Evaluation of the Knowledge, Practice, and Attitudes of Healthcare Workers on E-Health Systems

Ethar Hussain Alqassab[1], Naif Mutair Alatawi [2], Hind Fahad Alhamdan[3]

[1]*General medicine and surgery , Qatif health network , Work as family medicine resident*
[2] *Strategic Management, Ministry of Transport and Logistic Services*
[3]*Pharmacist , Riyadh, imam abdulrahman bin faisal hospital*

Abstract : This study aimed to evaluate the knowledge, practices, and attitudes of healthcare workers toward e-Health systems . The study involved 56 healthcare workers from various health facilities. In many developing countries, healthcare workers' educational backgrounds in electronic health are limited. This lack of familiarity contributes to challenges in adapting to e-Health systems, leading to ignorance and data discrepancies. The implementation of e-Health systems in developing countries faces significant hurdles, such as insufficient funding to maintain these systems consistently. Additionally, limited access to power and internet connectivity in rural areas exacerbates these challenges. The study aimed to assess healthcare workers' knowledge, practices, and attitudes regarding e-Health systems. A cross-sectional design, a type of descriptive study, was employed. The sample consisted of 56 respondents from five health facilities , selected through a simple random sampling method. Data were collected using a self-administered questionnaire.

Keywords: health , professionals, knowledge, attitude, practice

Introduction

Electronic health (e-Health) seeks to provide health professionals, patients, clinicians, and other relevant stakeholders with information support services to manage, disseminate, collect, administer, control, and monitor healthcare information, thereby enhancing health service delivery and quality of care (Luxton et al .,2015). e-Health encompasses medical practices supported by electronic devices, patient monitoring systems, personal digital assistants, and other wireless technologies. These services remove geographical and temporal limitations while improving healthcare coverage, quality, cost-efficiency, and user provisions (Martínez-Pérez et al .,2013). Several countries are actively addressing the quality of Health Information Management and are in the process of implementing e-Health systems (Broomhead et al.,2021). The healthcare sector, known for its sensitivity to patient data, often relies on paper-based systems for recording, disseminating, and reporting patient information. This practice contributes to data loss and breaches, leading to unauthorized disclosures of sensitive health information (Angula & Dlodlo, 2017).

To expand the reach of digital health, e-Health technologies have been introduced, but these systems often contribute to siloed patient data, with limited interoperability with nationally scaled electronic health systems in many low- and middle-income countries, including Namibia (Were, Martin et al .2021). New resources for remote monitoring and comprehensive patient data capture have become available, along with increased adoption of electronic devices by healthcare professionals. However, many healthcare workers are still adapting to these technological changes (Choi et al .,2013).

Research Aim

The aim of this study was to evaluate the knowledge, practices, and attitudes of healthcare workers regarding e-health systems within health facilities. The findings are intended to enhance the factors that impede optimal levels of knowledge, positive attitudes, and effective practices concerning e-health systems among healthcare workers

Methodology

Study Design

The study employed a cross-sectional design which involves collecting data from a diverse group of respondents to compare various variables at a single point in time. This design was chosen to capture real-world occurrences without manipulating variables or restricting the participants' ability to express their thoughts and emotions. A quantitative approach was utilized to support this objective.

Sampling Methods

A simple random sampling technique was implemented to select healthcare workers from various health facilities , a simple random sampling is most effective when dealing with a smaller population or modest sample sizes, as it ensures every individual has an equal probability of being selected.

Data Collection

Data collection refers to the systematic gathering and measurement of information on variables of interest to answer specific research questions, test hypotheses, and evaluate outcomes. According to Keshta & Odeh (2021), this process involves acquiring and analyzing data within an established system to interpret results and address relevant queries.

Data Analysis

Data analysis involves the systematic process of organizing, cleaning, interpreting, and modeling data to uncover relevant information and draw conclusions. In this study, the data was managed, presented, and analyzed using SPSS version 28 (Statistical Package for the Social Sciences). The results were then summarized and presented through cross-tabulations.

Ethical Considerations

The study proposal was submitted for approval from ethical committee.All participants signed an informed consent to indicate their voluntary participation in the study. The principle of respect for persons was upheld by ensuring full disclosure of the study's aims and objectives. Participants were given ample information to fully understand the study and were informed of their right to withdraw at any time. No participants were coerced or compensated to participate in the study.

Results and Discussion

The results are presented in table format, with explanations provided below. This section summarizes the findings from the reliability analysis.

Section A: Demographic Data

This section provides a summary of the demographic characteristics of the respondents.

