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Challenges on Student Health Information Records: A Basis for System Development

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ABSTRACT

Student health records play a pivotal role in nursing education, offering a comprehensive insight into students' health histories, immunization statuses, and clinical experiences. This study aims to identify the challenges and specific needs of NEUST-CON students to develop an efficient health record management system, design an Electronic Medical Record that outlines data collection, storage, security, and access protocols, and create a system prototype incorporating essential features and functionalities based on user requirements. This study utilizes applied quantitative research to gather numerical data, objectively measuring factors like the frequency and impact of issues related to record accessibility, availability, data retrieval and update, and data security and privacy. Furthermore, it employs a descriptive correlational design to examine the relationships between the demographic profile and the challenges on the student health information record system among NEUST-CON students. Findings revealed that most nursing students at NEUST are female, aged 18 to 21, primarily in their first year. The study identified challenges related to availability, accessibility, data retrieval and update, and data security and privacy in student health information records. Notably, availability emerged as the most pressing challenge. While overall satisfaction was reported among respondents, data security and privacy concerns persisted. A significant relationship was also observed between students' year levels and ages. Therefore, enhancements in infrastructure and functionalities are essential to ensure consistent availability of data and resources, mitigating downtime and ensuring uninterrupted access to the SHIR prototype system.

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1. INTRODUCTION

Student health records play a pivotal role in nursing education, as they provide a comprehensive overview of a student's health history, immunization status, clinical experiences, and any medical conditions that may impact their ability to participate in clinical rotations. The performance of a health system is strongly related to the quality of produced health information [1]. Effective management of these records is essential not only for the well-being of students but also for ensuring compliance with regulatory requirements and

accreditation standards. In today's rapidly evolving healthcare landscape, managing and maintaining student health records in educational institutions, especially nursing, have become increasingly complex and crucial. Many academic institutions need help with student health information records management. These challenges have prompted the development of an efficient and robust health records system tailored to the unique requirements of nursing students.

Its introduction has taken place in a few locations around the globe, but because many nations are opposed to it, its full potential has not yet been attained [2]. Unfortunately, traditional paper and phone methods may lack reliability [3], leading to time-consuming record retrieval, the risk of losing critical information, and conflicts arising from inefficient data management. It also faced the problem of data duplication and redundancy as all the institutions that the patient visited had various copies of the patient's medical records [4]. Transitioning from paper to electronic health records may improve efficiency and patient safety by streamlining data access and reducing the risk of errors, ultimately leading to enhanced patient care and outcomes [2]. Being constantly on the front lines of patient care means that they must have vital information regarding a patient's health history, previous and current medications, allergies, family history, and any other pertinent information on hand so that they may administer proper care, they are expected to have efficient record management skills.

Effective management of health records facilitates easy retrieval without wasting the time of either the health service provider or the patient [10]. Records are invaluable. Keeping complete records of information from the beginning can save time and money. It has been observed that accurate, reliable, and trustworthy records that fulfill evidential requirements are being created in the tertiary institution system but not properly managed [6]. Student nurses, especially in the Philippine settings, are more often than not exposed to paper-based health record management. The tedious process usually associated with such affects record management efficiency. Among those difficulties encountered in such a manner of record keeping is limited accessibility. Since paper records are often stored in physical locations, making it difficult for nursing students to access patient information quickly. Also, since information is usually manually written, there are challenges with different handwriting styles, which can lead to misinterpretation of crucial medical information, potentially compromising patient safety.

Another potential issue is data being redundant, which may lead to data inconsistency, making it more confusing and time-consuming. Nursing students may need to sift through redundant data, increasing the risk of overlooking critical information. This can also lead to another issue relevant to documentation errors, such as missing, incomplete, or wrong entries. Nursing students may struggle with ensuring that all necessary information is accurately recorded, which can impact patient care and clinical decision-making. Storage issues also pose a challenge. Since paper records require physical storage space, retrieving them can be time-consuming. Nursing students may find it challenging to locate specific records quickly, especially in busy clinical settings. Needless to say, with a manual record management process, there is a risk of loss or damage since papers are susceptible to loss or damage, whether due to accidents, natural disasters, or mishandling. This poses a danger to the integrity and availability of patient information.

