THE ASSESSMENT OF NURSING INFORMATICS COMPETENCY LEVEL FOR BEDSIDE NURSES IN PRINCE MOHAMMED BIN ABDUL-AZIZ HOSPITAL

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Abstract

Background: In contemporary healthcare environments, nurses frequently utilize complex clinical technology, necessitating proficient informatics skills and knowledge. Given the heightened emphasis on patient safety and care quality through informatics, nursing competency in this area has become indispensable. **Objectives:** The purpose of this research is to evaluate the level of Nursing Informatics (NI) competency and determine the factors influencing this competency among bedside nurses in Prince Mohammed bin Abdul-Aziz Hospital (PMAH). **Methodology**: The study adopts a descriptive, correlational, cross-sectional approach involving 196 nurses at PMAH. Utilizing the Nursing Informatics Competency Assessment Tool (NICAT), developed by Alphonsa Rahman in 2015, the research assesses bedside nurses' informatics competency. Additionally, the questionnaire gathers demographic data. The data was entered into SPSS 25 software, and correlation analysis was carried out. **Results**: The average level of competency across all categories was significantly tilted toward 'Competent, Very Competent, and Expert' (74%), with a substantially lower percent in 'Novice or Advanced Beginner' (26%). Educational level was identified as significantly correlated with the level of nursing informatics competency (NIC) (P = 0.047). However, age, gender, years of nursing experience, and utilization of the health information system showed no significant correlation with NIC level. **Conclusion:** These findings underscore the significance of nursing informatics competency within healthcare organizations, as it determines nurses' ability to effectively utilize available health information systems, thereby enhancing healthcare quality and safety.

Keywords: Nursing Informatics, Nursing Informatics Competency, Health Information System, Information Literacy, Basic Computer Skills, Clinical Information Management.

1. INTRODUCTION

In today's health care settings, nurses use a lot of complicated clinical technology, which requires them to have strong informatics skills and knowledge. Competency in informatics has become essential for nurses to fulfill their professional responsibilities since patient safety and care quality are being raised using informatics. Nursing informatics (NI) became an essential part of the nursing profession and practice with the high-speed revolution of the health information system (1). Using modern nursing informatics competencies that assess nurses' informatics skills and knowledge will improve their use of health information systems and help determine the educational programs needed to enhance these skills. Improving nursing informatics skills and knowledge for bedside nurses will have a positive impact on the quality of nursing care and patient safety (2). Nursing informatics was defined by the American Nurses Association as "a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, knowledge, and wisdom in nursing practice. Nursing informatics facilitates the integration of data, information, knowledge, and wisdom to support patients, nurses, and other providers in their decision-making in all roles and settings. This support is accomplished by using information structures, information processes, and information technology (3).

Nursing informatics competency can be defined as adequate knowledge, skills, and abilities to perform specific information tasks by nurses (1) . Nursing informatics competencies consist of three basic categories: basic computer skills, informatics knowledge, and informatics skills (4) . Nursing informatics competency is required for the nursing profession to provide high-quality patient care and safety (5). The need for competency evaluation tools is great because nursing informatics technology has advanced significantly in recent years. The significance of these competencies is to assess nurses' proficiency in using health information systems for accurate data collection, analysis, and retrieval, as well as to identify the educational activities required to enhance their competencies (6). Nursing informatics has significantly impacted nursing practice, with a focus on increasing efficiency, safety, and efficacy (7). The computer skills involved in nurses' increasing access to health informatics can be used to improve nursing practice, consequently leading to better health care delivery (8). The purpose of this research study is to assess the level of nursing informatics competency and determine the factors affecting NI competency among bedside nurses in PMAH.

2. METHODS

2.1 Study design:

This research is a descriptive, correlational, cross-sectional study. The research community included nurses working at Prince Mohammed bin Abdul-Aziz Hospital (PMAH).

2.2 Sample:

The study involved 196 nurses working as abed side nurses, nurses with administrative roles were excluded. Participants included must have bachelor's degree in nursing science or more and using the health information system in their daily clinical practice will be included in this research study. Nurses who have administrative role like head nurses, nurse's managers will be excluded because we are looking to assess the level of NI skills and knowledge for bedside nurses who have direct contact with patients and use the available health information system for a long period of time.