Table 1: Demographic Information of Respondents (Healthcare Workers)

Close-ended Questionnaire Questions	Frequency (N)	Percentage (%)
Age Groups		
20-29	19	33.9
30-39	31	55.4
40-49	4	7.1
50+	2	3.6
Total	56	100
Gender		
Male	15	27
Female	41	73

Total	56	100
Educational Level		
Master's Degree	1	2
Bachelor's Degree	27	48
Certificate/Diploma	28	50
Total	56	100
Occupation		
Enrolled Nurses	18	32.1
Registered Nurses	20	35.7
Data Clerks	5	8.9
Community Care Workers	4	7.1
HIS Officers	3	5.4
Administrative Officers	3	5.4
M&E Data Clerks	1	1.8
Pharmacist Assistants	1	1.8
Environmental Health Practitioners	1	1.8
Total	56	100

Findings from Table 1:

- **Age Group:** Among the respondents, the largest age group was 30-39 years, comprising 55.9% (n=31) of respondents. This was followed by the 20-29 age group at 33.9% (n=19), 40-49 age group at 7.1% (n=4), and the smallest group being 50 years and above at 3.6% (n=2).

- **Gender:** The gender distribution indicated that 27% of respondents were male (n=15), while 73% were female (n=41).

- **Educational Level:** In terms of educational qualifications, 50% (n=28) of respondents held a certificate or diploma, 48% (n=27) had a bachelor's degree, and only 2% (n=1) possessed a master's degree.

- **Occupation Distribution:** Registered Nurses made up the largest group at 35.7% (n=20), followed by Enrolled Nurses at 32.1% (n=18). Other occupations included Data Clerks (8.9%), Community Care Workers (7.1%), HIS Officers (5.4%), Administrative Officers (5.4%), and the smallest groups being Environmental Health Practitioners, M&E Data Clerks, and Pharmacist Assistants, each at 1.8% (n=1).

Section B: Knowledge of Healthcare Workers on E-Health Systems

This section reports the understanding of healthcare workers regarding e-Health systems, based on nine questions designed to evaluate their knowledge.

Table 2: Knowledge and Practice of e-Health Systems

Close-ended Questionnaire Questions	Frequency (N)	Percentage (%)
Training Related to e-Health Systems		
Never Received Training	32	58
Trained Once in 6 Months	13	24
Trained Twice a Year	10	18
Total	56	100
Electronic Devices Used		
Computers	23	41
Computers and Tablets	17	30
Cell Phone and Laptops	15	27
Never Used e-Devices	1	2

Total	56	100
Types of e-Health Systems Used		
DHIS Tool	25	45
Go Data Tool	13	24
Red Cap System	3	5
Others	15	26
Total	56	100
Familiarized Features of e-Health Systems		
Capturing and Record Management	6	11
Capturing, Record Management, Reports	28	50
Capturing	18	32
Record Management	4	7
Total	56	100
Ease of Use of e-Health Systems		
Yes	46	82
No	10	18
Total	56	100
Ease of Adaptation to e-Health Systems		
Yes	16	29
No	40	71
Total	56	100
Strong Internet Connection at Workplace?		
Yes	39	70
No	17	30
Total	56	100
Security Threats Experienced		
Yes	15	27
No	41	73
Total	56	100
Need for Further Training		
Yes	53	95
No	3	5
Total	56	100

Findings from Table 2:

- **Training:** The table shows that 58% of respondents (n=32) never received any training related to e-Health systems. In contrast, 24% (n=13) reported receiving training once every six months, and 18% (n=10) received training twice a year.

- **Electronic Devices Used:** Among respondents, 41% (n=23) primarily used computers for e-Health purposes, 30% (n=17) used both computers and tablets, 27% (n=15) used cell phones and laptops, and 2% (n=1) had never used an electronic device.

- **Types of e-Health Systems Used:** The DHIS tool was the most commonly used e-Health system, with 45% of respondents (n=25) reporting its use. This was followed by the Go Data Tool at 24% (n=13), the Red Cap System at 5% (n=3), and other systems at 26% (n=15).

- **Familiarized Features:** Half of the respondents (50%, n=28) were familiar with capturing, record management, and report generation within e-Health systems. 32% (n=18) were only familiar with data capturing, 11% (n=6) with capturing and record management, and 7% (n=4) with only record management.

- **Ease of Use:** A majority of respondents (82%, n=46) found e-Health systems easy to use, while 18% (n=10) struggled with them.

