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LETTER

Electronic health records perception among three healthcare providers specialties in Saudi Arabia: A cross-sectional study

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Abstract

Worldwide, more health care facilities are adapting the use of electronic health record (EHR). Healthcare providers (HCP) have different perceptions toward the use of EHR. To investigate the perception of three classes of HCP in Saudi Arabia toward using EHR, a questionnaire (targeting satisfaction, easiness, and benefits of use as major perception indicators) was prepared. The questionnaire was assessed by an expert panel for content validity. The questionnaire internal consistency was examined using Cronbach's alpha. 108 physicians, physical therapists (PT) and respiratory care therapists (RT) from different hospitals in Saudi Arabia answered the questionnaire. Most of respondents perceived EHR systems as beneficial and made work easier. Most HCP were satisfied with the use of EHR, however, with the use of EHR more time was needed to finish the work. Age, experience, job, and job rank of HCP are of different importance in determining responses, perception, and obstacles of using EHR. Moreover, the perception of using EHR seems to be field specific. There is a positive perception among Saudi Arabia HCP about EHR use.

1 | INTRODUCTION

The use of information technology, in general, and electronic health records (EHR) in health care organizations and among health care providers (HCP) has grown progressively [1, 2]. This is reflected by the increasing number of publications and studies that explain various publication trends and implementation aspects of EHR. Moreover, there are plenty of success stories related to the various applications of EHRs in different areas of healthcare sector giving specific results about improved outcomes. On the other hand, some studies have highlighted the obstacles, limitations, barriers, challenges, and problems linked with adopting these technologies, such as the digital divide etc. [3]. EHR adoption can be affected by various factors like the country, the region, the type of hospital, local circumstances, and other factors [4, 5]. Furthermore, HCP from different clinical specialty may have different perception toward the use of EHR [6].

In developed countries, there were many initiatives that aimed to accelerate the adoption of EHR through different administrative and financial procedures like the Meaningful Usage of EHR in USA [7, 8]. The results achieved and weaknesses appeared

in the journey toward fully automated healthcare systems are rich areas of research from different perspectives and views. In the developing countries EHR adoption race was launched later but it gained increased momentum. In Kingdom of Saudi Arabia (KSA), the situation is progressing faster than many countries due to many reasons including undergoing changes in the healthcare system, good financial resources, and the associated healthcare technology diffusion [9, 10] where the place of KSA is leading in this field as compared with other middle east countries. One of the features of Saudi healthcare system is that the public healthcare sector is essentially financed by oil revenues allocated budget, ranging from 5.9% of the government's total budget in 2006 to 7.82% in 2022. This is one of the reasons behind the apparent success of the KSA healthcare system [11]. This success is clearly reflected in the fast pace of adoption of Healthcare Technologies including EHRs. This is clearly obvious in the ongoing national projects including the development of a national electronic medical record (EMR) system which connected all healthcare facilities into a digital based healthcare network. Digital health implementation programs have been flourishing including training projects, such as the competency-based Digital Health framework, which was

developed by the Saudi Commission of Healthcare Specialties (SCFHS) in 2018 [2]. Successful health digital transformation is not limited to the adoption of advanced technology, but it is linked to the continuous professional development programs aiming to raise the competency-based skills of healthcare professionals and developing clinical and educational programs to equip clinicians with understanding of technology, and informaticians with understanding of healthcare [12]. The field of eHealth showed evidence of continual growth in the country in both publications and awareness [13]. On the other hand, many local healthcare facilities from private and public sectors have been awarded the Healthcare Information and Management Systems Society (HIMSS) accreditation and some of them reached the highest Stage 7 HIMSS EMR Adoption Model. The adoption rate of EHR in Saudi hospitals was reviewed in many articles [14, 15], a promising trend is revealed where there is real race to achieve higher levels of automation of administrative and clinical processes toward a paperless system. The EHR systems found in the country are from different brands and venders including the top rated like Epic, Cerner, and others [16].

