary strategy being pursued, known as health clusters. The purpose of this project is to check the perception and awareness of workers in healthcare about the transformation. **Methods**: This paper is a cross-sectional mono-quantitative paper since it relies on a survey to find answers to the research questions. This survey was distributed to healthcare practitioners and administrator in Riyadh city. **Results**: 131 healthcare practitioners and administrators participated in this study. Findings revealed that healthcare workers have a moderate knowledge regarding healthcare transformation programs. They should highly be aware of electronic health records; however, more awareness programs about pharma services with transformation must be applied as well as regarding the application of artificial intelligence and learning machines in the healthcare industry. **Conclusion**: Saudi health providers perceive this healthcare transformation program as improving health outcomes and increasing access to healthcare for all underprivileged individuals. Based on the results, frequent training must be created to develop the knowledge of health practitioners reading the healthcare transformation program.

Key Words Knowledge, Healthcare Transformation Program, Saudi Arabia, Healthcare Industry, Health Practitioners

INTRODUCTION

In June 2016, the Kingdom of Saudi Arabia initiated a vision journey called "Vision 2030" that includes 96 strategic objectives which are tracked by a set of Key Performance Indicators (KPIs) [1]. In pursuit of three overarching goals, the Kingdom's vision mirrors its desire to be a global leader in society, economy, and aspiration. The kingdom therefore adopted this strategy with the aim of developing its economy and increasing its landmass size [2].

In accordance with this Vision, the healthcare sector is presently undergoing a major transformation. The Kingdom has actually initiated a National Transformation Program (NTP), under which the healthcare transformation is identified as one of the eight priority themes [2]. The healthcare sector is therefore experiencing a major transition. Indeed, as a result of the establishment of the new Model of Care, there is a change in emphasis towards proactive health management and wellness, with the goal of improving health outcomes, quality of care, and overall value [1]. One of the key strategies being implemented is the idea of health clusters, whereby the concentration of healthcare providers and services within a geographic area is being brought about (Figure 1).

A couple of studies [3-4] have shown how the healthcare sector of the Kingdom significantly developed. It moved from being a model that dealt only with curative treatment to one dealing with reducing the impact of infectious diseases to finally establishing preventive medicine. Saudi Arabia made significant developments in the healthcare sector in recent years that deserve recognition. Thus, this sector was placed at number 26 among 191 countries, as per the World Health Organization rankings [3]. The need for transformation is multi-dimensional. There is an urgent need to address the various issues that have been identified within the Saudi Arabian healthcare system over the last decade. It should be mentioned here that as of 2020, the population of Saudi Arabia was 35 million, out of which roughly 33% were below the age of 20 years and less than 4% were above 65 years. However, it is estimated that by the year 2050, the population above 65 years would account for 20% of the population in addition to total population growth. The anticipated growth in the elderly population is likely to be

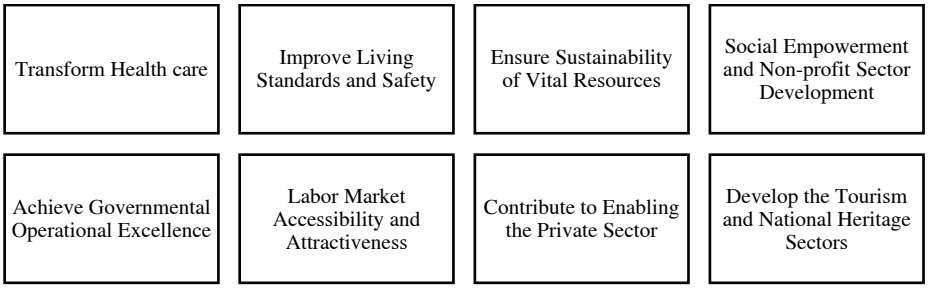

Figure 1: National Transformation Plan (NTP) Themes [2]

