Nurses' Understanding of Ethical Dimension of Using Electronic Health Records (EHRs)

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ABSTRACT

Background: Electronic Health Records (EHRs) undoubtedly offer various advantages over the paperwork system. However, the utilisation of EHRs has been questioned, particularly among nurses, the leading users of EHRs among other healthcare professions.

Objective: This study explored the nurses' understanding of the ethical aspects of using EHRs.

Methods: A qualitative descriptive study design was applied in this study. Purposive sampling was employed to recruit ten nurses, which proved sufficient for data saturation. Semi-structured individual via phone interviews and face to face was conducted in August 2021 and audio recorded. A qualitative thematic analysis approach was utilised.

Findings: Three key themes arose from the analysis: (1) Access to patient information, (2) Disclosure of patient information, (3) Maintaining ethical integrity.

Conclusions: The study indicated that nurses have some degree of understanding about the ethical dimension of using EHRs. However, there are several implications to our study. The first issue is the appropriateness of EHR access to the health data of acquaintances and family. This is followed by the issue of nursing students' access to EHRs, where it is purportedly common practice for nurses to temporarily share their personal EHR login credentials. As a result, it highlights the need to focus on further deliberation and possible review of the existing ethical codes to include measures to preserve the integrity of health data.

Keywords: Nurses; Ethics; Privacy; Confidentiality; Electronic health record; Brunei; Health services

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INTRODUCTION

Electronic Health Records (EHRs) are online records of patient's clinical health-related and personal data generated and stored in the healthcare setting. EHRs are increasingly becoming indispensable and are described as the backbone of digital health for storing and retrieving (1). Like other countries, Brunei Darussalam has introduced the digitisation of medical health records. In response to Brunei Vision 2035, the Ministry of Health implemented the e-Health initiative known as Bru-HIMS (Brunei Darussalam Healthcare Information and Management System) in 2012. The action addressed the growing need to enhance the efficiency of patient care, services, and safety (2).

EHRs provide a significant advance in easy access to patient information, facilitate communication between healthcare providers, and reduce the likelihood of medication errors (3,4). Additionally, using EHRs generally improves the quality of nursing documentation. Documentation quality is essential because proper documentation is fundamental to a patient's care and safety (5,6). Therefore, establishing an appropriate communication channel between healthcare providers could help prevent medical errors (7). However, the widespread use of EHRs has resulted in more subtle and broader repercussions, such as the user's ethical integrity. The hype surrounding EHRs raises issues in maintaining patient privacy and confidentiality in healthcare (8) . Meanwhile, nurses often use EHRs in their daily clinical practice (9) . In other words, nurses play an essential role in implementing the EHR system (10). Therefore, as one of its many users, it is crucial to explore the nurses' perspectives on the ethical issues of using EHRs.

For nurses, confidentiality refers to the nondisclosure of personal data conveyed in the context of the nurse-patient relationship. Trust and consent are central to this relationship (11,12). Maintaining confidentiality is one of five critical professional values identified by Iranian nurses. However, these ethical codes also recognise that confidentiality is not absolute in law enforcement or education cases. Nevertheless, the disclosure of patient information is guided by the hospital's policies (13).

Meanwhile, privacy is defined as the right to control access to and disclosure or nondisclosure of information (11,12). Moreover, the codes stated the importance of adhering to the hospital's policies when accessing patients' information. The American and Brunei Nursing Code of Ethics for nurses emphasises the importance of maintaining patients' confidentiality and privacy. However, once the patient's data has been entered into the EHR, it will be stored indefinitely, even though it has no bearing on the patient's care (13).

Although security breaches such as lack of data encryption can compromise patient confidentiality, most confidentiality breaches result in healthcare professionals' improper access and disclosure of patient data (14). They reported that nurses expressed concern about medical and non-medical staff accessing patient information without patient consent and inappropriately disclosing sensitive data. As a result, storing patient data perpetually curtails patient confidentiality (15). Moreover, patients were also concerned about easy access to their health information. Patients might feel reluctant to disclose their health information fully if they do not trust that it is being kept confidential. Patients' hesitancy to disclose their health information thoroughly might negatively compromise patients' treatments (15).

