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Knowledge, Attitude and Practice of eHealth among a Cohort of Egyptian Healthcare Providers: A Cross-sectional Study

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ABSTRACT

Background: Electronic health (eHealth) is one of emerging domains, which offer the use of information and communication technology, internet as well as other related technologies to enhance health care delivery and service provision.

Aim: This study aimed to assess knowledge, attitude, and practice of eHealth among Egyptian health care providers.

Subjects and Methods: This is a multicentric cross-sectional analytical study conducted at university hospitals in Egypt. The study was approved by the Institutional Review Board (IRB) committee of the Faculty of Medicine, Cairo University (N-64-2022). Health care providers including physicians and nurses across the different specialties were invited to fill the pre-tested structured self-administered e-questionnaire.

Results: The overall response rate was 97.2% (418 healthcare provider responded from 430 invited). Age of respondents' mean was 34.2 ± 10.9 years. Females represented more than three quarters of the taken sample (78.5%). The current study revealed that (44%) of the participants had good level of knowledge while most of them (83%) had a favorable attitude towards eHealth. Medical literature and electronic media significantly raised attitude score among participants, while ever attendance of orientation training program on eHealth significantly raised both knowledge and attitude scores. Attitude score % (median= 90, IQR: 70-100) was higher than knowledge score % (median= 70, IQR: 60-90), with moderate positive significant correlation (r= 0.34, *p*= 0.001).

Conclusion: The current study shed light on different enablers of eHealth adoption among healthcare providers. Medical literature, electronic media and orientation training program played pivotal role in raising both knowledge and attitude towards eHealth.

Keywords: eHealth, Digital Health, Telehealth, eHealth Knowledge, eHealth Attitude, eHealth Practice.

INTRODUCTION

Healthcare services have changed dramatically nowadays. The implementation of new technologies and approaches for providing health advice, consultation, diagnosis, and management of health problems was crucial to match such transformation [1,2]. These technologies have the potential to transform many aspects of patient care, as well as administrative processes within health care provisions [3,4].

Moreover, eHealth solutions have been identified as promising pillars to tackle pandemic challenges. According to the Organization for Economic Co-operation and Development (OECD), telemedicine is being used to deliver healthcare in a wide range of specialties, for numerous conditions, and through varied means, remote teleconsultation is now routine for many cardiologists and is appreciated by patients for its convenience [5,6].

Furthermore, eHealth allows the flow of expert medical knowledge from medical professionals to distant remote locations where knowledge is needed because of a lack of medical experts, cost, and accessibility issues [6,7].

The nature and functions of eHealth services are expanding rapidly in Egypt, especially in the hospital care setting [8,9]. Egypt started the first phase of the distance diagnosis initiative in September 2021, with a capacity of 150 medical units [10-12].

Despite many published articles about the importance of eHealth implementation, limited data have been published about how physicians, staff, and even patients adapt to this implementation process [13].There is a true gap, which necessitates the conduction of more studies about both the adoption and adaptation patterns of healthcare providers to eHealth technologies. This study aimed to assess the knowledge, attitude, and practice of eHealth among Egyptian healthcare providers, in order to have more insights towards better implementation and maximum outcome.

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SUBJECTS AND METHODS

This is a multicentric cross-sectional analytical study, conducted at university hospitals in Egypt. A sample of 418 healthcare providers; among the different specialties, were included. The inclusion criteria of participants were i) being an Egyptian resident, ii) being ≥18 years old, and iii) willing to participate.

Sampling technique and Sample size:

A convenient sample from all the study population was accessed by the investigators. According to previous studies, the average detected rate of knowledge, attitude and practice was approximately 60% among health care providers [13].

Therefore, the minimum sample size was determined to be 350 using open-epi online calculator (http://www.openepi.com/SampleSize/SSPropor.htm) with 95% confidence limit and 80% power. Considering non-response rate of 20%, therefore the final sample size was 420 health care providers. However, all the study population was accessed; whoever agreed to participate was taken in the sample.

Data collection tool:

A pre-tested structured self-administered e-questionnaire with both open-and closed-ended questions was used to collect data from the study participants [14]. It included the following four sections:

a) Socio-demographic characteristics: age in years, sex, education, specialty, rank, and residence.

b) Knowledge-related questions (16 questions, divided into two groups): Three categories of knowledge level as follows:

'Poor knowledge' - 0-50%; 'average knowledge' - 51-75%;

and 'good knowledge' – above 75% "Yes" responses.

c) Assessment of attitude (10 questions): The score was classified into 3 levels which were "Favorable" (>70%)," Moderately Favorable" (20-70%), and "Unfavorable" (<20%).

d) Practices-related questions (4 questions): asking about the modality and frequency of eHealth practice.

Data collection technique:

A Google form was created, and participants were invited through personal communication (via Facebook groups, WhatsApp contacts, email. etc.) with the researchers to complete the form and submit it.

