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Awareness and Assessment of Cybersecurity and Data Privacy in Digital Prescription Platforms among Pharmacy Students

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Abstract

Background: Digital prescription platforms are starting to replace healthcare delivery, yet the issues related to data privacy and cybersecurity remain. The purpose of this study was to evaluate the usage patterns, awareness of the concerns of data privacy, and attitude towards cybersecurity practices by users.

Methodology: The cross-sectional survey was performed with the help of the structured questionnaire of 10 items on the usage of digital prescription platforms, the number of times they are used, the awareness of the data privacy problem, and the opinion on the cybersecurity practices. The responses of users were gathered, and frequency and percentage distributions were performed.

Results: In 100 respondents, 44 percent of them have been using digital prescription systems, and 56 percent had not. The most common usage patterns were monthly (38percent) and weekly (23percent). Half of the participants identified data privacy concerns and only a small part of them knew the data protection laws (Yes: 34%, No: 45, Somewhat: 21). It is only 45 percent who always read privacy policies. Best practices to platform security were defined as passwords (15%), biometric authentication (34%), data encryption (25%), and two-factor authentication (26%). When it comes to breach of data, 34% would report it to the authorities and 40% would do nothing with it. Seventy-five percent of the

respondents were in favor of adding cybersecurity training to the pharmacy curriculum (Agree: 55%, Strongly Agree: 39%).
Conclusion: The results showed average exposure and engagement with digital prescription sites, poor knowledge of data privacy policies, and inconsistent practice of security measures. It is suggested to enhance user education and include cybersecurity training into the pharmacy curriculum to advance the digital health security awareness.

Introduction

One of the most significant new information technologies for healthcare companies is electronic prescription. ePrescription services are being used by several healthcare facilities and organizations worldwide. The potential for ePrescription services to enhance the efficacy, safety, and quality of the medication-prescribing process is the source of this enormous surge in interest.
enhance the prescription process's effectiveness, safety, and quality[1-4]. While improving drug safety is the main goal of ePrescription services, other areas of the prescription, dispensing, and purchase processes can also be improved [5, 6].While ePrescription will help solve a number of problems, including misreading prescription handwriting, misplaced or damaged paper prescriptions, and communication problems between prescribers and pharmacists, it may also cause new issues at various stages that require more research and analysis[1-4, 7]. For instance, ePrescription systems may increase the burden of pharmacists and prescribers by generating new kinds of prescribing mistakes, such delivering prescriptions for the incorrect medicine, dosage, or regimen[8].
As a result, ePrescription systems may have an impact on the quality and safety of healthcare services by necessitating more time for checking at the dispensing stage, which may lead to tiredness problems. According to most of the research, switching to the ePrescription system would improve patients' experiences and increase their safety while prescribing medications[9].However, the excessive effort brought on by the additional verification procedure during the medicine distribution process may have an adverse effect on patient safety.
Concerns regarding patient privacy and information security may also arise when the ePrescription system shares prescription data with the pharmacy[10]. The security of the data must be guaranteed while exchanging and maintaining patient prescription information to prevent any changes that can endanger the patient's health. Another risk is fraud, which might happen if someone stole the data and attempted to duplicate the prescription[11].Patients should be more involved in assessing healthcare systems, particularly those that they may interact with more frequently, like ePrescription systems, as they are more involved in the process of obtaining medical information. Numerous studies have shown that individuals are more likely to stick with healthcare services if they are happy with them[12]. Therefore, while thinking about possible enhancements, it is crucial to assess the ePrescription system from the perspective of all parties involved[13].
Numerous studies have assessed ePrescription systems to determine their advantages and disadvantages, the advantages and disadvantages of putting them into practice, and how they affect workflow and drug safety[13]. These studies assessed ePrescription systems from the perspective of medical professionals and experts. Additional research has assessed ePrescription systems from the viewpoint of Swedish and American patients. Four studies from Scotland and Australia looked at how patients felt about ePrescription systems prior to their adoption. According to these surveys, most patients had favorable opinions about ePrescription. However, these investigations were limited by their local focus, small sample sizes, and utilization of patients from a single clinic or state[14]. The aim of study was to find out how pharmacy students use online prescription services, the extent of their knowledge regarding their data privacy and cybersecurity, and their perceptions of the safety of these services.