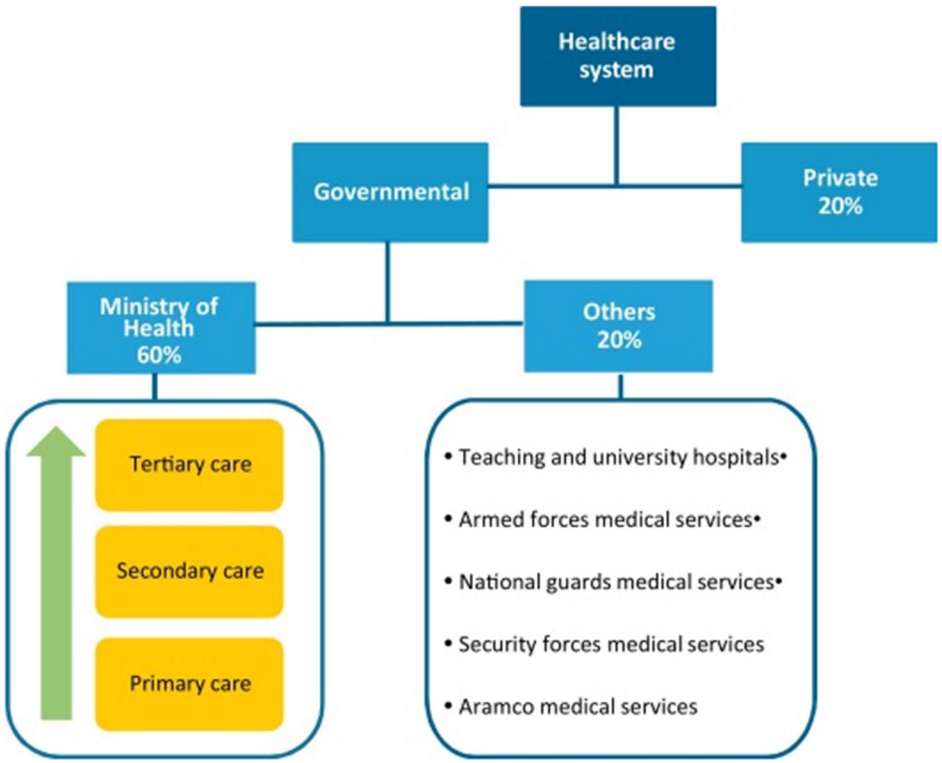

Figure 2: The Saudi Arabian healthcare system as it is currently organized [4]

followed by an increase in non-communicable diseases (NCDs), which in turn is anticipated to increase healthcare costs [5] (Figure 2).

The Saudi Arabian healthcare sector has undergone tremendous transformations in recent times with the vision of increasing quality healthcare services to the population at large. One such initiative being implemented is the concept of health clusters, which involves the clustering of healthcare providers and services in a particular geographic location. The aim of this project is to conduct a study of the feasibility of health clusters in transforming the healthcare system in Saudi Arabia. Hence, it becomes imperative to study the Knowledge, Attitudes, and Practices (KAP), the alignment of individuals' goals with the overall strategy, and the evaluation of healthcare providers and administrators based on their perception and awareness of the health transformation of Saudi Arabia, in order to determine gaps and provide recommendations to policymakers.

METHODS

Study Design

In order to gather information from healthcare administrators and practitioners about how they perceive and are aware of the Saudi health reform, this study used a cross-sectional survey approach. The descriptive cross-sectional survey approach, which is thought to be the most often used methodology for researchers and is thought to be appropriate for this study, has been used by the researcher. In fact, a cross-sectional study examines and assesses information acquired from a population at a certain period [6]. “It is a popular and common strategy in business and management research and is most frequently used to answer who, what, where, how much, and how many questions” [7]. Thus, as part of describing and interpreting a specific phenomenon, this methodology identifies the circumstances, interprets, and defines them, and recognizes the common practices and any methodology associated with it.

Study Population and Sampling Techniques

Healthcare providers (HCPs) employed in Saudi Arabia's various healthcare settings, such as hospitals, clinics, and other healthcare organizations, are the target demographic for this study, which aims to gauge their perceptions of and familiarity with the country's healthcare transformation.

Simple random is the chosen sampling technique. This method, which uses a straightforward random sampling process, gives all targeted groups an equal opportunity to participate in the study. Additionally, it ensures an equal and fair opportunity and reduces the researchers' interference and bias [8].

Data Collection and Analysis

A questionnaire with 17 questions has been developed based on the study questions. This questionnaire is divided into two parts. The first part includes the demographic part or the personal information of the study's respondents. The second part consists of questions related to Knowledge, Attitudes, and Practices (KAP) of Health Transformation. The survey link is distributed and kept online on Google Forms for several weeks via all social media platforms mainly WhatsApp. After data collection, quantitative numeric analysis was used to analyse the hypotheses concerning Knowledge, Attitudes, and Practices (KAP) of Health Transformation. As a result of the data gathered, all research questions will be answered.