While investigating the topic of EHR adoption, it is necessary to tackle the so-called Technology Acceptance Models (TAM), where researchers try to develop a framework model that explain the clinical staff and patients' technology adoption from a behavioural science perspective. In Health Informatics, three approaches were found to be dominating [17]. These types are task-related systems, e-commerce systems, and "experiential" systems [18], EHR belongs to the first type. In different TAMs, various factors, approaches, and methodologies were used like system and its characteristics, organizational and individual characteristics, perceptions of institutional trust, perceived risk, information integrity, perceived service level and performance, user interface, clinical safety, security, integration and information sharing, IT experience, privacy and compatibility issues, training, physicians' involvement, doctor–patient relationship, and others. These models reported versions of the original TAM, suggesting that no optimal TAM version for use in health services has been established [17]. On the other hand, many researchers focused on specific factors and problems related to what could be called after adoption issues like the level of satisfaction, perception of EHR and usability. These studies, besides others, are playing a pivotal role in enhancing and improving the design and implementation of newer and advanced systems that cover more functionalities of the clinical daily work of HCP. From the other side, many recent studies about EHR are becoming more specific with concentration on deep issues linked to answer questions like how to exploit EHR capabilities in analytics, prediction and managing diseases, epidemics, and pandemics [19]. Other studies stepped farther by investigating issues of integrating different EHR systems, data validation and data exchange with other information systems [20–22]. The outcomes of these studies have become more essential and attractive to all stakeholders in healthcare with COVID-19 pandemic outbreak [23–25].

One of the research areas in the field of technology diffusion and adoption is directed to the aspects of the perception and usability of the implemented systems. The research questions in these studies are how the users of diverse backgrounds perceive tools, functionalities, and other features of the given system. Moreover, these studies usually look deeply on issues like satisfaction, easiness, efficiency, productivity, and other similar issues. Some of these studies are of national wide scale [26], but others are of narrow and specialized character [16, 27]. The present study addresses several novel issues which were not addressed in previous studies: (1) this study compared the perception toward the use of EHR in KSA among different users including physicians, respiratory care therapists (RT) and physical therapists (PT); (2) contrary to previous studies, the present study used the demographic factors of participants in analyzing the behaviour of specific group of EHR users with different statistical tools.

The Technology adoption model (TAM) has been used to assess how different users of technology perceive the innovative technology. The results usually reflect opinions of individuals regarding the usefulness, easiness, satisfaction, or benefits of a technology and the rate of its adoption. In such studies, a hypothesis is assumed to reflect different demographic, social, cognitive, and work environment related factors and processes. In this study, it is assumed that HCP do not have the same degree of belief that a technology will be beneficial or enhance their daily clinical work. The results of the present study are in line with this hypothesis. More specifically, we will be addressing the following questions: (1) what is the perception (satisfaction, easiness, efficiency, productivity, and obstacles) of HCP from the three selected disciplines toward using EHR; (2) what are the factors which may contribute to the formation of such perception. Answering the above questions will lead to a better understanding of the perception of HCP in Saudi Arabia toward the use of EHR. Understanding the perception of clinicians from different disciplines toward the use of EHR may help to speed up the adoption of the use of such systems among various HCP.

The method section gives a detailed description of various procedures and tools used, more specifically how the questionnaire was developed, the questionnaire validation process and the statistical tests used in the present study. The results section gives details about the participants response to various parts of the questionnaire and the statistical analysis of such responses. The revealed results were discussed showing the noteworthy features as seen by the participants. In the conclusion section the main points of the study were summarized.