Methodology

Study Design

A descriptive cross-sectional survey with an aim of assessing the use, awareness, and perceptions of digital prescription platforms among the subjects. The chosen design aims at giving a picture of the existing user behavior and attitudes towards digital prescriptions and associated data privacy issues.

Study Population and Sample

A total of 100 respondents who were conversant with digital healthcare applications participated in the survey. The participants were invited to participate on a voluntary basis, and an attempt was made to make the sample combination of users and non-users of the digital prescription platforms.

Data Collection Tool

A structured questionnaire was used in data collection with 10 questions. The questionnaire was formulated in a way that would get data about the exposure of the participants to online prescription services, how often they are used, their awareness of the issue of data privacy, their understanding of the data protection statutes (local, HIPAA, GDPR) and their knowledge of the privacy policies, their views on the significance of data privacy, their ideal practices when it comes to cybersecurity, their reaction to a potential data breach, how they would update the platform, and their attitude to incorporating cybersecurity education in the pharmacy curriculum.

Data Collection Procedure

The questionnaire was done online or face to face. All the responses were noted down to be analyzed later. The process was such that the respondents were free to respond to any question they wanted without the influence of any external factor.

Data Analysis

The data obtained were interpreted through descriptive statistics. To summarize the usage patterns, awareness levels, and opinions on digital prescription platforms and practices of cybersecurity, frequencies and percentages were estimated within each category of responses. The analysis resulted in an opportunity to clearly understand the trends and gaps in knowledge among the participants of the study.

Result

Among 100 respondents, 44% reported that they had been using digital prescription platforms and 56% had not been introduced to it before. Monthly use was the most frequent among users (38%), then came weekly use (23%), daily use (10%), rarely (7%), never (18%), and other use (4%). Concerning the level of awareness of data privacy, only 34% of the individuals had heard about the privacy issues, the rest 66% had not. There was limited awareness of the laws of data protection with 34 percent responding that they were aware of such laws, 21 percent having some knowledge and 45 percent were not aware. There was a moderate level of involvement in terms of privacy policies: 45 percent said that they always read them, 25 percent sometimes, and 30 percent never. Upon being questioned on the importance of the privacy of their data during online prescription services, 68 percent believed it to be important, 12 percent were indifferent, and 20 percent did not believe it to be important. The respondents listed biometric authentication (34%), two factor authentication (26%), data encryption (25%), and strong passwords (15%) as the best practices of securing platforms. Because of a possible data breach, 34% would notify the authorities or IT, 40% would leave it alone, 23% would quit using the app, and 3% were unsure of what to do. With regards to the frequency with which apps/platforms are updated, 60% said that platforms are not

frequently updated or are read-only, 23 percent were sometimes updated, 10 percent rarely updated, and 7 percent were not sure. Lastly, the respondents were very much in favor of the fact that cybersecurity education should be included in the pharmacy curriculum with half of the participants agreeing with it and a third of them strongly agreed with it and only 6% disagreed or strongly disagreed.

