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A study to assess the knowledge and practice on safety and security regarding digital technology among nursing students in a selected college at Coimbatore

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Abstract

Digital technology is increasingly vital in healthcare today, underscoring the need for nursing students to possess strong knowledge and skills in safety and security measures. This descriptive survey aimed to assess the knowledge and practice on safety and security regarding digital technology among 100 nursing students from RVS College of Nursing, Coimbatore. The samples were selected by convenience sampling technique. A structured questionnaire was used to collect data from students. The purpose of the study was thoroughly explained to all student participants, and their verbal consent was obtained and ensured the privacy, confidentiality, and anonymity of their data. Results indicated that most students exhibited average levels of knowledge (66.0%) and practice (81.0%) in digital safety and security. Statistical analyses revealed a positive correlation ($r = 0.375$) between knowledge and practice scores. Demographic factors like age and course showed no significant association with knowledge, while residence area influenced practice levels significantly. The study underscores the importance of integrating digital safety education into nursing curriculum and suggests expanding research with larger samples and across different healthcare disciplines to enhance digital security preparedness.

Keywords: Safety and security regarding digital technology, knowledge, practice, college students

Introduction

In today's digital age, technology has become deeply embedded in society, revolutionizing how we live, work, and interact. Digital devices like computers, laptops, tablets, and smartphones are widespread, transforming how people learn, connect, and access information. While this advancement has improved efficiency and communication, it has also introduced significant safety and security challenges. The increasing reliance on digital technology has heightened vulnerabilities to cyber threats such as hacking, data breaches, identity theft, and malware attacks, posing serious risks to personal privacy, financial security, and organizational integrity. The healthcare sector, including nursing education, faces these challenges as well, with cybersecurity being a primary concern due to constantly evolving threats. Cybercriminals exploit system vulnerabilities to access sensitive information, causing financial loss, reputational damage, and legal issues. Protecting personal data and privacy is crucial, especially with the proliferation of online services and social media, raising concerns about data collection, storage, and use. Addressing these challenges requires implementing robust safety and security measures, such as using strong, unique passwords, enabling two-factor authentication, being cautious with personal information, avoiding suspicious links and attachments, maintaining up-to-date antivirus software, and regularly reviewing privacy settings on social media platforms. Proactive digital safety practices can minimize the risk of identity theft, fraud, and other cybercrimes. A study by Charles Griffith (2021), Director of Technology and Innovation for the UK government, revealed a 125% global increase in cyber-attacks. Data from the Cyber Security and Central Bureau of Cyber Investigation for 2022 showed an 18% rise in weekly cyber-attacks in India, averaging 1,853 attacks per week. Coimbatore recorded 6,494 cybercrime cases, according to the National Crime Record Bureau in Hindustan Times (2021). As nursing education increasingly integrates technology, nursing students must be prepared to navigate these challenges, ensuring safe and secure digital technology use in their practice. This requires technical proficiency and a deep understanding of the ethical, legal, and regulatory issues in healthcare digital technology.

Statement of the Problem

A study to assess the knowledge and practice on safety and security regarding digital technology among nursing students in a selected college at Coimbatore.

Objectives

- To assess the level of knowledge on safety and security regarding digital technology among nursing students

- To assess the level of practice on safety and security regarding digital technology among nursing students
- To correlate knowledge and practice on safety and security regarding digital technology among nursing students
- To associate the level of knowledge with selected demographic variables among nursing students
- To associate the level of practice with selected demographic variables among nursing students

Assumption
- All students use digital technology for their academic purpose
- Students may have a basic knowledge regarding the safety and security of digital technology

Delimitation
The study is delimited to one college at Coimbatore.

Methodology
This descriptive survey study used a non-experimental design and was conducted at a selected nursing college in Coimbatore. The population included 100 nursing students aged 18-23, selected through non-probability convenience sampling. Inclusion criteria were willingness to participate and the ability to read and write Tamil or English, excluding those not physically well or unavailable during data collection. A structured questionnaire assessed knowledge and practice regarding digital safety and security, comprising three sections: demographic data, knowledge (18 multiple-choice questions), and practice (20 rating scale questions). Validity was confirmed by three nursing experts, and reliability was established with a test-retest method (r=0.92). Data were collected with formal permission during students' break, ensuring verbal consent and maintaining confidentiality. SPSS software analyzed the data using frequency, percentage, Karl Pearson correlation coefficient, and the Chi-square test for associations. Ethical considerations included obtaining institutional permission, explaining the study's purpose, and ensuring participant confidentiality and anonymity.