Statistical analysis

All the collected data were revised for completeness and logical consistency. The data were extracted from the google form to Microsoft Office Excel Software Program, 2019, then were transferred and analyzed into the Statistical Package for the Social Sciences Software program, version 26 (SPSS) for statistical analysis.

Descriptive statistical analysis was used to describe the characteristics of respondents. Quantitative variables were described as mean, SD, median, and interquartile range. Qualitative ones were described as frequency and percentage. Relations were stated using Mann Whitney U, Kruskal-Wallis H tests and Spearman's rho correlation, where significant p value was at $p<0.05$. Illustrative figures were used as well.

Ethical approval and consent to participate:

The study was approved by the Institutional Review Board (IRB) Committee of the Faculty of Medicine, Cairo University (N-64-2022). Implicit informed consent was attained from the study participants after clarification of the study aim and importance of the online form before data collection. Only those who agreed were included and those who refused were excluded from the study by submitting empty form after answering "Not willing to participate". All procedures for data collection were treated with confidentiality according to the Helsinki Declarations of biomedical ethics. Participants were informed that this was an anonymous survey and participation was voluntary.

RESULTS

The overall response rate to the self-administered e-questionnaire was 97.2% (418 healthcare providers responded from 430 invited). The age of respondents ranged from 18 to 72 years with a mean of 34.2 ± 10.9 years. Females represented more than three-quarters of the taken sample (78.5%). Also, urban residents appeared more than rural ones (71.1%).

Apart from partaking nurses (22.7%), the highest number of medical participants were from the "internal medicine" specialty (12%). Almost one-third of medical participants were "Residents/Demonstrators" (32.6%) (Fig. 1).

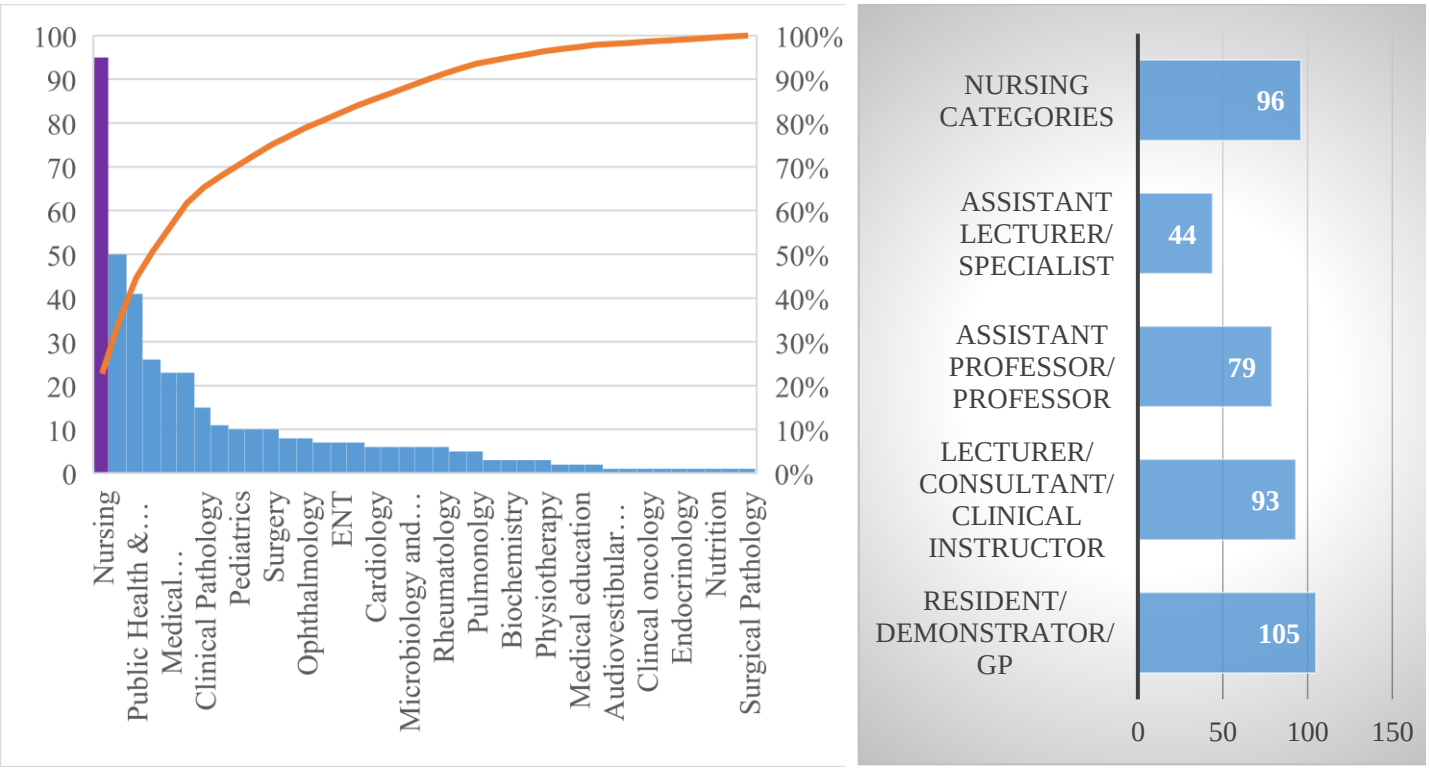

Fig. 1: Distribution of participant health care providers according to their specialty and title.