- **Ease of Adaptation:** Regarding adaptation to e-Health systems, 71% (n=40) of respondents reported that they did not take long to adapt, while 29% (n=16) indicated that adaptation took them some time.

- **Internet Connectivity:** 70% of respondents (n=39) reported having a strong internet connection at their workplace, while 30% (n=17) did not.

- **Security Threats:** The majority of respondents (73%, n=41) reported no experience of security threats, whereas 27% (n=15) had encountered such threats.

- **Need for Further Training:** A significant 95% of respondents (n=53) expressed the need for further training on e-Health systems, with only 5% (n=3) feeling that no further training was needed.

This section offers insight into the training levels, usage, and overall comfort with e-Health systems among healthcare workers, highlighting areas for improvement and potential training needs.

Reliability of the Questionnaire

To assess the reliability of the questionnaire, Cronbach's alpha was calculated. The overall reliability score was found to be **0.70**, indicating an acceptable level of internal consistency among the items within the questionnaire.

Section C: Intentions of Healthcare Workers on the Use of E-Health Systems

This section explores the intentions and attitudes of healthcare workers towards the use of e-Health systems. It consists of 12 close-ended questions designed to evaluate their perspectives on various aspects of e-Health implementation. The findings are summarized in Table 3.

Table 3: Intentions of Healthcare Workers on the Use of E-Health Systems

Question	Response	Frequency (N)	Percentage (%)
Using e-Health systems will make communication between healthcare providers more efficient and accurate.	Agree	52	93%
	Disagree	1	2%
	Not sure	3	5%
Using e-Health systems will make it easy and fast to retrieve data.	Agree	53	94%
	Disagree	1	2%
	Not sure	2	4%
e-Health systems may enhance communication via text messaging (SMS) between health providers and patients.	Agree	54	96%
	Disagree	1	2%
	Not sure	1	2%
Less time will be required to update client information than with paper-based systems.	Agree	54	96%
	Disagree	1	2%
	Not sure	1	2%
Health data analysis and collection can be more accurate with e-Health systems.	Agree	52	93%
	Disagree	1	2%
	Not sure	3	5%
Documentation of patients' data will be streamlined and errors will be reduced with e-Health systems.	Agree	49	87.5%

	Disagree	0	0%
	Not sure	7	12.5%
Using e-Health systems can easily detect duplicates during data collection.	Agree	51	91%
	Disagree	3	5.4%
	Not sure	2	3.6%
Patient information is more secure in e-Health systems.	Agree	44	78.6%
	Disagree	3	5.4%
	Not sure	9	16.1%
It is easy to schedule patient appointments using e-Health systems.	Agree	41	73.2%
	Disagree	2	3.6%
	Not sure	13	23.2%
The use of e-Health systems in sharing health information is not important.	Agree	10	17.9%
	Disagree	40	71.4%
	Not sure	6	10.7%
Preference for continued use of e-Health systems.	Agree	55	98.2%
	Disagree	0	0%
	Not sure	1	1.8%
Preference for implementing new e-Health systems.	Agree	42	75%
	Disagree	4	7.1%
	Not sure	10	17.9%

Section D: Challenges Associated with E-Health Systems

This section presents the challenges encountered by healthcare workers when using e-Health systems. It includes 5 questions evaluating the perceived difficulties associated with these systems. The findings are summarized in Table 4.

Table 4: Challenges Associated with E-Health Systems

Question	Response	Frequency (N)	Percentage (%)
There are technical errors when using the e-Health system.	Agree	40	71.4%
	Disagree	16	28.6%
Enough staff to capture and manage the e-Health system at the facility.	Agree	19	33.9%
	Disagree	37	66.1%
Staff undergo training when new e-Health systems are updated.	Agree	17	30.4%
	Disagree	39	69.6%
The e-Health system server does not run well sometimes.	Agree	44	78.6%
	Disagree	12	21.4%
The e-Health system goes off and on sometimes, causing errors with records.	Agree	37	66.1%
	Disagree	19	33.9%