2.3 Instruments:

In this research, the Google Form questionnaire consists of two sections. Section one consists of demographic data about participants, including age, gender, educational level, years of nursing experience, and years of using the available health information system. Section two includes the Nursing Informatics Competency Assessment Tool (NICAT). The Nursing Informatics Competency Assessment Tool (NICAT) was used to assess the level of bedside nurses's NI competency in this research study. NICAT was developed by Alphonsa Rahman in 2015 in the United States based on American Nurses' Association (ANA) standards (2008), TIGER guidelines (2009), and Benner's Dreyfus model of skill acquisition (1984). NICAT evaluates the NI competency for bedside nurses with 30 items in three dimensions, including basic computer literacy (10 items), information literacy (13 items), and information management literacy (7 items). The bedside nurses assess their level of NI competency using a Likert scale of five-points ranging from one to five, where 1 means not competent, 2 means somewhat competent, 3 means competent, 4 means very competent, and 5 means expert. The overall score range of the instrument is 30–150. The higher the scores, the higher the NI competency. NICAT used Benner's model of skill acquisition to classify the nurses from novice to expert according to their NIC scores (9). Benner's model of skill acquisition for nurses is a framework that describes the progression from novice to expert level (10). Table 1 illustrates the NICAT's scoring methods used.

Table 1: NICAT's self-assessment scoring method

The Benner's model of skill acquisition	Novice	Advanced Beginner	Competent	proficient	Expert
Self-report of perceived competency	1=Not competent	2=somewhat Competent	3= competent	4=very competent	5=expert
NICAT 's overall scoring	30	31-59	60-89	90-119	120-150

3. RESULTS

3.1 Demographic data

A total of 196 nurses working at PMAH answered the Google Form questionnaire. Most participants (29.6%) were aged from 36 to 40 years, followed by 24% from 31 to 35 years, 19.9% from 26 to 30 years, 15.8% from more than 40 years, and 10.7% from 22 to 25 years. Female nurses accounted for 56.1%, and male nurses made up 43.9% of the group (Table 2). Most participants have nursing experience from 1–5 years (32.1%), followed by the nurses with 11–15 years (24%), 6–10 years (22.4%), and 16–20 years (15.8%), and the least are the nurses who have nursing experience more than 20 years (5.6%) (Table 2). Most nurses that have been using the health information system for 6–10 years participated in this research study with 39.3%, followed by 1–5 years (31.6%), 11–15 years (15.8%), 16–20 years (7.7%), and 5.6% for nurses who have been using the HIS for more than 20 years. Most nurses who answered the questionnaire have a bachelor's degree in nursing (68.1%), followed by those with a master's degree (27%), and the least are nurses with a PHD (4.6%) (Table 2).

Table 2: Summary of demographic characteristics among the study participants

Variable	Category	N	%
Age	22-25	21	10.7
	26-30	39	19.9
	31-35	47	24.0
	36-40	58	29.6
	>40	31	15.8
Gender	Female	86	43.9
	Male	110	56.1
Years of nursing experience	1-5	63	32.1
	6-10	44	22.4
	11-15	47	24.0
	16-20	31	15.8
	>20	11	5.6
Years of using HIS	1-5	62	31.6
	6-10	77	39.3
	11-15	31	15.8
	16-20	15	7.7
	>20	11	5.6
Educational level	Bachelor's	134	68.4
	Master	53	27.0
	PhD	9	4.6