Most of healthcare providers knew well that eHealth means; " Use of Internet to enhance/promote health", " Health information exchange and communication between health providers in a standardized way", and "Electronic medical record of patients' registration". While the knowledge gap was in the item " Management of patients including surgical procedure through the Internet". Forty-four percent acquired good knowledge (Table 1).

Table 1: Knowledge of participating health care providers about meaning of eHealth (n=418)

Knowledge item	Yes		No	
	No.	%	No.	%
Healthcare through the Internet	337	80.6	81	19.4
Use of the Internet to enhance/promote health	383	91.6	35	8.4
Patients' management with drugs through the Internet or electronic media	240	57.4	178	42.6
Patients' examination communicated through the Internet	200	47.8	218	52.2
Management of patients including surgical procedures through the Internet	117	28.0	301	72.0
Electronic medical record of patients' registration	361	86.4	57	13.6
Follow-up of patients through the electronic technologies	358	85.6	60	14.4
Education of physicians through online sources	354	84.7	64	15.3
Health information exchange and communication between the health providers in a standardized way	378	90.4	40	9.6
Direct full consultation of the patients through video conferencing	268	64.1	150	35.9
Knowledge level	**Good knowledge (>75%)**		**184**	**44.0%**
	Average knowledge (51-75%)		**154**	**36.8%**
	Poor knowledge (0-50%)		**80**	**19.1%**

Generally, healthcare providers showed positive attitude regarding eHealth, specially that "eHealth can improve the productivity of the workplace" and "they find eHealth useful in their jobs" mainly in "saving time when using it". Most of them had a favorable attitude towards eHealth (83.7%) (Table 2).

Table 2: Opinion of the participating healthcare providers regarding eHealth (n=418)

Attitude statement	Agree		Disagree	
	No.	%	No.	%
I find eHealth useful in my job	375	89.7	43	10.3
I find the eHealth system easy to use	335	80.1	83	19.9
I found it easy to learn how to use this system	332	79.4	86	20.6
eHealth can improve the productivity of the workplace	384	91.9	34	8.1
I can use it successfully at every time	278	66.5	140	33.5
It saves my time when I use it	372	89.0	46	11.0
eHealth would decrease the burden of our patients visiting of hospitals	367	87.8	51	12.2
It should be implemented in all the hospitals	344	82.3	74	17.7
eHealth can be used for the prevention and treatment of communicable diseases	362	86.6	56	13.4
I am interested in getting training in telemedicine	360	86.1	58	13.9
Attitude level	**Favorable (>70%)**		**350**	**83.7%**
	Moderately favorable (20-70%)		**64**	**15.3%**
	Unfavorable (<20%)		**4**	**1.0**

The "Educational" area was the main area associated with eHealth among the participating healthcare providers (42%) (Fig.2-a). "Internet" was the main communication technique used between them (60%) (Fig.2-b), "Medical literature" was their main source of knowledge (27.8%) (Fig.2-c) and "Lack of time" was the main barrier to improving their health knowledge (45.4%) (Fig.2-d). Half of the participants had previously attended orientation training program on eHealth. From those who attended, about a quarter (24.2%) joined "less than 3 days' program".