Discussion

e-Health encompasses devices and services that leverage information and communication technologies to improve patient health, lifestyle management, diagnosis, and treatment. This sector also involves the application of

technological innovations to enhance patient services (Ellimoottil et al., 2018). Data were collected using a self-administered questionnaire from 56 respondents. The study aimed to evaluate the awareness, utilization, and perceptions of e-Health among healthcare workers. Demographically, 27% of the participants were male, while 73% were female. The majority of respondents (55.4%) were in the 30-39 age group, followed by 33.9% in the 20-29 age group, 7.1% in the 40-49 age group, and 3.6% in the 50-60 age group. Occupationally, registered nurses comprised the largest group (35.7%), followed by enrolled nurses (32.1%), data clerks (8.9%), community care workers (7.1%), Health Information Systems Officers (5.4%), administrative officers (5.4%), environmental health practitioners (1.8%), monitoring and evaluation officers (1.8%), and pharmacist assistants (1.8%). Regarding educational levels, 2% held a master's degree, 48% had a bachelor's degree, and 50% had a certificate or diploma. These occupational and educational variations contributed to differing perspectives in the study (Mohammadzadeh & Safdari, 2014). Regarding training on e-Health systems, 58% of respondents reported they had never received formal training, 24% received formal training once every six months, and 18% were trained twice or more annually. Wernhart et al. (2019) emphasize that e-Health should be integrated into healthcare workers' training curricula to enhance their knowledge and awareness of these systems. The study found that healthcare workers used various electronic devices: 41% used desktop computers, 30% used both tablets and computers, 27% used cellphones and laptops, and 2% had not used any electronic devices. Proper data handling by trained healthcare providers is crucial for maintaining data integrity (Janet, 2015). In this study, 50% of respondents were knowledgeable about capturing, managing records, and creating reports, while others had varying levels of familiarity with these tasks. Most respondents (82%) found electronic devices easy to use, while 18% did not. According to Wernhart et al. (2019), healthcare workers' attitudes and perceptions significantly influence their acceptance of new technology. The study revealed that 71% of respondents adapted quickly to new e-Health systems, while 29% took longer to adapt. Internet connectivity was also a key factor, with 70% of respondents reporting good network connectivity at their workplaces, while 39% indicated occasional unreliability. Wernhart et al. (2019) note that basic ICT with Internet connectivity is now integral to healthcare delivery. The study found that healthcare professionals generally supported e-Health, with 93% acknowledging that it improved communication between patients, healthcare workers, and stakeholders. However, 2% disagreed, and 5% were unsure. Similar studies have reported positive attitudes toward e-Health systems (Qureshi et al., 2021), and this study also found generally favorable attitudes . Granath et al. (2022) found that the healthcare sector benefits from reliable, accessible digital information for managing patient data. In this study, 96% of respondents agreed that updating patient information in e-Health systems is faster, while 2% disagreed and 2% were unsure. Additionally, 93% agreed that data analysis and collection are more accurate with e-Health systems, while 2% disagreed and 5% were unsure. The study also revealed that 87.5% of respondents found that e-Health systems streamline documentation and reduce errors, with no respondents disagreeing and 12.5% unsure. Hyla and Pejas (2019) emphasize the importance of systems that identify unauthorized alterations to patient records. The study found that 78.6% of respondents believed that e-Health systems were more secure than paper-based systems, while 5.4% disagreed and 16.1% were unsure. Regarding scheduling patient appointments, 73.2% agreed that it is easier with e-Health systems, while 3.6% disagreed and 23.2% were unsure. A significant majority (98.2%) preferred using e-Health systems, while only 1.8% disagreed. The study also found that 70% of respondents believed staff needed training on new systems. Brørs et al. (2020) highlight the need for qualified providers to use healthcare electronic systems securely and effectively. The study results indicate a strong interest among healthcare workers in adopting e-Health systems. The study identified several challenges associated with e-Health systems. Data analysis revealed that 71.4% of respondents experienced recurrent technical errors, while 28.6% did not. Additionally, 69.6% believed there were insufficient staff to manage e-Health systems, while 30.4% disagreed. Qureshi et al. (2021) also note that a shortage of health professionals to manage e-Health systems is a global challenge. Regarding security threats, 41 respondents reported no significant security threats, while 15 believed there were security concerns related to e-Health systems.

Conclusion

Healthcare workers demonstrated a high level of knowledge and practice regarding e-Health systems but exhibited a lower level of positive attitude towards these systems, identified as a potential area of improvement.

The majority of healthcare workers lacked regular or adequate training on e-Health systems. Challenges associated with e-Health systems were highlighted, suggesting that enhancing e-Health training could improve attitudes towards these systems. The study also found a gender imbalance, with more female respondents, and identified registered nurses as the largest occupational group. Additionally, 50% of respondents were familiar with e-Health features, and 71% found it easy to adapt to new e-Health systems. A significant majority (98%) expressed a preference for using e-Health systems. The study also identified several challenges associated with e-Health systems.