2 | METHOD

This is an observational cross-sectional study that is based on a special questionnaire that was developed for the present study. The developed questionnaire consists of thirty-two questions which takes into consideration the primary features of EHR usability. The questionnaire was clustered into five groups of questions: (1) demographic and professional data (age, specialty, years of experience, rank, and working experience with EHR and its characteristics); (2) beneficial/ detrimental effects of EHR to clinical practice; (3) satisfaction with the use of HER;
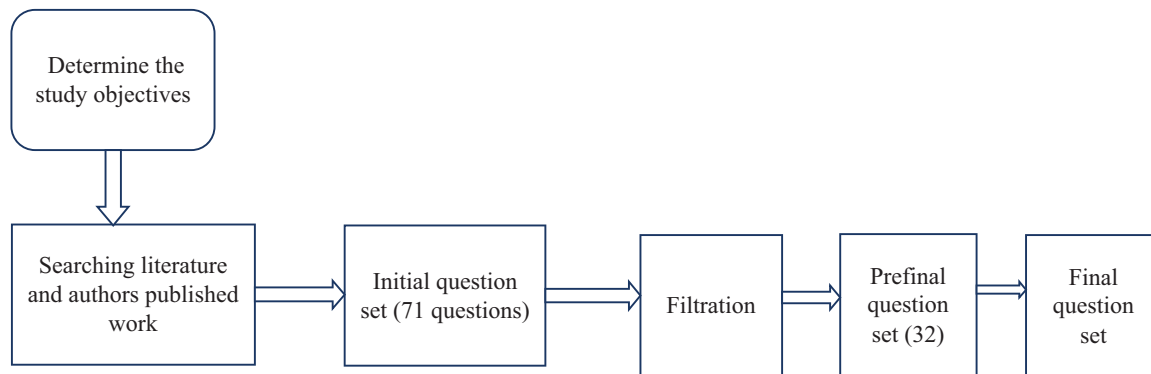
FIGURE 1 A flow chart showing the steps followed in the questionnaire development.

(4) easiness of the use of EHR systems; and (5) obstacles and difficulties faced while using EHR.

2.1 | Questionnaire development

The questionnaire was designed to obtain answers about how HCP perceive EHR use and what are the factors that might affect such perception. First, the authors searched literature and similar studies where an initial set of questions was considered as having direct relationship to the study's goals. The authors also made use of their own previous published work (see [16]). The initial set included seventy-one questions. These questions were about all aspects of using EHR including open end questions. They included questions about pre-implementation and implementation of EHR and pure technical and administrative in addition to clinical questions. Reducing the number of questions to a reasonable, direct, and easy to answer question guided the authors to group them into major categories. The factors that affect the users' perception were classified into (general questions like length of experience in using the EHR and clinical experience of users, demographic information, technical issues, usefulness of such systems, management of these systems, functionalities of the EHR, how patients are looking to the use EHR, how these systems affect clinical work and adverse effects, accessibility of EHR, continuity of care, and many other questions). At a later stage, questions were grouped into general demographic questions and four main categories: satisfaction, easiness, benefits, and advantages/ disadvantages of EHR. This filtration was done to make the question set consistent with the study's objectives, specifically by eliminating or merging similar or related questions. Rewriting and wording the questions were necessary to obtain a unified standardized terminology. The target respondents were defined by including only HCP with PTs, RTs, and physicians' background. The obtained set of thirty-two questions was put into meaningful order and format to straighten the way they appear to participants. The prefinal version of the questionnaire was revised to check its length and to remove any inconsistency problems. A pre-test and validation of the questionnaire was done which led to modifications of a number of questions. The final version of the survey was sent to the study participants. The steps are summarized in Figure 1.

All statements/questions were scored on a 5-point Likert scale from "strongly agree" to "strongly disagree". In the reported results, selecting "strongly agree" or "agree" were viewed as a positive perception about the given statement indicating acceptance, while choosing "strongly disagree" or "disagree" were considered as negative perception or rejecting the given statement. The responses with moderate or do not know or cannot decide were not discussed unless their percentage is the most significant among the respondents to the given statement. The full questionnaire is presented in Appendix 1.

2.2 | Validation of the questionnaire

The questionnaire was presented to a panel consisting of five clinicians who have been using EHR for the last 10 years or more and are familiar with this type of research. After considering the modification of the experts' panel, the questionnaire was pilot tested with a group of clinicians and again modified accordingly.

The internal consistency of individual sections of the questionnaire was studied using Cronbach alpha. A Cronbach's alpha value of 0.7 or more was considered as evidence of good internal consistency [28].

2.3 | Participants

The present study targeted physicians, RTs, and PTs from overall KSA. 248 specialists whose data were available to the researchers and fulfilled the inclusion and exclusion criteria (see below) were emailed to investigate whether they are willing to participate in the present study. Questionnaires were distributed during the period from March 2020 to August 2020. A total of 181 agreed to take part in the research study. 108 professionals (from different hospitals and cities of KSA) filled in and returned the questionnaire. The percentage of those who responded from those who agreed to participate was 59.7%

TABLE 1 Cronbach's alpha values for the individual sections of the used questionnaire.