Physicians and patients believe it would be challenging to maintain the privacy of a patient's health information if it were stored electronically (16). Additionally, the study found that half of the respondents expressed concern about information security when it was communicated via the Internet. However, despite the security concern, patients still expressed interest in accessing their health information (17). Most nurses agreed that patients should have access to their data in EHRs (14), but they also held that the nurses are concerned over unauthorised patient information access. Inappropriate access is any access that violates the facility's security and privacy policies (18). Thus, the objectives of this study are: (1) To explore the nurses' understanding of ethical issues with the use of EHRs in the surgical ward setting and (2) To

describe how nurses address the identified ethical issues.

METHODS

Study Design

The researchers had chosen a descriptive qualitative study as this study focuses on examining the participant's perspectives and understanding.

Sample and setting

The study participants were recruited using a purposive sampling strategy. The inclusion criteria were nurses working in surgical wards of the main hospital in Brunei Darussalam. In addition, nurses in the surgical ward generally hold a wide range of educational credentials, including certificates, diplomas, and degrees. Next, only nurses who can understand and converse in Malay and English were included to facilitate the communication between the researcher and participants and ease the data analysis and transcription processes. Moreover, only nurses with access to EHRs and trained in using EHRs were included. Recruiting other participants from various backgrounds could introduce extraneous variables affecting the research findings.

The nurses were recruited through the gatekeeper, who was given the inclusion and exclusion criteria. Two recruitment briefings were conducted, and these sessions included a brief presentation about the study, and a Participant Information Sheet (PIS) was also given to the attending nurses. Of the 33 attending nurses, 16 agreed to participate in the study. Due to the second wave of COVID-19 in Brunei Darussalam, all research activity has been suspended and converted to remote data collection to eliminate non-essential contact. As a result, only ten nurses participated in this study. In addition, some of the agreed participants have been reassigned to different duties.

Two of the ten participants were interviewed Face to Face (FFI), fully audio recorded, and lasted about 45 minutes for both sessions. However, due to the surges of COVID-19 cases in Brunei and following the Standard of Protocol (SOP) developed by the Ministry of Health, the rest of the interviews were conducted via telephone, with participants' consent, fully audio recorded and lasted about 30 minutes in each session. Most participants were women with a Diploma qualification in Health Science (Nursing) as their highest educational background. The participant's average work experience is between 7 months and 25 years in service (Table 1). Participant confidentiality was strictly maintained; for example, no personal information such as names was collected. Both English and Malay were used in the interview. The reason was to encourage richness and depth of data and make the situation more comfortable for the interviewer and participants.

Table 1: Characteristics of the participants

Characteristics	N
Gender	
Male	3
Female	7
Age (years)	
20-25	3
25-30	2
30-35	4
>35	1
Work Experience (years)	
>1	1
1-5	3
5-10	3
10-15	2
>15	1
Education Background	
General Certificate of Nursing	1
Diploma in Health Sciences (Nursing)	8
Bachelor in Health Sciences (Nursing)	1

Data collection

After obtaining full ethical approval, the research team discussed the interview guide. The interview guide was piloted on one participant. Based on the participant's responses, the research team agreed to add additional prompts to explore the nurses' understanding of nursing students' access to EHRs. The data were then collected with an interview guide containing five open-ended questions. The research team conducted the first face-to-face interview, while the principal researcher continued the interviews via telephone. The researcher used a recording

device and took field notes during each interview. The interviews started with the question: The meaning of EHRs to the nurses, followed by questions exploring patient confidentiality and privacy concerns when using EHRs. Two interviews were conducted in a private room at the RIPAS hospital, while the rest were conducted via telephone. All interviews were carried out in August 2021. The data saturation was established as the participants discussed no new themes or information. Data analysis was done after several meetings with the research team to discuss the findings.

Data analysis

The data was analysed and guided based on Braun and Clarke's (19) six-step framework. Thematic analysis is a valuable technique for exploring the views of various research participants, showing similarities and contrasts, and uncovering unexpected findings. The principal researcher analysed the interview data and transcribed the audio verbatim. The transcriptions were later translated into English words and grammar fixed. The principal researcher read the data repeatedly and made notes to give the researcher knowledge of the data provided. Then the transcript was reviewed several times to acquire a general understanding of its main ideas. The coding was performed manually using pen markers and paper to generate the initial codes. It was then coded for as many potential codes through each transcript. Once coding was completed, similar codes were collected and later organised using a mind-mapping technique. The research team further reviewed and sorted the codes, which resulted in three broad themes. The team then critically analysed each theme to examine its essence and establish coherence within the data collected. Following the summary analysis of the themes, the next stage is to write the report.