References

1. Amedzro St-Hilaire, W. (2018). *Introduction to Quantitative Analysis*. *Industrial Relations Research and Analysis*, 207–228. https://doi.org/10.1142/9789813274068_0009

2. Angula, N., & Dlodlo, N. (2017). Mobile technology for health information dissemination. *IST-Africa Week Conference, 2017*, 1–8. https://doi.org/10.23919/ISTAFRICA.2017.8102329

3. Asangansi, I., & Braa, K. (2010). The emergence of mobile-supported national health information systems in developing countries. *Studies in Health Technology and Informatics*, *160*(Part 1), 540–544. https://doi.org/10.3233/978-1-60750-588-4-540

4. Barton, A. J. (2012). The regulation of mobile health applications. *BMC Medicine*, *10*, 2–5. https://doi.org/10.1186/1741-7015-10-46

5. Bhattacharya, S., Kumar, A., Kaushal, V., & Singh, A. (2018). Applications of m-Health and e-Health in public health sector: The challenges and opportunities. *International Journal of Medicine and Public Health*, *8*(2), 56–57. https://doi.org/10.5530/ijmedph.2018.2.12

6. Bouras, M. A., Lu, Q., Zhang, F., Wan, Y., Zhang, T., & Ning, H. (2020). Distributed ledger technology for eHealth identity privacy: State of the art and future perspective. *Sensors (Switzerland)*, *20*(2), 1–20. https://doi.org/10.3390/s20020483

7. Broomhead, S. C., Mars, M., Scott, R. E., & Jones, T. (2021). eHealth investment appraisal in Africa: A scoping review. *Inquiry*, *58*, 1–10. https://doi.org/10.1177/00469580211059999

8. Brørs, G., Norman, C. D., & Norekvål, T. M. (2020). Accelerated importance of eHealth literacy in the COVID-19 outbreak and beyond. *European Journal of Cardiovascular Nursing*, *19*(6), 458–461. https://doi.org/10.1177/1474515120941307

9. Choi, S., Leslie, M., Crystal, B., Sara, S., & Francis, O. (2015). Namibia private health providers and facilities census results. *November*.

10. Choi, W., Park, M. A., Hong, E., Kim, S., Ahn, R., Hong, J., Song, S., Kim, T., Kim, J., & Yeo, S. (2013). Development of mobile electronic health records application in a secondary general hospital in Korea. *Healthcare Informatics Research*, *19*(4), 307–313. https://doi.org/10.4258/hir.2013.19.4.307

11. Christians, F. (2020). Country profile: Primary healthcare and family medicine in Namibia. *African Journal of Primary Health Care and Family Medicine*, *12*(1), 1–3. https://doi.org/10.4102/phcfm.v12i1.2242

12. Duhm, J., Fleischmann, R., Schmidt, S., Hupperts, H., & Brandt, S. A. (2016). Mobile electronic medical records promote workflow: Physicians' perspective from a survey. *JMIR MHealth and UHealth*, *4*(2), 1–9. https://doi.org/10.2196/mhealth.5464

13. Ellimoottil, C., An, L., Moyer, M., Sossong, S., & Hollander, J. E. (2018). Challenges and opportunities faced by large health systems implementing telehealth. *Health Affairs*, *37*(12), 1955–1959. https://doi.org/10.1377/hlthaff.2018.05099

14. Granath, A., Eriksson, K., & Wikström, L. (2022). Healthcare workers' perceptions of how eHealth applications can support self-care for patients undergoing planned major surgery. *BMC Health Services Research*, *22*(1), 1–11. https://doi.org/10.1186/s12913-022-08219-4

15. Hegde, G. P., & Hegde, N. (2021). Significance of big data frameworks and speculative approaches in healthcare systems. *International Journal of Advanced Networking and Applications*, *12*(6), 4787–4792. https://doi.org/10.35444/ijana.2021.12609

16. Hensher, M., Cooper, P., Dona, S. W. A., Angeles, M. R., Nguyen, D., Heynsbergh, N., Chatterton, M. L., & Peeters, A. (2021). Scoping review: Development and assessment of evaluation frameworks of mobile health

apps for recommendations to consumers. *Journal of the American Medical Informatics Association*, *28*(6), 1318–1329. https://doi.org/10.1093/jamia/ocab041

17. Hsu, S. C., Liu, C. F., Weng, R. H., & Chen, C. J. (2013). Factors influencing nurses' intentions toward the use of mobile electronic medical records. *CIN: Computers Informatics Nursing*, *31*(3), 124–132. https://doi.org/10.1097/NXN.0b013e318270100b