RESULTS

The participants of the study include 131 healthcare practitioners and administrators. As shown in Table 1, 32.8% of participants fall within the 25-34 age group and 42.7% in the 35-44 age range. Similarly, 24.4% of the participants are between the age group of 45-55 years. Regarding gender, the study encompasses a slightly higher proportion of males, constituting 53.4% of the participants, while females account for 46.6%. Regarding working experience, the participants exhibit a varied range, with a significant representation from those with 11-15 years of experience (28.2%). Occupationally, physicians comprise the largest group at 48.1%, followed by allied health professionals at 21.4%. This distribution highlights a well-rounded sample covering a range of ages, genders, professional backgrounds, and experience levels. The diverse sample also enhances the comprehensiveness and applicability of the study from different perspectives.

Figure 3 represents the distribution of study participants across different types of hospitals. Most participants (34.4%) are affiliated with military hospitals, closely followed by those from the 1st cluster of hospitals with 29.0%. Private hospitals significantly contributed to the study, with 21.4% of participants. Both university hospitals and hospitals in the 2nd cluster are represented by 6.9% of participants each. The 3rd cluster of hospitals is the least represented, with only 1.5% of study participants. This breakdown highlights the different sources of participants and suggests that the study covers a wide range of healthcare settings, including military, private, university, and cluster hospitals.

Table 1: Demographic characteristics of the included participants

Characteristic	Frequency	Percentage
Age		
25-34 years	43	32.8
35-44 years	56	42.7
45-55 years	32	24.4
Gender		
Male	70	53.4
Female	61	46.6
Working Experience		
Less than 5 years	26	19.8
5-10 years	26	19.8
11-15 years	37	28.2
16-20 years	16	12.2
More than 20 years	26	19.8
Occupation		
Administration/Management	14	10.7
Allied Health Professionals	31	23
Nurses	24	18.3
Physicians	63	48.1

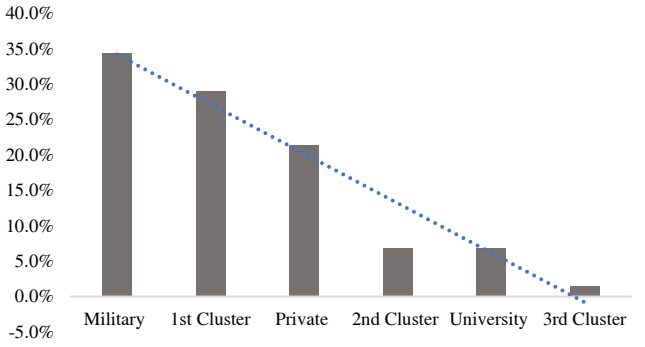

Figure 3: Type of Hospitals

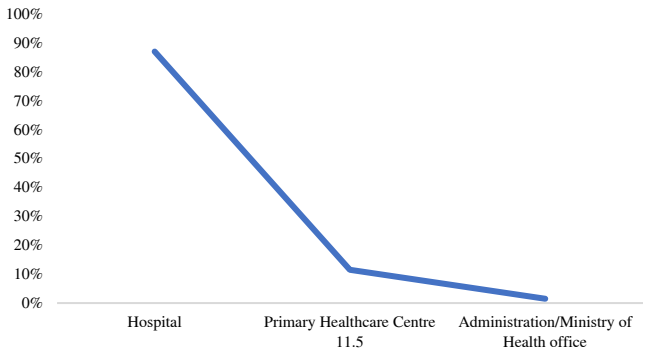

Figure 4: Type of Workplace Observed

Similarly, Figure 4 shows the distribution of study participants across different workplace settings. Most participants, 87%, are affiliated with hospitals. Primary care centres account for 11.5% of participants, a notable but small proportion of the study population. Participants working in administration/Ministry of Health offices make up 1.50%, indicating a small representation in the study. This breakdown shows that most participants are associated with hospital settings, with a smaller proportion from Primary Healthcare Centres and an even smaller proportion from Administration/Ministry of Health offices.