Table 1; Overview of Respondents' Knowledge and Opinions on Data Privacy in e-Prescriptions

Question	Option	Frequency (n)	Percentage (%)
1. Have you currently used or been exposed to digital prescription platforms?	Yes	44	44%
	No	56	56%
2. Frequency of use?	Daily	10	10%
	Weekly	23	23%
	Monthly	38	38%
	Rarely	7	7%
	Never	18	18%
	Other	4	4%
3. Have you ever heard of issues on data privacy in digital prescription platforms?	Yes	34	34%
	No	66	66%
4. Do you know the data protection laws (e.g., local, HIPAA, GDPR)?	Yes	34	34%
	No	45	45%
	Somewhat	21	21%
5. Do you read privacy policies of the applications/sites you visit or use?	Always	45	45%
	Sometimes	25	25%
	Never	30	30%
6. What is your opinion regarding the value of data privacy in online prescription services?	Important	68	68%
	Neutral	12	12%
	Not Important	20	20%
7. What are the best practices to enhance the security of the platform?	Passwords	15	15%
	Biometric authentication	34	34%
	Data encryption	25	25%
	Two-factor authentication	26	26%
8. How should you respond in case of a suspected data breach?	Report to authority / IT	34	34%
	Ignore	40	40%

	Stop using the app	23	23%
	Don't know	3	3%
9. What is the frequency of updates done on apps/platforms to ensure security?	Never / Read-only available	60	60%
	Sometimes	23	23%
	Rarely	10	10%
	Don't know	7	7%
10. The pharmacy curriculum should be equipped with cybersecurity education.	Agree	55	55%
	Strongly Agree	39	39%
	Disagree	4	4%
	Strongly Disagree	2	2%

Discussion

The results of the research given can be considered valuable information about the usage patterns, awareness, and perceptions toward the digital prescription platforms among the participants. Even though 44% of those surveyed said their use of digital prescription platforms was confirmed, most (56) had never used it, which means that this group still has moderate adoption rates. Monthly and weekly usage were the most frequent within the user sample as these platforms were used sporadically but not on a regular basis.

The level of awareness in relation to data privacy issues was a bit low as only 34% of the participants indicated that they were aware of the issue, and the level of data protection laws awareness was not that high as 34 percent indicated that they were aware of such issues, 21 percent had partial awareness and 45 percent lacked awareness. This indicates there is a possibility that many users are not fully aware of the legal frameworks that safeguard their health data, which can further present the danger of unintentional access or abuse. Interaction with privacy policies also was not optimal as fewer than half of the participants (45 percent) said that they always read the policies, which is a common thing in digital health where people and users simply do not think about the necessity to read the essential information about data protection.

When it comes to platform security, the participants were able to identify biometric authentication, two-factor authentication, and data encryption as important, but less identified the importance of strong passwords. This disproportionate perception of security measures points to the necessity of educating users more about effective digital security measures. Faced with the suspicion of data breach, only 34% of the participants would report the incident and the remaining 40 percent of the participants would leave it alone, which shows that participants are not aware of the steps that should be taken. Moreover, most of the participants (60) stated that platforms are not updated frequently and are read-only, which can also seriously undermine the security of digital prescription services.

Positively, most of the respondents approved the incorporation of cybersecurity education in the pharmacy curriculum since 94 percent either agreed or strongly agreed. This implies that the role played by formal training in promoting the use of digital health platforms in a safe and secure manner is acknowledged[15]. Overall, the findings indicate moderate use of digital prescription sites and the lack of awareness about data privacy and cybersecurity practices[16]. These results highlight the necessity of specialized educational interventions among the users and healthcare professionals and continuous

benefits of platforms on their security and user engagement plans, to increase the safe use of digital healthcare services[17].

Conclusion

This paper points to the fact that digital prescription systems are being actively adopted, but overall, the exposure level is average, and users lack understanding of the data privacy concerns and associated legal frameworks. The awareness and implementation of good privacy practices are sporadic, which shows that there is a knowledge and behavior gap that may jeopardize the safety of the information. Most of the participants expressed opinions on the need to incorporate cybersecurity education into the pharmaceutical curriculum to ensure that users are educated to develop safe digital health practices. Enhancing user education, bettering the security protocols of the platform as well as implementing systematic cybersecurity education to healthcare providers are necessary measures to make sure that the use of digital prescription platforms is safe and effective.

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