Section	Cronbach alpha
Beneficial/detrimental	0.830
Satisfaction	0.898
Easiness	0.733
Obstacles	0.886

TABLE 2 Demographic and professional data.

Variable	Number (%)
Age groups	
<30	50 (46.3%)
30–40	29 (26.9%)
41–50	21 (19.4)
>50	8 (7.4%)
Job	
Physician	20 (18.5%)
Respiratory care therapist	49 (45.4%)
Physical therapist	39 (36.1%)
Job rank	
Consultant	20 (18.5%)
Specialist	50 (46.3%)
Technologist/Technician	15 (13.9%)
Student	8 (7.4%)
Other	15 (13.9%)

(108/181). Participants who were physicians, PTs or RTs and practicing in Saudi Arabia were included in the study. Clinicians with other fields or practicing outside Saudia Arabia were excluded.

2.4 | Statistical product and service solutions

Statistical package for the Social Sciences (SPSS) (version 23, IBM Corp., USA) was used for data analysis. Statistical significance was taken at $p < 0.05$. Data normality was assessed using visual inspection and Shapiro–Wilk test. Data was not normally distributed, therefore nonparametric tests were used for all comparisons [29]. Categorical data were expressed as percentages and frequencies. Chi-square test (χ^2) was used to compare age groups, different jobs, different job ranks, and duration of EHR use on the perceived changes which EHR had made in participants' clinical work [29]. The effects of participants' demographics on perceived benefits of EHR, satisfaction with EHR use, easiness of EHR use and disadvantages of EHR use were investigated using the Kruskal-Wallis's test. Post hoc Mann–Whitney tests using a Bonferroni adjusted p values based on the number of comparisons done were used to compare all pairs of diverse groups [29].

3 | RESULTS

3.1 | Internal consistency of the questionnaire

The internal consistency of the individual parts of the questionnaire showed good internal consistency (as measured by Cronbach alpha). The Cronbach's alpha values for the individual sections of the questionnaire are given in Table 1.

3.2 | Demographic data of participants

Table 2 shows the demographic data of participants. When participants were asked how the use of EHR has changed their work in comparison to the use of paper medical records, 90.5% indicated that using EHR made their work much better or better. Only 3.9% indicated that EHR made their work worse or much worse. Chi square test showed that there were no significant differences between different age groups ($\chi^2(12) = 15.9$,

$p = 0.195$), different participants jobs classes ($\chi^2(8) = 9.1$, $p = 0.334$), different job ranks ($\chi^2(20) = 18.2$, $p = 0.573$), or duration of EHR use ($\chi^2(12) = 13.7$, $p = 0.322$) on the perceived changes which EHR had made in participants clinical work or on the believe about the overall use of EHR in participants' hospitals.

78% of respondents believe that the use of EHR in their hospitals is high or remarkably high. Only 5% believe that the use of EHR is low or exceptionally low in their hospitals. Chi square test showed that there were no significant differences between different age groups ($\chi^2(12) = 12.5$, $p = 0.408$), different participant job class ($\chi^2(8) = 8.1$, $p = 0.426$), different job ranks ($\chi^2(20) = 24.2$, $p = 0.233$) or duration of EHR use ($\chi^2(12) = 19.1$, $p = 0.087$) and the believe about the overall use of EHR in their hospitals.

3.3 | Beneficial/ detrimental effects of EHR

Table 3 shows the participants' response to questions regarding the benefits/ detrimental effects of using EHR. Most participants (75% or more indicated that EHR is highly beneficial or beneficial for their clinical practice for the criteria provided. However, when participants were asked about the beneficial effects of EHR in avoiding errors (such as overlooking a drug interaction), only 36.4% reported that EHR is highly beneficial or beneficial. More than 50% indicated that EHR is detrimental for these criteria (Table 2).