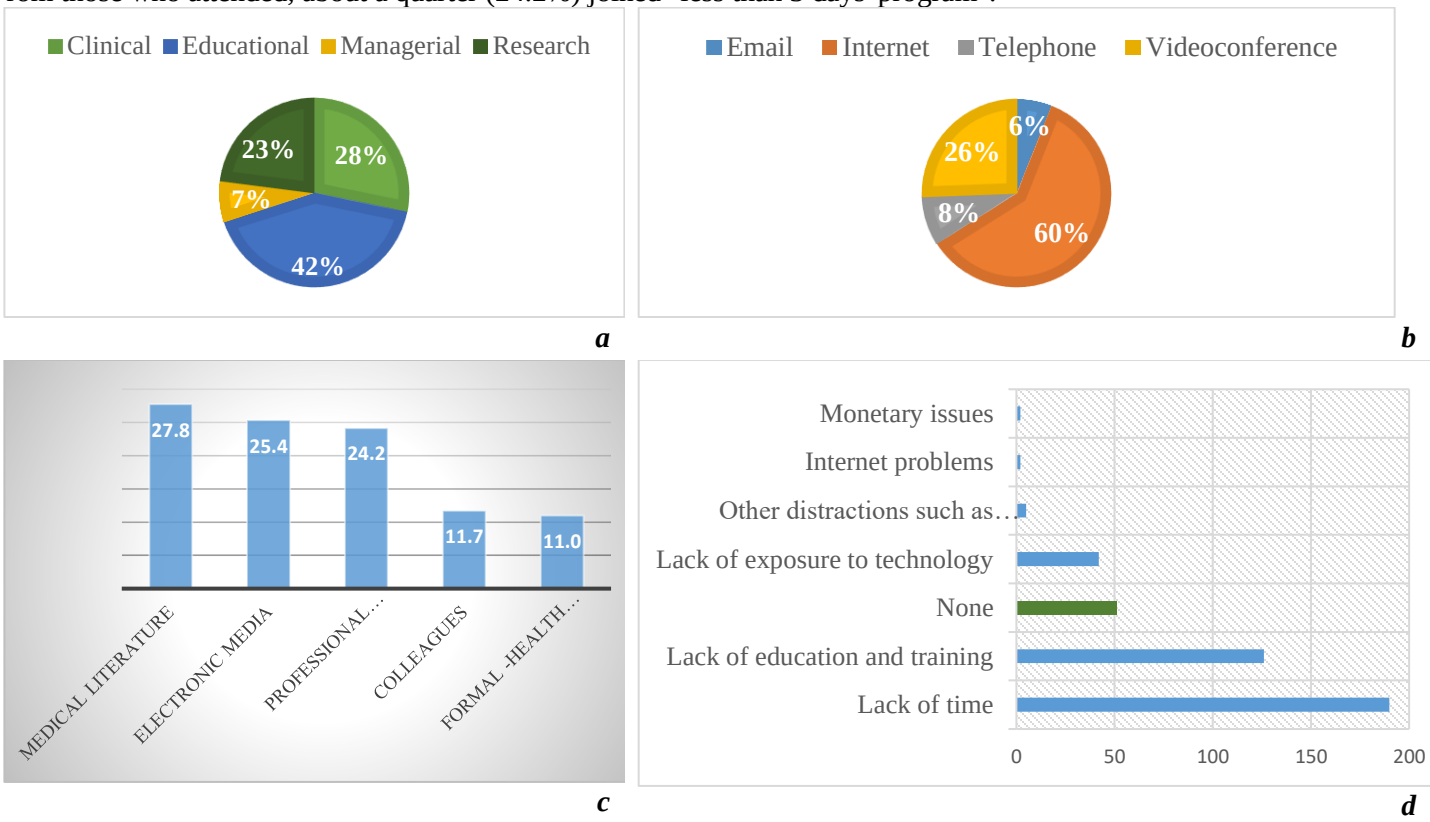

Fig. 2: Distribution of additional knowledge items among participant health care providers.

Age had weak negative significant correlation with knowledge score. Attitude of males was significantly more favorable than females towards eHealth. Medical literature and electronic media significantly raised attitude score among participants. Lastly, ever attendance of orientation training program on eHealth significantly raised both knowledge and attitude scores (Table 3).

Table 3: Relation between "characteristics" of participants and their "knowledge" and "Attitude"

Characteristic		Knowledge percent score		Attitude percent score	
		Mean rank	*P* value	Mean rank	*P* value
Age		r= -0.11	**0.02 ***	r= -0.04	0.45 *
Sex	Male	223.1	0.22**	237.5	**0.01****
	Female	205.7		201.8	
Residence	Urban	203.5	0.1**	208.8	0.86**
	Rural	224.1		211.0	
Title	Assistant Professor/ Professor	206.5	0.36#	186.8	0.12#
	Lecturer/ Consultant/ Clinical instructor	208.3		205.5	
	Assistant Lecturer/ Specialist	204.7		229.0	
	Resident/ Demonstrator/ GP	194.8		227.2	
	Nursing categories	229.1		201.6	
Main source of Knowledge	Medical literature	213.1	0.33#	226.1	**0.01#**
	Electronic media	225.9		223.7	
	Professional training/conference	191.9		201.8	
	Colleagues	209.7		199.9	
	Formal-health training	200.9		162.0	
Main barriers to improving health knowledge	Lack of time	205.2	0.39#	208.2	0.84#
	Lack of education and training	207.5		206.7	
	Lack of exposure to technology	225.5		206.1	
	Other distractions such as wasting time on social media/ Lack of motivation	197.1		201.3	
	Internet problems	35.5		119.0	
	Monetary issues	197.8		241.5	
	None	225.6		227.4	
Ever attendance of orientation training program on eHealth	Yes	221.3	**0.04****	222.7	**0.02***
	No	197.7		196.3	

*Spearman's rho correlation, **Mann-Whitney U, #Kruskal-Wallis H.

Attitude score % (median= 90, IQR: 70-100) was higher than knowledge score % (median= 70, IQR: 60-90), with moderate positive significant correlation (r= 0.34, *p*= 0.001) (Fig. 3).