Lastly, maintaining the privacy and security of paper records can be challenging. Confidentiality ensures that the information remains protected from unauthorized deletion or modification and undesired modification by authorized users [8]. As healthcare institutions shift to innovative ways of record management and transition towards digital solutions, these challenges may be mitigated by adopting electronic health records, which offer improved accessibility, legibility, data accuracy, and collaboration among healthcare professionals. When nurses have quick, easy access to patient records, they save time that would otherwise be spent locating paper charts or when nurses are alleviated from manually entering information into patient records. Similarly, using a standardized record format like EMR helps nurses efficiently document patient notes using wizards and templates for faster data entry. Another area where EMR improves efficiency for nurses is reporting Critical lab values to the healthcare provider promptly.

The EMR flags each critical value for clinical staff, simplifying nurse notifications. Electronic health records also help nurses in other ways, for instance, by sending medication reminders, preventing drug interactions, giving immediate access to patient medical history and medications, and documentation of clinical care [11]. This serves as a beacon, illuminating the path toward developing sophisticated systems that transcend the existing limitations. By dissecting and understanding the underlying challenges, it aspires to lay the groundwork for innovative solutions that streamline the management of student health information. Through this exploration, we know the identified roadblocks and catalyze the creation of robust, secure, and interoperable systems that safeguard the integrity and accessibility of health data. Ultimately, the prototype system's digital student health record is an eye-opener, rendering medical data accessible, engaging, and beneficial. This encourages a proactive and group approach to student well-being.

This study, entitled "Student Health Information System: A Basis for System Development," addressed the need for a systematic approach to managing student health data in NEUST-CON. Researchers identified challenges and gathered insights from NEUST College of Nursing students to propose a customized health records system prototype. By incorporating student input, the study ensured alignment with practical

needs. The proposed prototype aimed to streamline record-keeping, retrieval, and analysis, fostering efficient, secure, and compliant management. In conclusion, the research laid a foundation for systematically developing a Student Health Information System, enhancing student well-being and educational effectiveness.

2. RESEARCH METHOD

Method of Research

This study utilized applied quantitative research. Applied research aims to solve real-world problems [45], while quantitative research involves collecting and analyzing numerical data to find patterns, make predictions, and test relationships [24]. Combining applied and quantitative research allows researchers to identify the challenges in student health information records on NEUST-CON students and contribute practical, evidence-based solutions, wherein researchers developed a system prototype.

Research Design

This research employed a descriptive correlational research design to collect measurable data for the statistical analysis of a population from Nueva Ecija University of Science and Technology (NEUST), specifically focusing on students in the College of Nursing from 1st year to 4th year. Descriptive research aims to precisely and methodically characterize a population, circumstance, or phenomenon [12]. In addition, descriptive research design encompasses critical approaches such as observations, surveys, and case studies [13]. In this study, this type of research design helped the researchers understand and document the current state or conditions of the university clinic's health record system, enabling researchers to understand, compare, and describe various aspects of the problem regarding the challenges of student health records. This further aided them in gaining valuable insights among nursing students as it can be beneficial in molding the health record system.

Research Locale

The researchers conducted the study in the Nueva Ecija University of Science and Technology, General Tinio Campus, specifically during the concluding 2nd semester of the academic year 2023-2024. The respondents chosen are the selected students from each year level of NEUST College of Nursing.

Samples and Sampling Design

This study focused on Nueva Ecija University of Science and Technology students of the College of Nursing on all year levels, with a total population of 737 students. In this regard, the study sample respondents were selected through a probability sampling technique utilizing stratified random sampling. A statistical method, stratified random sampling, divides the population into discrete subgroups or strata according to particular traits pertinent to the investigation or study [14]. Having the year level as the strata, the stratified sampling will use proportional allocation as it helps in obtaining more precise estimates of population parameters. By allocating sample units to each stratum in proportion to the size of the population, the sample is more likely to capture the variability within each stratum–year level. Utilizing the Raosoft Sample Size calculator, tolerating a 5% margin of error, 95% confidence interval, and 50% response distribution, 490 sample respondents out of 737 total from the College of Nursing student population will be selected through simple random sampling.

Distribution of Samples in Each Year's Level

The sample units within each stratum-year level with a total of 737 CON-NEUST students; 158 students are chosen for a sample size out of 265 1st-year-level, 140 students out of 219 2nd-year-level, 96 students out of 126 3rd-year-level; and 96 students out of 127 4th-year-level. Totaling 490 student respondents for the study.