Results
The study finding revealed that most students were aged 19-20 years 50(50.0%) and under 19 years 46(46.0%). Females constituted the majority (64.0%) compared to males (36.0%). The majority were pursuing a B.Sc Nursing course 73(73.0%), primarily in their first 37(37.0%) or second year 36(36.0%). A significant number resided in hostels 76(76.0%) and had family incomes ranging from Rs 10,000-20,000 per month 54(54.0%). Access to internet facilities showed that the majority, 77 (77.0%), had access in their residence, 96 (96.0%) used smartphones for internet access, and daily internet usage was prevalent among 89 (89.0%) samples, with weekly, monthly, and rare usage at 3 (3.0%) each and 5 (5.0%) rarely using the internet. Entertainment was the main purpose for 54 (54.0%) samples, followed by academic activities for 30 (30.0%), social networking for 15 (15.0%), and other purposes for 1 (1.0%). Mobile data was the preferred internet connection for 96 (96.0%) samples, while Wi-Fi was used by the remaining 4 (4.0%).
Majority of students had an average level of knowledge

(66%) and practice (81%) on safety and security regarding digital technology, and had a positive correlation between knowledge and practice regarding safety and security in digital technology, with a correlation value of r = 0.375. There was a significant association found between the level of practice regarding safety and security in digital technology and the area of residence.
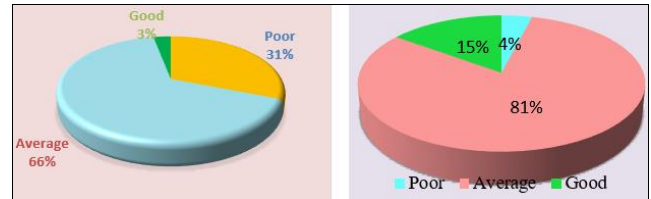

Fig 1: Presents the percentage distribution of overall level of knowledge and practice regarding safety and security in digital technology

Table 1: presents the correlation between the knowledge and practice regarding safety and security in digital technology among nursing students

Variables	Mean	Standard Deviation	r Value
Knowledge	7.48	2.83	0.375 *
Practice	15.57	3.82	

Discussion
The present study findings revealed that most of the students were aged 19-20 years 50(50.0%), with a significant proportion under 19 years 46(46.0%). Females constituted the majority (64.0%) compared to males (36.0%). The majority of the students had an average level of knowledge 66(66.0%) and the average level of Practice 81(81.0%) towards digital technology. The present study was supported by the study conducted by R Mailok *et al*., (2023), to assess the level of knowledge of personal data protection among students. The sample study consists of 133 students, of which 62 males and 71 females, aged between 17 and 24 years. The result of the study revealed that 91.7% of the respondents were able to answer correctly the question relating to social media, indicating that their knowledge of this social media network was high. Whereas their knowledge of privacy policy, net neutrality (36.1%), private browsing (32.3%), and two-factor authentication (36.1%) was low, given that less than 40% of the respondents were able to answer correctly to the questions relating to these three security aspects. Additionally, slightly more than half (58.0%) and a third (66.0%) of the respondents managed to answer correctly the questions about cookies and phishing scams, respectively, signifying that the levels of knowledge of most respondents regarding these security aspects were moderate.

Conclusion
The findings of the study indicate that the majority of students have an average level of knowledge and practice regarding safety and security concerning digital technology and also had a positive correlation between knowledge and practice, which suggests that individuals with higher levels of knowledge are associated with better practices in digital safety and security.

Limitation
- The study was limited to small sample size
- The study relied on self-reported knowledge and practice, which could be subject to bias.

Implication
The study has significant implications across nursing practice, education, administration, and research. Nurses must be proficient in digital safety and security to protect patient information and reduce data breaches. Nurse educators should integrate digital safety topics into the curriculum, offer in-service education on the latest digital security developments, and provide practical training sessions. Nurse administrators should organize educational programs and ensure resources for digital security training and implementation. Additionally, intensive research is needed to explore factors influencing digital safety knowledge and practices among nursing students and to evaluate the effectiveness of various educational interventions.

Recommendation
The study recommended that similar studies can be conducted with larger sample sizes to enhance the generalizability of the findings. Additionally, comparative studies among nursing, pharmacy, and physiotherapy students, as well as between hostel residents and day scholars, could provide valuable insights into the differences in digital safety practices across various groups. Furthermore, a mixed-method study exploring students' perceptions, attitudes, and barriers to adopting digital safety practices in healthcare settings would offer a comprehensive understanding of the challenges and opportunities in implementing effective digital safety measures in nursing education and practice.

Conflict of Interest
The study was conducted independently, and there were no external influences or biases that could have affected the research process and outcomes.

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