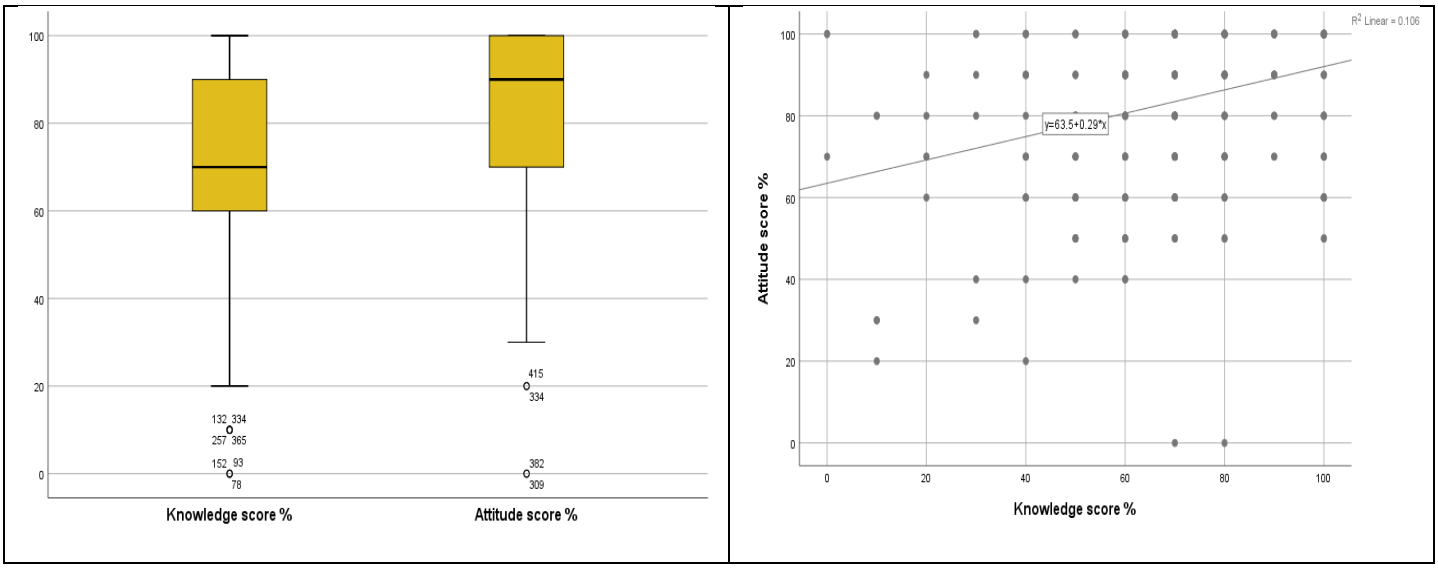

Fig. 3: Relation between Knowledge score % and Attitude score %

"Follow-up" was the most common field of use of eHealth in participants' practice (49%). "Mobile phone" was the supreme type of eHealth modality used in their practice (52%). Also 52% of participants used eHealth regularly once/week. While effectiveness of use of eHealth with patients was somewhat satisfactory among 45% of the participants (Fig.4).