Research Instrument

The researchers used self-made questionnaires regarding the study entitled, “Challenges on Student Health Information Records: A Basis for System Development.” The researchers studied and related the questions in line with the theoretical framework, which satisfied and answered the problem statement. The survey questionnaire was conducted face-to-face, and these questions were utilized because they were reliable and were the quickest way to collect information from multiple respondents. The researchers obtained informed consent, stated in the first portion of the survey questionnaire, considering the ethical concerns of nursing research. Informed consent ensures that participants receive adequate details regarding the study, comprehend this information, and are free to decide whether to engage voluntarily. In this study, the questionnaires contained three significant parts that aligned with the researchers’ statement of the problem.

To provide an answer to the first statement of the problem, which aims to determine the demographic information from respondents, encompassing gender, age, and academic year, the researchers constructed questions to be answered by just checking the designated boxes for their corresponding answers. The researchers collected details about the student health record process at the NEUST clinic. This served to provide context regarding students' experiences, challenges, and the current status of the health record system, aligning with the researchers’ statement of the problem concerning availability, accessibility, data retrieval and update,

and data security and privacy. The researchers used the Likert Scale, which measured the respondents' responses by measuring very challenging or not challenging scales with specific statements or questions on the questionnaire. The last part of the researchers' questionnaire was formulated so that the respondents could easily understand and state their satisfaction with their health records, utilizing Likert scales to obtain responses to statements concerning availability, accessibility, data retrieval and update, and data security and privacy.

Reliability and Validity

The research study questionnaire underwent rigorous evaluation for content validity through assessment by esteemed faculty members. All quantitative instruments used in this study by the researchers were approved by their research adviser, Rose Ann R. Paet MAN, RN, which confirmed the agreeableness of the questionnaires or assessment. Following this initial phase, as part of ensuring the reliability and validity of this study, the researcher intends to validate the questionnaire further. This validation process involves the five (5) selected MAN RN instructors from other universities for thoroughly reviewing the questionnaire. Their invaluable expertise and insights were sought to confirm the questionnaire's appropriateness, clarity, and relevance to the study's objectives. Upon thorough review, whereby their feedback and suggestions are incorporated, the participating professionals provided explicit agreement and confirmation, signifying their approval for utilizing the finalized questionnaire in the research study.

Cronbach Alpha was developed by Lee Cronbach in 1951 to measure the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct; hence, it is connected to the interrelatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity. In addition, reliability estimates show the measurement error in a test. However, this interpretation of reliability is the correlation of the test with itself. The measurement error index is obtained by squaring this correlation and deducting it from 1.00. Cronbach's alpha is a reliability or internal consistency coefficient based on the average inter-correlation among items in a test or scale [36]. It provides an estimate of the extent to which all the items in a scale measure the same construct.

Evaluation of content validity

The evaluation of the five (5) expert validators for the questionnaire on the challenges of the student health information record showed the mean result that all the face and content validity items were highly acceptable. This means the questionnaire has passed the validation process and could undergo pilot testing to check its reliability. This tests whether the instrument asks the intended question and whether the selected validated tool is appropriate for the target population [15] before data collection. Implementing this approach tested the reliability of the researchers' measures, contributing to their research findings' validity and overall quality. After the pilot testing was conducted on 40 BSHM students at Nueva Ecija University of Science and Technology of the Philippines-Sumacab Campus, the data gathered were subjected to a reliability test utilizing Cronbach's alpha.

Cronbach's alpha measures the internal consistency of the variables, determining whether the variables are related to each other as a group. A measure of reliability that tests the coefficient of reliability.

Figure 1 Cronbach's alpha.

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k}\sigma_i^2}{\sigma_T^2}\right)$$

Where: k = is the number of items (questions) in the test.
σ_i^2 = is the variance of the i-th item.
σ_T^2 = is the total variance of the test.