3.4 | Satisfaction with the use of EHR

Respondents were moderately to highly satisfied with the use of EHR, with the highest satisfaction was with the easiness of the

TABLE 3 Percentage of participants who indicated that electronic health records (EHR) is beneficial/detrimental to their clinical practice based on the criteria provided.

	Highly beneficial	Beneficial on the whole	Neither detrimental nor beneficial	Detrimental on the whole	Highly detrimental
Costs of providing care	54.3%	31.4%	6.7%	5.7%	1.9%
Quality of health care	60.0%	30.5%	4.8%	2.9%	1.9%
Interactions within the health care team	48.6%	30.5%	15.2%	1.9%	3.8%
The rapport between clinicians and patients	48.1%	32.1%	11.3%	4.7%	3.8%
Personal and professional privacy	50.0%	34.0%	8.5%	2.8%	4.2%
Clinicians' access to up to-date knowledge	48.6%	27.6%	17.1%	3.8%	2.9%
The comprehensiveness of patient care	52.8%	32.1%	8.5%	2.8%	3.8%
The efficiency of clinical practice	47.6%	40.0%	5.7%	2.9%	3.8%
Avoiding errors (such as overlooking a drug interaction)	6.7%	29.7%	9.6%	34.6%	20.2%
EHR primary value is just a data storage	47.6%	29.5%	15.2%	3.8%	3.8%

TABLE 4 Satisfaction of participants with the use of electronic health records (EHR).

	Strongly agree	Agree	cannot decide	Disagree	Strongly disagree
To me, the use of this EHR is easy.	43.3%	43.3%	5.9%	4.8%	2.9%
The EHR screens are intuitive.	30.5%	52.4%	11.4%	3.8%	1.9%
This EHR provides all the functionalities that I expect.	26.9%	44.2%	11.5%	13.5%	3.8%
Overall, I am satisfied with my experience with this EHR.	28.8%	51.9%	4.8%	12.5%	1.9%
EHR is a viable alternative FOR paper-based records.	43.3%	43.3%	6.7%	1.9%	4.8%
EHR reduces clinicians' stress-level.	33.3%	35.2%	18.1%	10.5%	2.9%
Patients' satisfaction with the quality of care they receive.	39%	37.1%	19%	2.9%	1.9%

system use and its being a viable alternative for the paper-based record. While they were least satisfied with the amount of stress it may cause to clinicians (Table 4).

3.5 | Easiness of EHR use

Most respondents reported that EHR is very easy or easy to use for the indicated tasks. The task which got the highest score was viewing laboratory tests for patients in a timely fashion. The least score was given to manage chronic disease condition for patients (Table 5).

3.6 | Disadvantages of EHR use

When asked about the disadvantages of EHR, about one third of respondents indicated that EHR requires doing more work in comparison with the paper-based system. Twenty three percent strongly agreed or agreed that EHR contributes to health care provider burnout. About 11% strongly agreed or agreed that EHR detracts from clinical effectiveness and takes valuable time away from their patients (Table 6).

3.7 | Effects of participants' demographics on EHR perception and use

The effects of participants' demographics on perceived benefits of EHR, satisfaction with EHR use, easiness of EHR use and disadvantages of EHR use were investigated. The perceived benefits of using EHR did not differ in different age group (H (3) = 3.721, p = 0.293), in different participant job class (H (2) = 1.811, p = 0.404), in different job ranks (H (3) = 2.795, p = 0.424), or based on the duration of EHR use (H (2) = 2.546, p = 0.280).

Satisfaction with the use of EHR was not affected by age (H (3) = 1.864, p = 0.601), different participant job class (H (2) = 0.883, p = 0.643), job rank (H (3) = 2.840, p = 0.417), or duration of EHR use (H (2) = 1.742, p = 0.419).

TABLE 5 Easiness of which electronic health records (EHR) allows you to perform certain tasks.