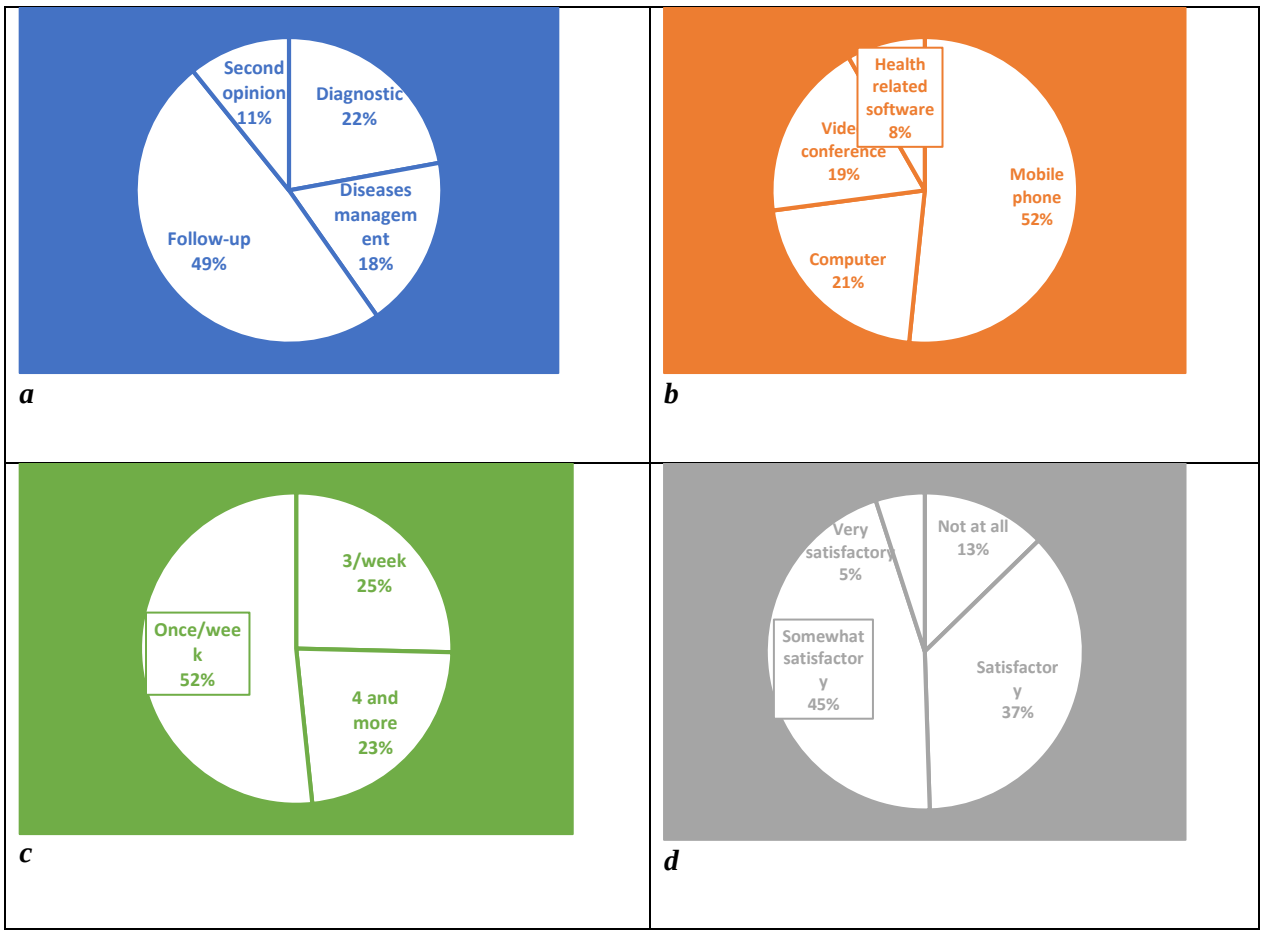

Fig. 4: Practice variables among participant health care providers.

DISCUSSION

The age of the respondents ranged from 18 to 72 years with a mean of 34.2 ± 10.9 years. These results agreed with **Al-Khatlan *et al.,*** who studied the current situation in Kuwait and showed that participants' age ranged from 22 to 69 years with a mean of 35.6 ± 8.8 years [15].

Most of the current study's participants chose the "Educational" area as the main area associated with eHealth among participant healthcare providers (42%) followed by clinical, research, and managerial areas (28%, 23%, and 7% respectively). These results slightly match the results obtained by **Aleke *et al.***, who reported that health education was the eHealth application chosen by most of the participants (92.8%), followed by research, healthcare administration, health policymaking, and clinical area (92.5%, 89.9%, 85.9%, and 84.6% correspondingly) [16].

Regarding the main barriers that hinder improving their eHealth knowledge, lack of time was the main barrier as reported by nearly half of the current study's respondents (45.4%). These results agreed with the results of the study of **Parvin and Shahjahan**, which found that lack of time, lack of education/training opportunities, and lack of exposure to technology were the most important barriers to implementing eHealth (33%, 32%, and 25% successively) [14]. However, the non-availability of information and communication technologies (ICTs) was the main challenge (90.6%) to the implementation of eHealth services as stated by **Lekalakala-Mokgele *et al.*** [17].

Out of the 418 respondents, only 44% had good knowledge (>75%) of eHealth. As predicted, this percentage was close to the percentage reported by **Al-Khatlan *et al.,*** who showed that 41.3% of the respondents had an intermediate level of eHealth knowledge score [15]. In comparison with **Ahmed *et al.'s*** study, which was carried out in an Egyptian hospital among 205 nurses and found that 97.1% of them had a good level of knowledge [18]. The difference might be because the former study was conducted among health professionals who were working in a hospital where there was an established network and electronic health information system. However, the current study included a wider sector of healthcare providers in different locations of urban and rural areas with variability in the infrastructure.

Regarding their attitudes, most of the participants showed a favorable attitude toward eHealth. This result coincided with the results reported by the study of **Olok *et al.,*** in which most of the healthcare professionals had positive attitudes towards eHealth attributes [19].

The results of the present study showed that the age of the respondents had a weak negative significant correlation with their knowledge score. On the other hand, the attitude of males was significantly more favorable than that of females towards eHealth. In addition, the attitude score was significantly raised by medical literature and electronic media. Previous attendance at the eHealth orientation program had significantly raised both knowledge and attitude scores.

These findings are quite similar to the results reported by **Parvin and Shahjahan** who found that both age, gender, respondents' rank, and service length were significantly related to the knowledge level [14]. Also, the study conducted by **Shouman *et al.*** to assess the awareness and attitude of Egyptian healthcare workers towards telehealth showed that there was an association between the education level, professions categories, and healthcare workers' awareness of telehealth [20].