Reliability Testing of the Questionnaire

The general reliability got a Cronbach's alpha of .87. In the aspect of Availability, it shows that it got a Cronbach's alpha of .77, Accessibility got a Cronbach's alpha of .71, Data Retrieval got a Cronbach's alpha of .78, Data Security got a Cronbach's alpha of .76 which shows the overall reliability got a Cronbach's alpha of .85. On the other hand, the overall satisfaction of all the aspects got a Cronbach's alpha of .90. These results show that the questionnaire developed by the researchers passed the reliability test and can measure the challenges faced by students on health records and students' satisfaction level with the use of paper-based student health records.

Response Mode/Scoring

In the first part, as described in the research instrument, the researchers asked for the respondent's age, gender, and year level. In addition to the primary data, the researchers utilized secondary sources such as published articles and literature to strengthen the survey findings. The data gathered was compiled and analyzed to interpret the responses given by the respondents regarding the challenges and specific needs they perceived on Student Health Records. In the second part of the instrument, 4 points Likert scale was used to measure the challenges the students encounter with the current health record system in terms of the availability,

accessibility, data retrieval and update, and data security and privacy ranging from 4 (very challenging), 3 (slightly challenging), 2 (challenging), and 1 (not challenging). In the third part of the questionnaire, 4 points Likert scale was also used to measure the satisfaction of the students with the current health record system in terms of the availability, accessibility, data retrieval and update, and data security and privacy ranging from 4 (very satisfied), 3 (satisfied), 2 (slightly satisfied), and 1 (not satisfied).

Data Gathering Procedure

The researcher wrote to the Dean of the College of Nursing, allowing the researchers to conduct a research study with the approval of their research adviser and academic unit head. Before the questionnaire was distributed, the researchers performed a brief orientation and reassured the respondents that the information they collected was kept private. Firstly, the data collection procedure involves deliberately identifying issues and opportunities for data collection. Once these are identified, the subsequent step is to set clear goals and objectives. These goals serve as the guiding principles for the data collection effort, ensuring a focused and purposeful approach that aligns with the overarching aims of the research. Moreover, researchers plan the approach of the data collection procedure. This involves deciding who will be surveyed and determining how the data will be collected. The planning phase is crucial for designing a systematic and efficient data collection process.

It includes considerations such as selecting the appropriate survey participants, choosing suitable data collection methods, and outlining the overall strategy to ensure relevant and meaningful data collection. Furthermore, the researcher proceeded to develop a targeted instrument for data gathering. This instrument, often in the form of a printed questionnaire, is distributed directly to respondents through face-to-face interactions. Printed forms facilitate a personal and direct exchange, enhancing the depth of data collected. Following the data collection phase, confidentiality measures were rigorously upheld. The collected data underwent thorough examination, analysis, and interpretation, utilizing responses from participating respondents. Other researchers meticulously evaluated this information and formed the basis for subsequent studies, analysis, and interpretation.

Statistical Treatment of Data

The Nueva Ecija University of Science and Technology data analytics center was informed regarding statistical concerns. The hypothesis mentioned earlier served as the basis for this research and was tested at the 0.05 valuable level. Any statistical analysis must begin with data collection, followed by statistical tool analysis. Measures in the center are the most commonly used category of descriptive statistics: Mean, Median, and Mode, which are used at almost all levels of math and statistics [84]. Moreover, this study also utilized Pearson's Correlation Coefficient to analyze the significant relationship between the data gathered. The mean or average overall evaluated the NEUST College of Nursing's results. The median showed a medium value for factors such as the length of time using paper-based.

a. Percentage and Frequency Distribution and Mean

The frequency and percentage distribution were used to describe the respondents' demographic profile with the following formula.

$$P = F\ x\ 100\ N$$

Where: P = percentage
E = frequency
N = total population

b. Mean

The test statistic is the average or a calculated central value of a set of numbers and was used to measure the central tendency of the data. Central tendency is the statistical measure that recognizes the entire data set or distribution through a single value.

Mean = sum of all data in the number of data.

c. Verbal Description of Weighted Mean

Verbal Interpretation of Weighted Mean based on Challenges Encountered

i. **Very Challenging (4)** indicates that the challenge/s requires high attention and focus to overcome or address.
ii. **Slightly Challenging (3)** indicates that the challenge/s requires considerable attention and effort to overcome or address.
iii. **Challenging (2)** indicates that the challenge/s requires attention and effort to overcome or address.
iv. **Not Challenging (1)** indicates that the challenge/s often requires little attention or effort to overcome or address.