Trustworthiness of study findings

The interviews were guided by semi-structured open-ended questions that allowed participants to express their opinions. Further clarifications were used to promote dialogue and achieve credibility. Additionally, the dependability of the research was achieved as all the interviews were transcribed verbatim and translated into English. Meanwhile, direct quotes from the participants are presented in the findings for conformability. The research team also performed coding, analysing, and categorising the data. The research team further checked whether data were allocated correctly to its sub-themes and themes. The participant's broad age range and experience level contributed to the finding's transferability.

Ethical consideration

The research was granted ethical approval from the PAPRSB Institute of Health Sciences Research Ethics Committee (IHSREC) and the Medical and Health research ethics committee (MHREC) of the Ministry of Health with the reference number UBD/PAPRSBIHSREC/2021/30. During the recruitment briefings, PIS containing detailed information about the study was presented to nurses. It was emphasised that participation was voluntary, and informed consent was obtained before the interviews. The participants were also informed about their rights to withdraw from the study, provided that no data analysis had been done on their data. All data were treated confidentially. Participants' personal information was not collected, and substitute codes were used for participant identifiers.

Findings

The nurses reported significant concerns regarding the ethical issues present when using EHRs'. In all interviews, three significant themes were presented in the findings. These are illustrated with the interview's quotes. Quotes are used to exemplify the findings.

Theme 1: Access to patient information

Most nurses agree that healthcare providers directly involved with patient care have the right to access patients' information. The majority of nurses interpreted proper access to patients' information as referring to situations in which it is necessary rather than out of personal curiosity.

"We do not review electronic health records out of curiosity or to kill time. We do so solely for medical reasons." (P08)

"Accessing electronic health records to satisfy one's curiosity is a protocol breach since it compromises patients' right to privacy. We have no reason to access patients' information because they are not directly involved in the care and treatments that we provide for our patients." (P05)

However, some participants claimed they have the right to access the information of their family and friends if they are closely related or if their friends have consented.

"Accessing the information of family members is the most common form of information access justified by personal curiosity. When questioned about it, they say it is necessary because it is their right as family members, provided they are closely related." (P07)

"I do not consider looking at my friends' records inappropriate as long as I have their permission." (P02)

In addition, the participants acknowledged that it is a widespread practice among nursing colleagues and students to share personal EHRs accounts and passwords, even though they considered this practice ethically questionable.

"It is possible for patient confidentiality to be compromised when personal EHR accounts and passwords are shared." (P06)

"Even though passwords and accounts for personal electronic health records should be kept private, they are frequently shared among users." (P03)

Theme 2: Disclosure of patients' information

Many participants agree that patient information is kept confidential and is not shared with others without the patient's permission.

"The information about a patient is confidential and cannot be shared with anyone else." (P08)

"We have a responsibility to respect the confidentiality of patient information and must never provide it to anyone else without first obtaining the patient's permission." (P06)

Most participants believe that patient information should not be shared with any family or friends of the patient, regardless of how near or distant they are to the patient.

"If the patient's friends or family members approach me about the patient's status, I will tell them that it is against hospital policy to discuss a patient's health with anyone other than the patient or the attending doctor, and I will urge them to ask the patient directly or the doctor who treated them." (P07)

"We may be able to divulge the information if they are very closely related, but if they are only distantly connected to one another, we do not disclose the information until the doctor directs them to." (P06)

In addition, the nurses agreed that disclosing patient information is permissible in certain situations, such as when law enforcement is involved or in an emergency.

"We are permitted to disclose patient information if there is a low likelihood of involvement." (P05)

"We may be able to disclose patient information in life-or-death situations, but we must prioritise patient safety." (P06)

Theme 3: Maintaining ethical integrity

The nurses described ethical integrity as protecting the privacy and confidentiality of their patients.

"The boundaries of ethics include being aware of right and wrong and deciding whether to share information about a patient." (P03)

"What we see in EHRs stays in EHRs; nurses do not compromise patient confidentiality." (P06)

Most nurses reported that one of the significant barriers to maintaining ethical integrity when using EHRs is the easy access to patients' data on EHRs.

"Sometimes EHRs have problems and allow us to access everything — sometimes, after rotation, our access to other wards is not revoked." (P08)

"It is challenging to keep patient confidentiality because of the easy access to EHRs — someone will misuse this main advantage of EHRs." (P07)

Some nurses shared that professional commitment helps them maintain ethical integrity when using EHRs.