Kalayou *et al.* showed that healthcare professionals' IT experience strongly influences perceived usefulness ($\beta = 0.595$, $P = 0.00$), and their attitude towards eHealth ($\beta = 0.267$, $P = 0.02$), technologies [21]. The possible reason for this could be that the staff with previous IT experience may know the challenges to use eHealth technologies in low-resource settings with interrupted power supply, limited computer access, and a high burden of care on providers due to high patient flow. Therefore, before and after the implementation of eHealth systems capacity building of staff in IT, is crucial for the sustainable adoption of eHealth technologies in the future. Additionally, it is necessary to provide more computers within the wards to practice and teach themselves without having to wait for free computers [22].

Ghoochani *et al.* found that the percentage of both good attitudes and practices to be 40%, compared to **Mengestie *et al.*** finding of attitudes and practices of 66.3% and 50.4%, respectively [23,24]. The time difference between the two studies and the impact of the COVID-19 pandemic-associated distancing might have affected healthcare professionals' knowledge and attitudes as recent developments in technology and the urgent need for its implementation were likely to bring positive changes.

Regarding eHealth practice, nearly half of the participants (49%) reported that they used eHealth mostly for follow-up purposes. While eHealth also was used for diagnostic purposes, disease management, and second opinions (22%, 18%, and 11%). However, **Parvin and Shahjahan** found that the most common uses of eHealth were patient follow-up (42%) and diagnostics (28%), followed by disease management (15%) and providing second opinions (12%), while other uses constituted just 3% [14]. The mobile phone was the type of eHealth modality used by more than half of the participants (52%) in their practice. Our results were in agreement with **Parvin and Shahjahan** who reported that the mobile phone was the most frequently used modality (64%), with computers (26%), and videoconferencing (9%) being less commonly used. Only 1% had used eHealth-related software [14].

Our study showed that the effectiveness of the use of eHealth among the participants with their patients was somewhat satisfactory (45%), satisfactory (37%), and very satisfactory (5%). The degree of satisfaction among healthcare workers usually varied according to the level of accessibility to electronic tools, the infrastructure, and the nature of electronic health literacy. **Gosadi *et al.*** identified a good overall satisfaction level with the governmental established e-health system in the Jazan region, Saudi Arabia. Although, they found that physicians working in primary healthcare settings were likely to exhibit lower satisfaction levels [25].

Also, **Rotenstein *et al.*** suggested that physicians working in physician-owned practices are more likely to be satisfied with the EHR, and to have positive perceptions of time spent on documentation compared with their counterparts working in non–physician-owned practices [26]. There are many factors needed to raise overall satisfaction with e-Health among healthcare worker, including training attended, incentives received, ethics, and patient confidentiality maintained.

LIMITATIONS

Being a cross-sectional study, the data of our study can be subjected to bias. The participants who responded to our online survey and showed sufficient knowledge, or a positive attitude towards eHealth, or reported using its applications may have supporting facilities such as: strong internet connection, or smartphones, or they had training sessions to learn how to use the eHealth applications. The results may differ if the used tool was face to face interviews, or paper surveys.

CONCLUSION

The current study shed light on different enablers of eHealth adoption among healthcare providers. The medical literature, electronic media, and orientation training program played a pivotal role in raising both knowledge and attitude toward eHealth. The main field of eHealth practice was "Follow-up", where "Mobile phone" was the supreme type of the eHealth modality used.

RECOMMENDATIONS

It is a good opportunity to make use of the favorable attitude of the healthcare providers towards eHealth and direct them to more adoption and proper practice. Professional training programs will have a great impact on knowledge enhancement and consequently better attitude and practice among the participants. Efforts should be directed to widen the fields of eHealth applications, with more technological modalities.