18. Hyla, T., & Pejas, J. (2019). eHealth integrity model based on a permission blockchain. *Proceedings of the 2019 Cybersecurity and Cyberforensics Conference (CCC 2019)*, 172–177. https://doi.org/10.1109/CCC.2019.00013

19. Ilozumba, O., Van Belle, S., Dieleman, M., Liem, L., Choudhury, M., & Broerse, J. E. W. (2018). The effect of a community health worker-utilized mobile health application on maternal health knowledge and behavior: A quasi-experimental study. *Frontiers in Public Health*, *6*(May), 1–10. https://doi.org/10.3389/fpubh.2018.00133

20. Janet, D. (2015). A study of records management practice at health facilities in Upper Denkyira West District of Ghana. *Advances in Life Science and Technology*, *31*(2224-7181), 6–15. www.iiste.org

21. Keshta, I., & Odeh, A. (2021). Security and privacy of electronic health records: Concerns and challenges. *Egyptian Informatics Journal*, *22*(2), 177–183. https://doi.org/10.1016/j.eij.2020.07.003

22. Lee, M., Kang, D., Yoon, J., Shim, S., Kim, I. R., Oh, D., Shin, S. Y., Hesse, B. W., & Cho, J. (2020). The difference in knowledge and attitudes of using mobile health applications between actual users and non-users among adults aged 50 and older. *PLoS ONE*, *15*(10), 1–14. https://doi.org/10.1371/journal.pone.0241350

23. Luxton, D. D., June, J. D., & Chalker, S. A. (2015). Mobile health technologies for suicide prevention: Feature review and recommendations for use in clinical care. *Current Treatment Options in Psychiatry*, *2*(4), 349–362. https://doi.org/10.1007/s40501-015-0057-2

24. Martínez-Pérez, B., de la Torre-Díez, I., & López-Coronado, M. (2013). Mobile health applications for the most prevalent conditions by the World Health Organization: Review and analysis. *Journal of Medical Internet Research*, *15*(6), e120. https://doi.org/10.2196/jmir.2600

25. Mohammadzadeh, N., & Safdari, R. (2014). Patient monitoring in mobile health: Opportunities and challenges. *Medicinski Arhiv*, *68*(1), 57–60. https://doi.org/10.5455/medarh.2014.68.57-60

26. Oshakati, D., & Hospital, S. (2010). u t l k b a y. 21–22.

27. Pharow, P., & Blobel, B. (2008). Mobile health requires mobile security: Challenges, solutions, and standardization. *Studies in Health Technology and Informatics*, *136*, 697–702.

28. Rahim, A. (2008). Sampling techniques. *Clinical Medicine Made Easy*, 550–552. https://doi.org/10.5005/jp/books/10134_88

29. Riley, R. D., Ensor, J., Snell, K. I. E., Debray, T. P. A., Altman, D. G., Moons, K. G. M., Collins, G. S., & Van Calster, B. (2016). External validation of clinical prediction models using big datasets from eHealth records or IPD meta-analysis: Opportunities and challenges. *BMJ*, *353*, i3140. https://doi.org/10.1136/bmj.i3140

30. Schwartz, M., Gupta, S. K., Anand, D. K., & Kavetsky, R. (2007). Virtual Mentor. Journal of Computing Ethics, 14(9), 280–287. https://doi.org/10.1145/1660877.1660918

31. Street, P. (2016). Namibia Inter-censal Demographic Survey 2016 Report. Namibia Statistics Agency, 1–136.

32. U.S. Embassy Windhoek. (2017). Launch of the District Health Information System Version 2. Official Release, 3–5.

33. Were, M. C., Savai, S., Mokaya, B., Mbugua, S., Ribeka, N., Cholli, P., & Yeung, A. (2021). Development and Implementation of the mUzima Mobile Electronic Health Record (EHR) System at Scale. Journal of Medical Internet Research, 23(12), 1–14. https://doi.org/10.2196/26381

34. Wernhart, A., Gahbauer, S., & Haluza, D. (2019). eHealth and Telemedicine: Practices and Beliefs Among Healthcare Professionals and Medical Students at a Medical University. PLoS ONE, 14(2), 1–13. https://doi.org/10.1371/journal.pone.0213067

35. Zangirolami-Raimundo, J., Echeimberg, J. de O., & Leone, C. (2018). Research Methodology Topics: Cross-Sectional Studies. Journal of Human Growth and Development, 28(3), 356–360. https://doi.org/10.7322/jhgd.152198