Table 2: Independent samples T-test

Group Statistics					
Parameters	Gender	N	Mean	SD	Sig.
Enhancing the health outcomes for Saudi population	Male	70	4.16	1.044	0.721
	Female	61	3.89	1.20	
Expanding healthcare coverage to reach all deprived people	Male	70	4.16	0.97	0.781
	Female	61	3.89	1.07	
Developing a robust digital health infrastructure to continue cost	Male	70	4.14	0.97	0.028
	Female	61	3.77	1.40	
Enhancing the healthcare quality	Male	70	4.11	0.97	0.097
	Female	61	3.74	1.35	
Improving healthcare workforce competency	Male	70	3.80	1.12	0.549
	Female	61	3.79	1.32	
Strengthened healthcare regulations and governance	Male	70	3.90	1.024	0.034
	Female	61	3.72	1.39	
Primary and Preventive healthcare	Male	70	3.91	1.10	0.611
	Female	61	3.75	1.25	
Telemedicine and e-health solutions	Male	70	3.79	1.20	0.426
	Female	61	3.87	1.20	
Highly integrated specialised medical care	Male	70	3.83	1.19	
	Female	61	3.9	1.38	0.905
Pharmaceutical industry development	Male	70	3.43	1.11	0.291
	Female	61	3.67	1.27	
Medical Research and innovation	Male	70	3.40	1.27	0.001
	Female	61	3.90	1.00	
Integrated health care service delivery	Male	70	3.80	1.07	0.160
	Female	61	3.75	1.39	
The adoption of electronic health records	Male	70	4.09	1.06	0.294
	Female	61	3.92	1.26	
Implementation of telemedicine services	Male	70	3.63	1.08	0.325
	Female	61	3.72	1.28	
Integration of artificial intelligence and machine learning in healthcare	Male	70	3.33	1.13	0.650
	Female	61	3.80	1.17	
Use of medical wearables and other remote monitoring devices	Male	70	3.53	1.13	0.410
	Female	61	3.64	1.24	
Enhancing the competency of staff through Training and education	1	70	3.81	1.13	0.495
	2	61	3.82	1.30	

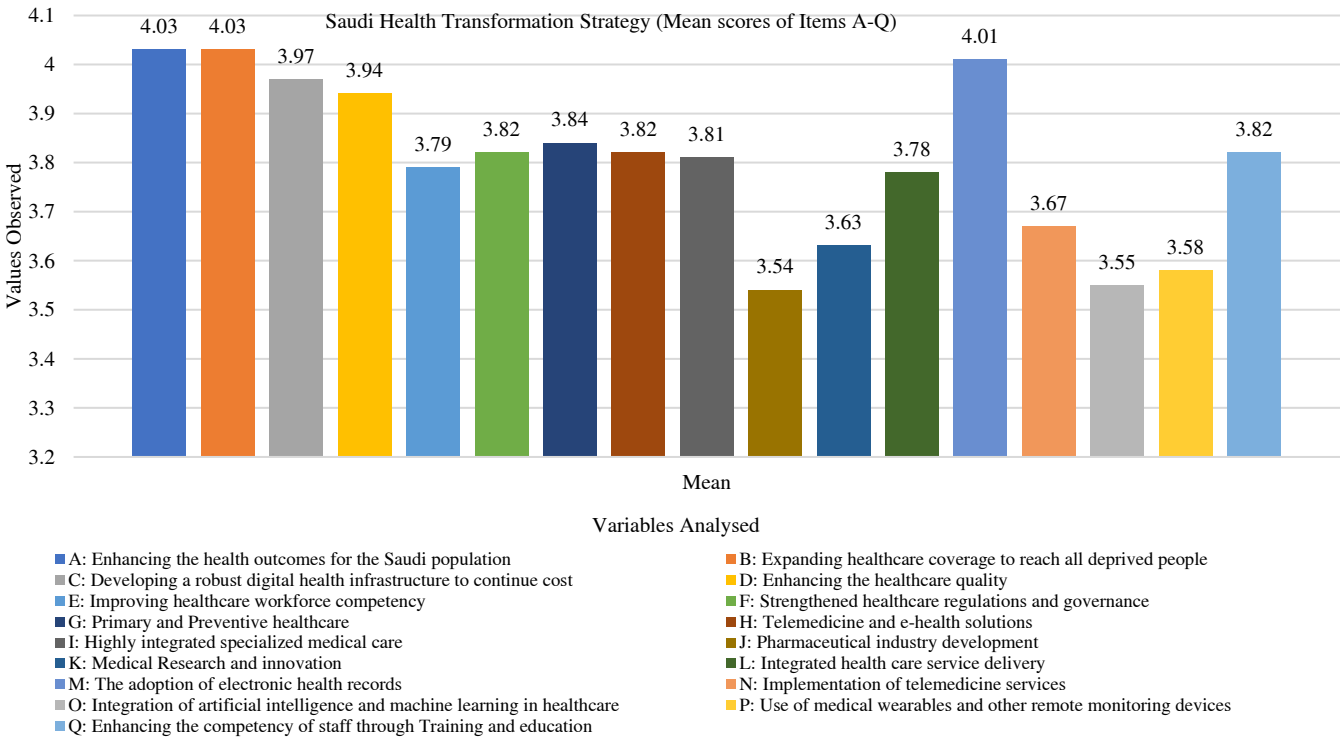

Figure 5: Saudi Health Transformation Strategy (Mean scores of items A-Q)