"If others access my information and tell others, I put myself in the patient's shoes." (P08)

"Before you improperly use EHRs, you must put yourself in the patient's shoes and consider what would happen if your data were accessed by unauthorised individuals." (P07)

Most nurses felt that improper use of EHRs should be highlighted in the hospital's orientation briefing for newly graduated nurses.

"Unfortunately, there seems to be a lack of training — the only guidance we received was on how to use EHRs. It would be wonderful if such training were integrated into the orientation program." (P03)

Some participants argued that the orientation provided to newly graduated nurses about EHRs is minimal and that reasonable rulings, such as a reduction in CNME (Continuing Nursing & Midwifery Education), should be adopted to discourage staff from using EHRs inappropriately.

"The most effective method to get others to consider patient confidentiality and privacy is if someone who did it is reprimanded by reducing their CNME — I believe it would serve as a clear reminder not to do it again." (P05)

DISCUSSION

Based on the first theme, our study indicates that nurses interpreted proper access to refer primarily to the access of patient data solely related to nursing care and not out of personal interest, which is consistent with the findings made by Bani Issa et al. (14). The nurses also argued that proper access could be justified if the patient is family or friend and granted consent. However, despite the probing question asked during data collection, the participants in this study did not mention patients as those who are allowed access to their information. Nurses believe patients also have the right to access their health information (14). It is unusual for patients to request access to their medical hospital records, despite their legal rights (20). However, a local study found that most patients and their families agreed they would like to view and control their medical records (21).

There have been worldwide attempts to increase transparency in giving patients easy access to their health information; however, it is limited due to poor interoperability between EHRs systems and other data sources (22). They also reported a recent development to integrate patients' health records onto patients' phones, but the information is relatively rudimentary and limited functionality. The study also argues that patients with cognitive and physical disabilities may have difficulty using smartphones, limiting access to their health records. Nevertheless, Brunei Darussalam also made an effort to increase its access transparency. For example, a health application named BruHealth was implemented in March 2021. The application serves as a tracking application to help combat the COVID-19 pandemic. However, one of its features is the ability for citizens to access their health records. However, to the researcher's knowledge, no research has been conducted on the application's success in allowing citizens access to their health records.

Moreover, our findings found that sharing personal EHRs accounts and passwords still happens among nurses, even though they know it is unethical. Hassidim et al. (23) echoed our findings and reported that medical staff members frequently share personal passwords. This is partially attributable to the delegation of administrative responsibilities to novice doctors and students. This makes it necessary for them to have specific access to carry out their responsibilities. Our study also showed that sharing EHRs accounts and passwords also happened between nurses and students. The beforementioned issue has brought up the matter of justifiable access. It is argued that restricting nursing students' access to EHRs could inadequately prepare them to use EHRs when they become newly graduated nurses. In other words, with restricted access, newly graduated nurses will lack the skills to use EHRs for planning, documenting, and care outcomes (24).

Meanwhile, a study found that students are not given access to EHRs despite using the system to fulfil their duties. The study further explains that the hospital's strict policy of protecting patient privacy and confidentiality leads to students' restricted access to EHRs. However, this forces them to use other employers'

credentials to fulfil their duties (23). The Code of Ethics (12) mentions maintaining privacy and getting patients' consent for teaching purposes. However, currently there is no policy that clarifies the reality of circumstances regarding nursing students' access to EHRs. Therefore, it could be argued that giving students access to patients' health information is unjustifiable and violates the principle of non-maleficence. However, one can be wronged without harm. Therefore, if third parties unjustifiably access patients' medical data, patients are wronged, even if they were unaware of this act of sharing and suffer no consequences (25).

Regarding the second theme, it appears that the nurses in this study are cognisant of the concerns regarding patient confidentiality in EHRs. Most agreed that disclosing information must be done with the patient's consent. This follows statement 5.1 of the Code of Ethics (12). Nurses and midwives should respect the client's right to determine who will provide their roles in what detail. Brunei Darussalam is a family-oriented society. Therefore, nurses must ensure the patient's consent before disclosing the information to their families — closely related or not. Additionally, most nurses agreed that involving law enforcement and emergencies, patients' information could be disclosed without consent. These allowances are also mentioned respectively (11,12).

