

PERSONAL HEALTH INFORMATION PRIVACY CONCERNS OF INDIVIDUALS IN MYANMAR

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ABSTRACT

The evolution of healthcare services from traditional practices to modern, digitalized systems has raised significant concerns regarding the privacy of personal health information (PHI). This study explored PHI privacy concerns in Myanmar, a country facing challenges in implementing electronic health systems amid political instability and infrastructure constraints. A cross-sectional survey was conducted using a convenience sampling approach to collect data from Myanmar citizens aged 18 and above. Participants were reached via an online questionnaire posted on social media platforms and shared on-site with patients, attendants, providers, and staff at two private clinics. Hong & Thong's scale for measuring internet privacy concerns was adapted to the healthcare setting, translated into Burmese, and utilized in the study. Data analysis of 424 responses revealed that Myanmar people had relatively low concerns about health facilities collecting their PHI. However, they expressed high concerns regarding PHI errors, unauthorized secondary use, improper access, lack of control over their PHI, and limited awareness of health facilities' data privacy policies. Additionally, older participants (>45 years) exhibited lower PHI privacy concerns compared to younger respondents. This study contributes to the growing body of research on PHI privacy concerns, providing insights that can inform strategies for implementing secure and privacy-conscious electronic health systems in Myanmar and other developing countries facing similar challenges.

Keywords: Personal health information, information privacy, privacy concerns, Myanmar

INTRODUCTION

The importance of protecting personal health information (PHI) dates to the 4th century B.C. when the Hippocratic Oath first emphasized physicians' duty to maintain patient confidentiality. Over time, however, the healthcare landscape has

expanded to include financial, governmental, and other sectors, which now require access to PHI for various purposes (Rothstein, 2010). With the transition to electronic health information systems and growing data exchange, both the amount of collected health data and associated privacy concerns have increased significantly (Gastin, 1995).

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Research consistently highlighted public concern over PHI privacy in electronic systems (Adu et al., 2019; Srisawatsakul & Boontarig, 2021). And the information privacy concerns are identified as multidimensional; collection, errors, unauthorized secondary use, improper access (Smith et al., 1996), control, and awareness (Malhotra et al., 2004).

The reasons why it is important to understand these concerns have also been mentioned in many studies. Abdekhoda et al. (2019) and Chhanabhai et al. (2007) found that PHI privacy concerns are a major barrier to EHR implementation (Abdekhoda et al., 2019; Chhanabhai & Holt, 2007). Consequently, these concerns have a negative effect on behavioral intention to use technology in health services (Dhagarra et al., 2020) and are associated with information withholding behavior of patients from their healthcare provider (Agaku et al., 2014). Addressing these concerns has been emphasized as essential for the effective implementation of electronic health systems (Ermakova et al., 2015).

In least-developed countries, where resources for privacy expertise, infrastructure, and legal safeguards are often limited, these privacy issues are even more challenging (Rothstein, 2010). Myanmar, in particular, has limited exposure to electronic health systems. This study aimed to examine the extent of PHI privacy concerns among Myanmar citizens, assessing six dimensions of concern and exploring their relationship to age to understand better how these concerns might differ from those in more developed regions.

MATERIALS AND METHODS

This cross-sectional survey targeted individuals from Myanmar. A convenience sampling method was used to reach the required sample size of 385. The inclusion criteria were as follows:

1. Myanmar citizen
2. Aged 18 years or older
3. Provided informed consent to participate in the survey.

Hong & Thong's instrument for measuring PHI privacy concerns (Hong & Thong, 2013) was adapted for this study. Each item in the scale was rated on a seven-point Likert scale, ranging from "Strongly disagree" (1) to "Strongly agree" (7). Subscale scores were calculated by averaging the responses to the items within each subscale, and an overall score was derived by averaging all subscale scores.

The questionnaire was translated into Burmese and formatted using Google Forms. It was publicly distributed via social media platforms (Facebook, Messenger) and also shared with healthcare providers, staff, patients, and their companions at two private clinics: one in Kyaukpadaung Township and the other in Pakokku Township.

Ethical approval was obtained from the Ethics Committee of the Faculty of Tropical Medicine, Mahidol University. At the beginning of the online questionnaire, participants were provided with an option to give informed consent. If consent was not given, they were unable to proceed with the survey.

Data from Google Forms were exported and analyzed using Microsoft Excel and R programming. Descriptive statistics, including frequencies, means, and standard deviations, were calculated for demographic variables and each dimension of PHI privacy concerns. To examine differences in PHI privacy concerns across

age groups, a one-way analysis of variance (ANOVA) was conducted, with age categorized into five groups: A (18-24 years), B (25-31 years), C (32-38 years), D (39-45 years), and E (>45 years). Tukey's honestly significant difference (HSD) test was performed as a post-hoc analysis to identify specific group differences. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 424 valid responses were collected. The sample was predominantly composed of participants in the 25-31 age

group (44.58%), while the smallest proportions were in the 39-45 (8.25%) and >45 (8.73%) age groups (Table 1).

The mean and standard deviation (SD) values for each dimension of PHI privacy concerns are presented in Table 2. The mean score for concerns related to data collection was 3.47 (SD = 1.33). All other dimensions had mean scores above 4: errors 4.55 (SD = 1.44), unauthorized secondary use 4.90 (SD = 1.68), improper access 4.98 (SD = 1.60), control 5.01 (SD = 1.67), and awareness 5.02 (SD = 1.65). The overall PHI privacy concern score was 4.65 (SD = 1.24), which was above the mid-point of the seven-point Likert scale.