Table 3: Occupation & Saudi Health Transformation Strategy

Objective	Admin.	AHP	Nurses	Physicians
A: Enhancing the health outcomes for the Saudi population	4.21	3.57	3.5	4.40
B: Expanding healthcare coverage to reach all deprived people	4.14	3.75	3.33	4.38
C: Developing a robust digital health infrastructure to continue cost	4.14	3.61	3.13	4.40
D: Enhancing the healthcare quality	4.21	3.61	3.13	4.30
E: Improving healthcare workforce competency	4.21	3.46	3.13	4.06
F: Strengthened healthcare regulations and governance	4.43	3.32	3	4.19
G: Primary and Preventive healthcare	4.07	3.36	3.25	4.25
H: Telemedicine and e-health solutions	4.07	3.46	3.49	4.11
I: Highly integrated specialized medical care	4.36	3.5	3.13	4.06
J: Pharmaceutical industry development	4.36	3.29	3.46	3.73
K: Medical Research and innovation	3.29	3.54	3.42	3.73
L: Integrated health care service delivery	3.79	3.46	3.04	4.06
M: The adoption of electronic health records	4.36	3.5	3.42	4.33
N: Implementation of telemedicine services	4.50	3.54	3.46	3.71
O: Integration of artificial intelligence and machine learning in healthcare	4.29	3.29	3.33	3.73
P: Use of medical wearables and other remote monitoring devices	3.79	3.32	3.21	3.90
Q: Enhancing the competency of staff through Training and education	3.50	3.75	3.17	4.13

Figure 5 shows the mean scores of the study's participants assigned to various Saudi Health Transformation Strategy objectives. The scores reflect their perceived levels of knowledge, attitude, and practice. The highest-rated objectives, with mean scores above 4.00, include "Enhancing health outcomes for the Saudi population" and "Expanding healthcare coverage to reach all deprived people", both received mean scores of 4.03. In addition, "Adoption of electronic health records" (M) is highly rated with a mean score of 4.01.

Objectives such as "Developing the pharmaceutical industry", "Integrating artificial intelligence and machine learning into healthcare", and "Using medical wearables and other remote monitoring devices" have comparatively lower mean scores, which indicates a less favourable assessment of the workforce's knowledge, attitudes, and practices in these areas. It can be considered a call for attention and the potential areas for targeted interventions to enhance workforce knowledge and practices.

Table 2 shows Independent Sample t-test statistics by gender for participants' mean scores on various Saudi Health Transformation Strategy objectives. The test was conducted to find a possible gender difference in perceptions. For objectives such as "Improving health outcomes", "Expanding healthcare coverage", and "Developing a robust digital health infrastructure", men consistently score higher than women. However, the differences are only significant ($P \leq 0.05$) in the case of "Developing a robust digital health infrastructure". Some minor differences were observed in the objectives related to "Strengthened health regulations and governance" and "Medical research and innovation", where men have significantly higher mean scores. These findings suggest potential gender differences in perceptions of certain aspects of the Health Strategy and highlight the importance of taking gender perspectives into account in policy and implementation efforts.

Table 3 shows the perceptions of various healthcare professionals, including administrators, allied health professionals, nurses, and physicians, regarding different aspects of Saudi Arabia's health transformation strategy. The overall objective of improving the health of the Saudi population (A) is strongly supported by administrators (m = 4.21) and doctors (m = 4.40). Opticians and nurses are also supportive, although slightly less so, with mean scores of 3.57 and 3.5, respectively. Objectives B, C and D also received support across all occupations. However, integrating artificial intelligence and machine learning (Objective O) and using medical wearables and remote monitoring devices (Objective P) garnered more varied responses, with some professional groups expressing lower levels of enthusiasm. Regarding the difference in opinion between administrators and nurses, administrators generally have a more positive outlook, particularly emphasising the importance of improving health outcomes, expanding healthcare coverage, and developing a robust digital health infrastructure. On the other hand, nurses tend to place more emphasis on improving workforce skills and are less enthusiastic about specific goals, such as integrated specialised medical care.