	Very easy	Somewhat easy	Somewhat difficult	Very difficult	Does not apply to me
Obtain, and review patient information and data	59.0%	31.0%	4.0%	3.0%	3.0%
Document care for my patients	48.0%	35%	4.0%	2.0%	4.0%
View lab tests for my patients in this EHR in a timely fashion	63.0%	28%	8.0%	0.0%	1.0%
EHR allows me to review and research clinical trends	48.5%	36.9%	6.8%	4.9%	2.9%
Prevent adverse events (e.g. drug-drug interaction, drug-allergy interaction)	44.0%	28.0%	9.0%	3.0%	16.0%
Manage chronic disease conditions for my patients	43.0%	25.0%	12.0%	6.0%	14.0%
Manage orders/referrals	47.0%	33.0%	11.0%	1.0%	8.0%
Analyze outcomes of care	45.0%	32.0%	10.0%	6.0%	7.0%
Communicate with my colleagues to coordinate care	42.0%	29.0%	15.0%	6.0%	8.0%
Communicate with my patients	46.6%	34.0%	7.8%	1.9%	9.7%
Enhance the continuity of care my organization is able to provide	44.0%	39.0%	7.0%	3.0%	7.0%

TABLE 6 Disadvantages of electronic health records (EHR).

	Strongly agree	Agree	cannot decide	Disagree	Strongly disagree
Use of this EHR requires me to do more work compared to what I used to do	13.5%	19.2%	7.7%	36.5%	23.1%
Using EHR detracts from clinical effectiveness.	7.5%	3.8%	12.3%	46.2%	30.2%
EHRs contribute to physician burnout	7.7%	15.4%	25.0%	31.7%	20.2%
Using EHR takes valuable time away from my patients.	3.8%	6.7%	11.4%	40.0%	38.1%

Similarly, easiness of the use of EHR was not affected by age (H (3) = 1.862, p = 0.602), different participant job class (H (2) = 2.211, p = 0.331), job rank (H (3) = 1.015, p = 0.798), or duration of EHR use (H (2) = 3.111, p = 0.211). However, the perceived disadvantages of the use of EHR were significantly affected by age (H (2) = 9.383, p = .025). Post-hoc Mann–Whitney U tests using a Bonferroni adjusted α = 0.0125 (0.05/4) showed that none of the comparisons were significant. The perceived disadvantages of the use of EHR were different in different participant job classes (H (2) = 10.121, p = 0.006). Post-hoc Mann–Whitney U tests using a Bonferroni adjusted α = 0.016 (.05/3) showed that there was a significant difference between physicians and respiratory therapists (U = −20.9, z = −2.590, p = 0.029), there was a significant difference between physical therapists and respiratory therapists (U = 17.3, z = 2.648, p = 0.024). However, there was no significant difference between physicians and physical therapists (U = −3.6, z = −0.423, p = 1.000). Physicians and physical therapists reported less disadvantages for the use of EHR than respiratory therapists. The perceived disadvantages of the use of EHR were significantly affected by job rank (H (3) = 9.014, p = 0.029). Post-hoc Mann–Whitney U tests using a Bonferroni adjusted α = 0.010 (0.05/5) showed that none of the comparisons were significant. Duration of EHR use was significantly affected the perception of disadvantages of the use of EHR (H (2) = 15.227, p < 0.0001). Post-hoc Mann–Whitney U tests using a Bonferroni adjusted α = 0.0125 (0.05/4) showed that clinicians who have used EHR for 3–5 years differed significantly from those who have used EHR for 1–3 years (U = 26.1, z = 2.651, p = 0.048 and from those who used it for with less than one year (U = 36.5, z = 4.015, p < 0.001). Moreover, clinicians with more than 5 years' experience using EHR differed significantly from those who used EHR for less than one year (U = 26.2, z = 3.526, p = 0.003). In general, the longer EHR was used the less disadvantages were reported.

4 | DISCUSSION

The present study attempted to investigate the perception of HCP (in three areas: physicians, PT and RT) in Saudi Arabia toward using EHR. The results of the study showed that most of the HCP in the three specialties investigated view EHR as beneficial. Most of the respondents were satisfied with the use of EHR. Moreover, most of the participants testified to the easiness of the EHR system use. The main disadvantage of EHR use reported was that EHR use required more time. Health care providers from different disciplines seem to differ in their perception toward the use of EHR.