Table 1 Age profile of survey participants

	Category	Frequency	%
Age Group	A: 18-24 years	74	17.45%
	B: 25-31 years	189	44.58%
	C: 32-38 years	89	20.99%
	D: 39-45 years	35	8.25%
	E: >45 years	37	8.73%

Table 2 Mean and SD values of PHI privacy concerns

Dimension of PHI privacy concern	Mean (SD)
Collection	3.47 (1.33)
Errors	4.55 (1.44)
Unauthorized secondary use	4.90 (1.68)
Improper access	4.98 (1.60)
Control	5.01 (1.67)
Awareness	5.02 (1.65)
Overall PHI privacy concern	4.65 (1.24)

ANOVA results indicated a significant difference in overall PHI privacy concerns across age groups ($p < 0.05$) (Table 3). Post-hoc analysis using Tukey HSD revealed that participants aged >45 years (Group E) exhibited significantly lower concerns than those aged 18-24 years (Group A) and 39-45 years (Group D).

Significant differences were observed in the dimensions of unauthorized secondary use ($p < 0.01$), improper access ($p < 0.05$),

and awareness ($p < 0.05$). Specifically, the >45 years group (E) had significantly lower concerns than: Group A (18-24 years) and Group D (39-45 years) in unauthorized secondary use; Group B (25-31 years) and Group D in improper access; Group A in awareness.

No significant differences were found between age groups in the dimensions of collection, errors, or control.

Table 3 Differences in PHI privacy concerns between age groups

Dimension	Mean (SD)					p-value	Tukey HSD
	A: 18-24 years	B: 25-31 years	C: 32-38 years	D: 39-45 years	E: >45 years		
Collection	3.72 (1.25)	3.39 (1.26)	3.41 (1.29)	3.58 (1.46)	3.41 (1.76)	0.43	
Errors	4.70 (1.37)	4.53 (1.42)	4.51 (1.44)	4.74 (1.50)	4.27 (1.59)	0.56	
Unauthorized secondary use	5.18 (1.47)	4.97 (1.68)	4.60 (1.66)	5.37 (1.54)	4.21 (2.00)	0.006	E<A,D
Improper access	5.09 (1.40)	5.05 (1.57)	4.87 (1.73)	5.43 (1.26)	4.23 (1.87)	0.015	E<B,D
Control	5.19 (1.38)	5.07 (1.61)	4.89 (1.77)	5.34 (1.51)	4.31 (2.19)	0.05	
Awareness	5.37 (1.23)	5.01 (1.60)	4.91 (1.80)	5.36 (1.57)	4.34 (2.09)	0.02	E<A
Overall	4.88 (0.88)	4.67 (1.23)	4.53 (1.38)	4.97 (1.10)	4.13 (1.53)	0.015	E<A,D

DISCUSSION

We collected data from individuals recruited online and from two private clinics in Myanmar. Among the 424 usable responses, only 17% of the participants ($n=72$) were aged 39 years or older. This underrepresentation of older individuals could be attributed to the survey distribution method, as a significant portion of the data collection was conducted through social media, where younger individuals are more active.

Regarding PHI privacy concerns, only the “collection” dimension had a mean score below 4. In contrast, all other dimensions had mean values above 4 on the seven-point Likert scale, indicating that individuals in Myanmar are concerned about the privacy of their health data. The finding that participants expressed lower concerns about health facilities collecting their PHI compared to other dimensions is consistent with previous studies. For example, Adu et al. (2019), in their research on privacy perceptions in Ghana, found that individuals were less concerned about data collection and more worried about how their data would be used (Adu et al., 2019). Similarly, Rose (2006) reported that patients generally accepted collecting personal health data as necessary for medical purposes but were apprehensive about potential misuse (Rose, 2006).

This study also revealed that PHI privacy concerns varied significantly across different age groups. Significant differences were observed in the unauthorized secondary use, improper access, and awareness dimensions, where the oldest age group (>45 years) exhibited lower concerns than younger participants. This finding aligns with Adu et al. (2019), who also found that younger individuals expressed greater privacy concerns (Adu et al., 2019). However, our results contrast with findings from studies in Western contexts, such as those by Fox & Connolly (2016), Pitta &

Katsanis (2009), and Zukowski & Brown (2007), which reported that older individuals tend to express greater concerns about privacy (Fox & Connolly, 2016; Pitta & Katsanis, 2009; Zukowski & Brown, 2007). These discrepancies may be attributed to cultural differences, varying levels of digital literacy, or differences in trust toward healthcare institutions and data protection laws in different regions.

In the literature, it has been emphasized that anticipating patients’ privacy concerns and addressing them proactively is crucial for the successful implementation of e-health information systems (Li & Slee, 2014; Policy Engagement Network, 2010). Given that Myanmar is still in the early stages of developing its health information technologies, our study provides valuable insights into public privacy concerns that should be considered when designing, developing, and implementing new digital health systems.

A key limitation of this study was the underrepresentation of older adults, which may have influenced the observed differences in PHI privacy concerns across age groups. Future research should employ targeted strategies, such as in-person surveys or community-based recruitment, to increase participation from older populations and obtain a more balanced sample.

In conclusion, this study aimed to provide insights into PHI privacy concerns in Myanmar, an understudied country in terms of healthcare privacy. Our findings confirm that Myanmar’s population exhibits concerns regarding their health information privacy, particularly about data errors, unauthorized secondary use, improper access, lack of control, and lack of awareness of privacy policies. Moreover, the results suggest that the level of privacy concerns is not necessarily linked to the level of sophistication of a country’s health information system. These insights can help inform strategies for ensuring privacy-

aware and secure e-health systems in Myanmar and other developing countries facing similar challenges.

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