Verbal Interpretation of Weighted Mean based on the Level of Satisfaction

i. **Very Satisfied (4)** suggests high satisfaction with the experience.
ii. **Satisfied (3)** suggests a moderate level of satisfaction with the experience.
iii. **Slightly Satisfied (2)** suggests minimal satisfaction with the experience.

iv. Not Satisfied (1) suggests the lowest level of satisfaction with the experience.

d. Pearson's R (Pearson's correlation coefficient)

Pearson's correlation (sometimes known as Pearson's R) is a correlation coefficient frequently used in linear regression. Correlation coefficient formulas are used to determine the strength of a relationship between two pieces of data. The algorithms provide a number ranging from -1 to 1, with 1 indicating a strong positive relationship. A value of -1 denotes a robust negative relationship. A result of 0 shows there is no relationship at all.

Ethical Consideration

The researchers followed guidelines and ethical considerations while conducting the study. The researcher asked the respondents for permission before conducting the "Challenges on Student Health Information Records: A Basis for System Development" study through a face-to-face survey. This ensured that no respondents were forced to participate in the study. This maintained transparency, and researchers upheld the integrity of their studies while respecting and protecting the rights and well-being of the participants involved. This study implemented the following measures: informed consent and autonomy, confidentiality, beneficence, non-maleficence, and security and privacy. In compliance with the requirement of the Data Privacy Act, researchers have consent to process details that contain personal information that have a lawful basis and adhere to the general data privacy principles of transparency, legitimate purpose, and proportionality.

3. RESULTS AND DISCUSSIONS

3.1 Socio-demographic Profile

Table 1 presents the distribution of the respondent's age. The highest percentage is for the age group "18-21," with a frequency of 434, representing 88.50% of the total sample. The lowest percentage is for the age group "22-25" with a frequency of 56, constituting 11.50% of the total sample. This shows that most nursing students belong to the younger age group. In addition, most first-year students who are much younger outnumber students at higher-year levels. Since new legislation was introduced in 2012, students are required to continue their schooling until they graduate from grade 12, usually at age 17-18, which is also within the typical age range for college enrollment [96].

Table 1. Age of the respondents

Age	Frequency	Percent
18-21	434	88.50
22-25	56	11.50
Total	**490**	**100.00**

Table 2. Sex of the respondents

Sex	Frequency	Percent
Male	112	22.90
Female	378	77.10
Total	**490**	**100.00**

Table 3. Year Level of the respondents

Year Level	Frequency	Percent
1st yr	158	32.30
2nd yr	140	28.60
3rd yr	96	19.60
4th yr	96	19.40

Year Level	Frequency	Percent
Total	**490**	**100.00**

Table 2 shows that the highest percentage is for the "Female" category, with a frequency of 378, accounting for 77.10% of the total sample. The lowest percentage is for the "Male" category, with a frequency of 112, constituting 22.90% of the total sample. This shows that the majority of the nursing students in NEUST were female. It is an established reality that nursing has predominantly been associated with females throughout history. In addition, 9 out of 10 nurses globally are female [18]. Florence Nightingale envisioned nursing as a profession particularly suited for women, viewing it as an extension of maternal care. Consequently, she believed females were better suited for nurturing and caregiving services.

Table 3 illustrates the distribution of students across different academic years. The highest percentage belongs to the "1st-year" level, with a frequency of 158, representing 32.30% of the total sample. This suggests a more significant influx of students into the academic program, which is typical as students start their educational journey. The lowest percentage is for the "3rd year" and "4th year" levels, each with a frequency of 96, constituting 19.60% and 19.40% of the total sample, respectively. Nurses faced significant challenges during the pandemic, yet their courageous endeavors were duly acknowledged [19]. Consequently, there has been a notable increase in the number of individuals applying to nursing schools. In the United Kingdom, there has been a 32% upsurge in applicants for nursing programs, according to data released by the University and College Admissions Service (UCAS). The figures reveal that 60,130 individuals have applied for a nursing course for the autumn of 2021, marking a 32% rise from 2020.

3.2 The challenges students face regarding health information records using the existing process are availability, accessibility, data retrieval and update, and data security and privacy.