Upon reflection, the third theme shows that surgical nurses define ethical integrity as maintaining patient privacy and confidentiality when using EHRs. Integrity in nursing is essential as the nursing profession deals with ethical and moral dilemmas daily, including dictating whether access to healthcare information is a right or a privilege (26). Additionally, although accessibility is one of the significant advantages of EHRs, the participants were also aware that easy accessibility EHRs could lead to nurses accessing other ward's patients. Although instant retrieval of patient data through EHRs could improve patient care, it also creates issues of inappropriate access and disclosure of patient information. The surgical nurses stated that professional commitment by displaying responsibility for whom can access patients' information helps them to maintain their ethical integrity when using EHRs (27). This

may reflect nurses' commitment to the Code of Ethics (12) to maintain all clients' privacy and confidentiality. Professional commitment is loyalty and responsibility towards the profession's problems and challenges (28). In other words, the nurses in this study felt responsible for maintaining and upholding patients' confidentiality and privacy.

However, participants in this research voiced an urgent need for management to incorporate a discussion about appropriate EHRs use in the orientation program provided to newly graduated nurses. There could be some merit to this suggestion. When nurses learn the appropriate measures for EHRs access, they might be able to prevent other nurses from behaving ethically (29). The surgical nurses also believed that the hospital management should have included punishments such as docking of CNME points to deter nurses from inappropriately using EHRs. All nurses and midwives in Brunei Darussalam must achieve 30 CNME points. However, regulations and guidance are developed for nurses to act competently and with integrity (26).

On the other hand, the lack of statements about maintaining the integrity of digital health records in the existing ethical code could explain our findings in which nurses believe that the ethical code alone is not enough to deter nurses from inappropriately using EHRs. The importance of each country revising its ethical codes to address any unique risks affecting online health data integrity. The study explains that any further review of the ethical codes should be aligned with the emphasis on nurses' duties to keep patient data confidential and secure (14). Therefore, our study suggests that potential deliberation and review of the existing Brunei Nursing Code of Ethics should include new guidelines for maintaining the integrity and security of health data. In addition, the revised code of ethics could highlight the issue of nursing students' access to EHRs. For reasons of ethics and confidentiality, there are numerous alternatives to providing students with passwords for learning EHR in a controlled environment. As an example, a simulated EHR system may be utilised. In addition, there is a dire need for a clear policy regarding the sharing practice of EHR passwords among nurses and students and robust interventions to address the ethical

challenges presented to nurses. Aside from revising the ethical codes, nursing managers are crucial in promoting ethics in health care (30). Therefore, nursing managers must promote ethical thinking among nurses and empower nurses to identify and engage in ethical situations associated with EHRs (31). Moreover, nursing managers must promote practice and compliance with ethical codes. Nurses, too, should be aware that they are accountable for their clinical decision-making and have moral and legal obligations toward preserving EHRs data integrity (14).

LIMITATIONS

Due to the unavoidable situation with COVID-19, eight of the interviews were conducted via telephone interviews. Despite the pilot study, the main study learned that telephone interviews may have compromised the depth of the participants' responses. This is especially true when some participants ignore or refuse to respond to the researcher's further probing.

CONCLUSION

Three themes from this study related to nurses' understanding and concern regarding access to patients' information, nurses' understanding of the disclosure of patients' information, and; maintaining ethical integrity. Our study seems to suggest that nurses have some degree of understanding about the ethical dimension of using EHRs. However, there are several implications to our study. The first one is the appropriateness of EHR access for friends and family. This is followed by the issue of nursing students' access to EHRs, where it is purportedly common practice for nurses to temporarily share their personal EHR login credentials. There are currently no guidelines in place that resolve the issue. Moreover, the lack of inclusion regarding maintaining the integrity of health data in Brunei's existing ethical code could explain why nurses believe the existing ethical code is insufficient in deterring nurses from inappropriate EHRs. Therefore, our study suggests reviewing the existing ethical code to include additional guidelines on stringent access to EHRs and the appropriate measures to maintain health data integrity. In addition, our research suggests that nurses should be guided on the unique ethical issues associated with using EHRs to

foster an ethical environment. In addition, our study underlines the significance of nursing ethical leadership in promoting ethical thinking and compliance with nursing accountability, particularly regarding nurses' use of EHRs when providing care.

CONFLICT OF INTEREST

There were no conflicts of interest.

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AUTHOR CONTRIBUTIONS

NHI: drafted the manuscript and contributed to the concept development and design of the article through data collection, analysis, and data interpretation for the article.
ZJ: contributes to data collection and data analysis.
YZ: revised the manuscript critically for important intellectual content and approved the final version of the manuscript.

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