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REFERENCES

1. **Ohannessian R, Duong T, Odone A (2020):** Global eHealth implementation and integration within health systems to fight the COVID-19 pandemic: A call to action. JMIR Public Health Surveill, 6(2): e18810. doi: 10.2196/18810.
2. **Lin C, Tseng W, Wu J *et al.* (2020):** A double triage and eHealth protocol to optimize infection control in an emergency department in Taiwan during the COVID-19 pandemic: Retrospective feasibility study. J Med Internet Res., 22(6):e20586. doi: 10.2196/20586.
3. **Tagliaferri S, Angelova M, Zhao X *et al.* (2020):** Artificial intelligence to improve back pain outcomes and lessons learnt from clinical classification approaches: three systematic reviews. NPJ Digit Med., 3(1):1–16.
4. **Choudhury A, Asan O (2020):** Role of artificial intelligence in patient safety outcomes: systematic literature review. JMIR Med Inform. ,8(7):e18599
5. **OECD (2023):** The COVID-19 Pandemic and the Future of Telemedicine, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/ac8b0a27-en.
6. **Reeves J, Hollandsworth H, Torriani F *et al.* (2020):** Rapid response to COVID-19: health informatics support for outbreak management in an academic health system. J Am Med Inform Assoc., 27(6):853–859. doi: 10.1093/jamia/ocaa037.
7. **Hanlon P, Daines L, Campbell C *et al.* (2017):** Telehealth interventions to support self-management of long-term conditions: A systematic metareview of diabetes, heart failure, asthma, chronic obstructive pulmonary disease, and cancer. J Med Internet Res., 19(5):e172. doi: 10.2196/jmir.6688.
8. **Badran M (2019):** eHealth in Egypt: The demand-side perspective of implementing electronic health records. Telecommunications Policy, 43. 10.1016/j.telpol.2019.01.003.
9. **Garas S (2021):** Use Intention of Aggregator Medical Mobile Apps' (M-apps) and Revealing Reasons for Non-Use. Journal of Alexandria University for Administrative Sciences, 58(5): 171-201..
10. **Khashan M, Alasker T, Ghonim M *et al* .(2024):** Understanding physicians' adoption intentions to use Electronic Health Record (EHR) systems in developing countries: an extended TRAM approach. Marketing Intelligence & Planning. 10.1108/MIP-05-2023-0225.
11. **Mursi M, Emad S, Salama M (2021):** Towards a Secure eHealth System for Public Healthcare Sector in Egypt. 10.21608/BFEMU2021.176376.
12. **Goel A, Singh A, Taneja U *et al* (2024):** Consumer adoption of digital health services: A systematic literature review and research agenda. International Journal of Consumer Studies. 48. 10.1111/ijcs.13070.
13. **Elhadi M, Elhadi A, Bouhuwaish A *et al.* (2021):** Telemedicine awareness, knowledge, attitude, and skills of health care workers in a low-resource country during the

COVID-19 pandemic: Cross-sectional study. J Med Internet Res., 23(2):e20812. doi: 10.2196/20812.

14. **Parvin R, Shahjahan M (2016):** knowledge, attitude, and practice of eHealth among doctors working at selected private hospitals in Dhaka, Bangladesh. J Int Soc Telemed eHealth, 4:e15
15. **Al-Khatlan H, Alazmi S, Almutairi B (2017):** Knowledge, attitude, and practice of eHealth among health care providers in Kuwait. Green J Med Sci., 7(5), 42-51
16. **Aleke C, Omaka-Amari L, Nwafor J *et al.* (2020):** Knowledge and utilization of eHealth care delivery among health care professionals in federal teaching hospital Abakaliki, Ebonyi State, Nigeria. International Journal of Medical and Health Sciences Research,7(1): 19-30.
17. **Lekalakala-Mokgele E, Lowane M, Mogale N (2023):** Knowledge, perceptions and attitudes of eHealth and health technology among nursing students from Gauteng Province, South Africa. Healthcare (Basel), 11(12):1672. doi:10.3390/healthcare11121672
18. **Ahmed A, Abd Elaziz E, Abdalla N (2020):** Nurse's knowledge, skills, and attitude toward electronic health records. Journal of Nursing and Health Science,9:53–60.
19. **Olok G, Yagos W, Ovuga E (2015):** Knowledge and attitudes of doctors towards eHealth use in healthcare delivery in government and private hospitals in Northern Uganda: a cross-sectional study. BMC medical informatics and decision making,15: 1-10.
20. **Shouman S, Emara T, Saber H *et al.* (2021):** Awareness and attitude of healthcare workers towards Telehealth in Cairo, Egypt. International Journal of Clinical Practice, 75(6): e14128.
21. **Kalayou M, Endehabtu B, Tilahun B (2020):** The applicability of the modified technology acceptance model (TAM) on the sustainable adoption of ehealth systems in resource-limited settings. J Multidiscip Healthc., 13:1827-1837. doi:10.2147/JMDH.S284973
22. **Topkaya S, Kaya N (2015):** Nurses' computer literacy and attitudes towards the use of computers in health care. Int J Nurs Pract.,21(2):141-149. doi:10.1111/ijn.12350
23. **Ghoochani M, Kahouei M, Hemmat M *et al.* (2017):** Health information technology and health care activists: Where is the place of Iranians? Electron Physician, 9(10):5657-5662. doi: 10.19082/5657.
24. **Mengestie N, Yeneneh A, Baymot A *et al.* (2023):** Health information technologies in a resource-limited setting: knowledge, attitude, and practice of health professionals. Biomed Research International, 4980391. DOI: 10.1155/2023/4980391.
25. **Gosadi I, AlTalhi A, Alfaifi A *et al.* (2022):** The experience and satisfaction of physicians with electronic health systems in healthcare establishments in Jazan, Saudi Arabia. J Multidiscip Healthc., 15:2703-2713 https://doi.org/10.2147/JMDH.S390679
26. **Rotenstein L, Apathy N, Landon B *et al.* (2022):** Assessment of satisfaction with the electronic health record among physicians in physician-owned vs non–physician owned practices. JAMA Netw Open, 5(4):e228301. doi:10.1001/jamanetworkopen.2022.8301.