DISCUSSION

This study gauged knowledge, attitudes, and behaviours of health professionals and administrators towards the Saudi health transformation plan. In particular, the Saudi Arabian government has set a nationwide reform initiative known as Vision 2030, which is being well directed by young Deputy Crown Prince Muhammad bin Salman [9]. Implications of the conclusions drawn from the data analysis are that the objectives targeted for enhancing health outcomes and increasing healthcare accessibility to all marginalized populations were ranked highest on average, demonstrating strong support among the respondents.

In addition, another study [10] revealed that Saudi Arabia is facing challenges regarding quality of care in addition to exaggerated costs. Under Vision 2030, the government intends to restructure and improve the healthcare system to prevent these challenges. This program involves a project to incorporate the private sector, with vision to increase its contribution from 25% to 35% within the next few years. In addition, it was further revealed that

new health transformation strategies have been designed to ensure the provision of the highest quality of care by ensuring healthcare enhancements and increasing health coverage to all persons [10].

In addition, the deployment of electronic health records (EHR) has been widely praised. And has been shown that the rapid adoption of information technology in the healthcare industry has led to increased usage and sharing of electronic health records by a couple of investigations [11-12]. One of these studies has also explained that the use of electronic health records has the potential to incorporate metrics of success and performance into clinical practice, enhance patient care, and enhance the potential to identify and enrol skilled participants in clinical trials [12].

Conversely, the results indicated in our investigation that the goals concerning the growth of the pharmaceutical industry, artificial intelligence and machine learning integration in healthcare interventions, and the integration of medical wearables with other remote monitoring technologies were given relatively lower mean scores. These are the areas where there may be some scope for improvement in understanding as well as implementation. These results are opposite to Alasiri et al. [13], which mentions that the specific objectives of the health sector transformation program under Vision 2030 are to enhance the quality and availability of health care and ensure that the resources are being allocated efficiently and equally across the nation. Furthermore, more digital and e-health services are being facilitated to meet that target.

Additionally, multiple studies [14-17] explained that six key components are necessary for the effective implementation of the new healthcare model: workforce, e-Health, corporatization, private sector participation, and governance. To fully adopt the Kingdom's ambitious vision and optimize the Saudi healthcare system, all of the proposed strategies will need extra time and resources to be implemented optimally. In addition, the study also probed differences in gender responses. The findings show that males had higher scores than females on all aspects of improving health outcomes, expanding healthcare access, and building a robust digital health infrastructure, the latter of which showed statistically significant differences. Considered as a group, these findings call for interventions addressing specific aspects of concern to enable an inclusive and equitable rollout of the Saudi Health Transformation Strategy among healthcare professionals and administrators.

CONCLUSIONS

Our findings revealed strong levels of support for aims such as improved health outcomes, improved access to care, and electronic health records. Comparatively low ratings in the areas of use of artificial intelligence, drug research and development, and wearable technology were also observed; therefore, it suggests increased awareness and training schemes. There are significant inter-sex differences in attitudes, especially in the area of digital health infrastructure and among professional groups, suggesting both general and specific interventions are necessary.

Limitations

This study employed a relatively smaller sample size of hospital managers and healthcare workers, covering a range of age, gender, professional grade, and hospital environments, thus adding to the generalizability of the findings. There are, however, limitations to be borne in mind when interpreting findings. Although the sample is adequate, it remains too small to cover all institutional and regional differences in views, especially as some types of workplaces, including administrative offices, are underrepresented. In spite of the participation of several professional groups in the survey, the lack of feedback from patients and policymaker policymakers at a high level might have reduced the level of understanding gained.

Acknowledgement

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Ethical Statement

Maintaining the standards of ethical research conduct is crucial for this research paper. To this purpose, participants were promised anonymity, which meant that at no stage during the research process would their names or any other information that may be used to identify them be released or referenced, protecting their privacy. All participants were also not only notified but also given the assurance that their participation in the study was completely voluntary, stressing that they were free to make this decision without being subjected to any pressure or form of coercion. Moreover, participants were explicitly given the freedom to leave the study at any time and for any reason without penalty or negative repercussions, ensuring that their autonomy was upheld at all times.

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