This explores students' challenges with the current health record system, focusing on availability, accessibility, data retrieval and update, and data security and privacy concerns. **Table 4** shows the overall weighted mean of the challenges students face on health records using the existing process in terms of availability, accessibility, data retrieval and update, and data security and privacy (WM: 2.99) has a verbal interpretation of slightly challenging. Furthermore, among these four areas, the challenges students face on health records using the existing process are data security and privacy (WM: 3.16), which has the highest weighted mean score with a verbal interpretation of slightly challenging. Conversely, the challenges faced by students on health records using the existing process in terms of availability (WM: 2.91) have the lowest weighted mean score with a verbal interpretation of slightly challenging. This score suggests that while efforts have been made to manage these challenges, there is still room for improvement in enhancing the overall effectiveness and reliability of health records management systems within the school clinic.

Table 4. Overall challenges encountered on student health information record

Challenges	Mean	Verbal interpretation
Availability	2.91	Slightly Challenging
Accessibility	2.95	Slightly Challenging
Data retrieval and update	2.94	Slightly Challenging
Data Security and Privacy	3.16	Slightly Challenging
Overall Weighted Mean	**2.99**	**Slightly Challenging**

Note: (4.0-3.26) Very Challenging, (3.25-2.56) Slightly challenging, (2.55-1.76) challenging, and (1.75-1.00) Not challenging

3.3 The Level of Satisfaction of Students with the Use of Paper-Based Student Health Records

This shows students' satisfaction with the current health record system, which focuses on availability, accessibility, data retrieval and update, data security, and privacy concerns.

Table 5. Overall satisfaction of students on health information records

Challenges	Mean	Verbal interpretation
Availability	2.93	Satisfied
Accessibility	2.95	Satisfied
Data retrieval and update	2.95	Satisfied
Data Security and Privacy	3.12	Satisfied
Overall Weighted Mean	**2.99**	**Satisfied**

Note: (4.0-3.26) Very Satisfied, (3.25-2.56) Satisfied, (2.55-1.76) Slightly Satisfied, and (1.75-1.00) Not satisfied

Table 6.. Significant relationship between the profile and challenges encountered by the students

	Age			Sex			Year Level		
	r value	Sig. value	Interpretation	r value	Sig. value	Interpretation	r value	Sig. value	Interpretation
Availability	-.23**	.00	S	-.10	.01	NS	-.42**	.00	S
Accessibility	-.12*	.00	S	-.06	.17	NS	-.27**	.00	S
Data Retrieval and Update	-.22**	.00	S	-.07	.10	NS	-.39**	.00	S
Data Security and Privacy	-.16**	.00	S	-.01	.72	NS	-.32**	.00	S
Challenge	**-.21****	**.00**	**S**	**-.07**	**.10**	**NS**	**-.40****	**.00**	**S**

*Note. **. Correlation is significant at the 0.01 level (2-tailed).*
**. Correlation is significant at the 0.05 level (2-tailed).*

Table 5 shows the overall weighted mean of students' satisfaction on health records using the paper-based student health records in terms of availability, accessibility, data retrieval and update, and data security and privacy (WM: 2.99) with a verbal interpretation of satisfied. Furthermore, among these four areas, the challenges students face on health records using the existing process in terms of data security and privacy (WM: 3.12) have the highest weighted mean score with a verbal interpretation of Satisfied. Conversely, students' satisfaction with health records using the existing process regarding availability (WM: 2.93) has the lowest weighted mean score with a verbal interpretation of Satisfied. However, there remains scope for enhancement in managing health records within the school clinic, as these aspects are also verbally interpreted as slightly challenging. Respondents express satisfaction not necessarily because they find the current processes optimal, but rather due to the absence or limitation of alternatives for comparison. Their satisfaction may be attributed to the lack of available options rather than an endorsement of the current processes as the best possible method, which makes it somewhat relative.

3.4 The significant relationship between the profile and the challenges encountered by the respondents

Pearson's correlation was used to determine the significant relationship between the profile and the challenges encountered by the respondents. All analyses were significant at a .05 level.

As illustrated in

Table 6, the table shows that there is a significant relationship between the profile and the challenges encountered by the respondents, in terms of age, $r = -.21$, $p < .00$ interpreted as low negative correlation; and year level, $r = -.40$, $p < .05$ interpreted as moderate negative correlation. . This also shows that younger students tend to have lower or fewer challenges encountered than older students, and lower-year level students tend to have lower or fewer challenges encountered than those in the higher level. However, sex is not significantly correlated with the overall challenges encountered by the students as the university clinic does not select their patients based on sex, ensuring equal treatment for all individuals.