Our results showed that more than two thirds of the respondents consider the use of EHR as beneficial. These results are in line with studies like King et al. [30] where more than half of participants reflected positively on the different benefits of EHR on their routine clinical work. The present study showed that the demographics of the participants (age, field of work, job rank and duration of EHR use) did not affect the HCP perceived benefits of EHR use. This finding contradicts that of King et al. [26] who reported that HCP who used EHR for longer time perceived it as more beneficial. The difference between the two studies' findings could be due to the different specialties of HCP participating in the two studies.

The investigation of users' satisfaction of using EHR from various aspects is common. Most of these works clearly state that users in general are pleased with using such systems [31, 32], however, there are differences in the level of satisfaction. The results among family medicine physicians [31] showed a 76% of respondents were satisfied with the use of EHR while the average satisfaction in the carried work is about 80%. On the other side, research work on the satisfaction associated with other variables like age, ease of use, technology background and skills and experience gave controversial results [33]. In the present study the level of satisfaction was not affected by age, job type, job rank or number of years using EHR systems.

Regarding the ease of use of EHR, our results are consistent with other studies [34, 35] where more than 90% of respondents reported that EHR systems made data documentation, obtaining, and reviewing patient information easier than using the paper format. However, a smaller percentage (about 70%) of respondents reported that the use of EHR has made advanced functions like managing chronic diseases, and preventing adverse events, easier to use than the conventional format. The reason behind this could be that these functions need more skills and expertise to master and use routinely. Comparable results were reported by others. For example, Furukawa et al. [34] showed that when it comes to advanced functions and tasks like public health reports, HCP showed more difficulty in using EHR. The older HCP are the less likely to perceive EHR as useful [35], however, the present study did not show a significant difference between HCP from different age groups. The reason behind this could be that the oldest clinician in our study was below the age of 60 years.

The use of EHR is associated with some difficulties and obstacles from the point of view of participants. One clear issue in this regard is the more time spent while using EHR which many HCP consider as a main disadvantage of these systems that hinder their use. Such finding was reported by other studies [36]. Moreover, the burnout caused by using EHR has been reported by many published studies [37, 38]. Other studies reported more frustration and burnout as linked to some departments and jobs like attending physicians in emergency department compared to residents. The revealed results also showed a significant difference in how different healthcare jobs react to the use of EHR which can be due to the existence or absence of specialty specific functionalities in the available EHR system used. Moreover, the longer the experience of using EHR systems, the more comfortable and the less difficulties expressed by HCP. This finding is in line with overall technology adoption and perception rules. The revealed bivariate comparisons between the groups of participants represent and maximize the identification of the meaningful implementation status of EHR.

Considering the other side of EHR where some of the participants expressed negative response to specific issues of EHR use shows that these problems are not unusual in the context of new technology adoption and use and the portion of the respondents who mentioned them as disadvantages are not comparable (10% or less in most cases) with those who did not consider them the same way, Table 6. In particular, some of the respondents stated that there is a need for more time to perform clinical tasks through EHR which is rather unusual for users of innovative technology [16, 39]. Additionally, others raised issues like detracting from clinical effectiveness or taking valuable time away from patients. This can be minimized with more training and experience on the new systems [32, 38, 39].

The study has some limitations. The sample size (108) is relatively small and included HCP from three fields only. The age groups of participants are not even, there is skewness toward younger participants. Only some aspects of the used questionnaire validity and reliability have been established.

5 | CONCLUSION AND FURTHER WORK

The present study showed that most of the study participants have a positive perception toward the use of EHR systems. The main disadvantages of EHR systems as reported by the study participants are time demand and its contribution to HCP burnout. The participants' demographics (age, specialty, years of experience, working experience with EHR and rank) do not seem to affect their perception toward the use of EHR.

One of the future topics which need to be studied is periodic evaluations of usability of EHR in KSA. The proposed work is expected to target issues like HCP burnout, and clinical stress caused by EHR use. Future studies regarding this topic should use a bigger sample with equal participants from different age groups. Moreover, validated questionnaires should be used and include HCP from other disciplines.

AUTHOR CONTRIBUTIONS
A. Karim Jabali. Conceptualization, Data curation, Investigation, Methodology, Project administration. Fuad A. Abdulla: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration

CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data available on reasonable request from the authors.

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