3.5 A system prototype for an Electronic Medical Record for Nursing students designed to address the identified challenges

The study findings indicated that designing the system prototype for an Electronic Medical Record for nursing students should prioritize addressing the challenges they face. The system prototype for an electronic medical record for nursing students will be designed to improve the areas with the lowest weighted mean in the questionnaire provided by the researchers, which is available with a score of 2.91, which is interpreted as slightly challenging. Despite its seemingly moderate mean, acknowledging it as a challenge

within the existing process underscores the need for enhancement. This enhancement will involve refining the system's infrastructure and functionalities to ensure consistent availability of data and resources. Moreover, the prototype system has student profiles that will show up after you click the register button to access the electronic medical record. After completing the form, the profile of the student who registered will appear.

Student profiles include the name, age, sex, COVID & Hepa B vaccination, and vital signs; all the data they enter can be edited with a click of the edit button. Name, age, sex, and position in the clinic are all listed in the staff profiles. Additionally, admins/staff can add and update their personal information or remove their profiles for students who are not enrolled. However, they can only view the request for medical certification. The only people who can view and release the pending request are the clinic staff. For the clinic staff to identify whether all of the vaccine students have finished, not only the COVID-19 vaccine but also the Hepatitis B vaccine is being tracked here together with the vaccination date. The student will fill out the medical and dental forms in the system for their physical health history. Furthermore, the student will only be permitted to submit the medical certification request once because, upon submitting two requests, a notification will be shown on the student profile stating that the request must only be submitted once due to a pending request.

Students cannot use SHIR without the internet because it is only a prototype system. Lastly, the details of the prototype system creators are in the upper right corner by clicking the “about” section.

4. CONCLUSIONS AND RECOMMENDATION

This study, entitled "Student Health Information System: A Basis for System Development," addressed the need for a systematic approach to managing student health data in NEUST-CON. Most respondents ranges from aged 18–21 in NEUST College of Nursing. The proportion of first-year female students was the largest compared to male students. Researchers identified challenges and gathered insights from NEUST College of Nursing students to propose a customized health records system prototype. By incorporating student input, the study ensured alignment with practical needs. The study revealed that they have challenges regarding student health information records regarding availability, accessibility, data retrieval and update, and data security and privacy. Most respondents are only moderately satisfied regarding the ease of data security and privacy. This means there's still potential for development. Hence, a developed electronic medical record system prototype designed for nursing students to address their challenges, ensuring that the system successfully meets their needs and improves healthcare delivery.

Recommendations

The recommendations for further study of the study entitled, “Challenges in Students Health Information Records: A Basis for System Development’’ are as follows:

Offer an option where students who have been vaccinated with the Hepatitis B vaccine at the Rural Health Unit (RHU) are required to upload a picture of their vaccination proof for verification. In contrast, this requirement is waived for those vaccinated at clinics, as clinical staff can independently confirm vaccinations through their records.

Implement a feature allowing students to upload their PhilHealth Member Data Record (MDR) file or picture. This also comes with a function where staff can efficiently merge MDR files of students for printing in case needed for academic purposes.

Set up an automated email system to remind students of upcoming vaccine due dates or prompt them to complete their vaccinations. This ensures students stay informed and on track with their vaccination schedules. Transforming the system from a local host to an online platform for expanding accessibility.

The researcher suggests customizing the EHR system to match the clinic's workflows and preferences. This will provide healthcare providers with an intuitive, user-friendly interface and allow for integrating features tailored to the clinic's unique needs, streamlining staff tasks and improving efficiency.

Conduct pilot testing of the prototype EHR system in a controlled environment to evaluate its functionality and usability. Gather feedback from pilot users, identify areas for improvement, and refine the prototype based on lessons learned before full-scale implementation.

Establish mechanisms for continuous quality improvement and feedback loops within student health information systems to facilitate iterative refinement and optimization over time. Implement user feedback channels, satisfaction surveys, and performance metrics tracking to solicit stakeholder input and monitor system usability, functionality, and effectiveness.

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