3.2 Nursing informatics competency's perceived scores

3.2.1 Basic computer skills' perceived score

A descriptive analysis was conducted to estimate the frequency and percentage of scores for each competency item in the basic computer skills category. Additionally, this analysis

was used to determine the level of competency based on the scores of the items. Based on the findings, 75% of nurses assessed themselves as competent or above (36.23% were competent, 24.02% were very competent, and 14.75% were experts). In contrast, 25% considered themselves non-competent (20.51% were advanced beginners and 4.49% were novices). In a detailed analysis of each basic computer skills 'competency items show that in the area of "recognizing the basic components of the computer system such as the mouse, screen, and workstation," 81% of nurses assess their level of competency as competent (competent, very competent, and expert), while 19% consider themselves novices or advanced beginners. When it came to'' utilizing electronic mail and fax machines'', '' ability to create, rename, move, and delete files using computer operating systems such as Microsoft Windows'' and'' use of external devices such as a USB flash drive, digital camera, or CD-ROM'', 75% of respondents indicated they were proficient, while 25% said they were a novice or advanced beginner. In terms of using remote communication platforms like Lync, Skype, and Adobe Connect, 34% of nurses classified themselves as novices or advanced beginners, compared to 66% who considered themselves proficient. In terms of navigating computer operating systems to access installed apps and choose active printers, 77% of nurses were rated competent, while 23% were classified as novice or advanced beginners. When it came to using presentation software like Microsoft PowerPoint, 69% were competent or above, while 31% considered themselves novices or advanced beginners. In terms of'' using word processing features such as save, categorize documents, copy, paste, and delete'', ''performing a basic computer system troubleshooting such as checking the power supply, rebooting the computer, and printing'' and' management of computer system security to secure data, devices, and passwords' 78% of nurses considered themselves proficient, while 22% were classified as novices or advanced beginners.

3.2.2. Information literacy competency's perceived score

A descriptive analysis was conducted to estimate the frequency and percentage of scores for each competency item of the information literacy category. Additionally, this analysis was used to determine the level of competency based on the scores of the items. Based on the findings, 78% of nurses considered themselves competent or above (36% were competent, 23% were very competent, and 13% were experts). In contrast, 22% rated themselves as non-competent (22% were advanced beginners and 6% had a novice level of competency).

A detailed analysis of each information literacy's competency items shows that 76% of nurses consider themselves competent in ''using the Internet to discover and download items of interest'' and '' reviewing point of care data such as urine dipsticks, glucose checks, and hemoglobin meters to make timely decisions'', while 24% considered themselves novices or advanced beginners. In terms of ''navigating the electronic health record '', ''developing and document care plans in electronic health record'' and '' view trended electronic documentation to understand the effectiveness of nursing interventions, 74% rated themselves competent, with 26% classifying themselves as

novice or advanced beginners. In terms of ''review and acknowledging patient orders in the electronic health record'' and '' Continue patient care documentation and patient identification when the computer system is down'', 72% are considered competent and 28% are considered novices or advanced beginners. Regarding ''respond appropriately to alerts from clinical decision-making tools such as algorithms, best practice alerts'', 66% rated themselves as competent and 34% as a novice or advanced beginner. In the area of '' conduct literature searches in the accessible proprietary database systems such as CINAHL, EBSCO, etc.'' and ''Use of medication dispensing systems such as Pyxis and Omni cel'' approximately 62% considered themselves competent and 38% considered themselves a novice or advanced beginner. In the competency of '' Use medication administration tools such as barcode medication verification and scanning', 71% considered themselves competent, and around 29% considered themselves novices or advanced beginners. In the field of ''collect and document patient data relevant to care such as vital signs, height, and weight'' and '' use systems to assist with the admission and discharge process'', 78% rated themselves as competent and 22% as a novice or advanced beginner.

Overall, the analysis of the competency level of information literacy items shows that about 78% of nurses rated themselves as competent in this field, while 22% considered themselves novices or advanced beginners.

3.2.3 Clinical information management competency's perceived score

A descriptive analysis was conducted to estimate the frequency and percentage of scores for each competency item of clinical information management category. Additionally, this analysis was used to determine the level of competency based on the scores of the items. Based on this finding, 75% of nurses assessed themselves at a competent level or above in the overall clinical information management competency's items (39% were competent, 23% were very competent, and 13% were experts). In contrast, 25% considered themselves to be at a non-competent level (21% were advanced beginners, and 4% were at a novice level of competency).

A detailed analysis of each clinical information management competency's items shows that 78% of nurses assessed themselves as competent, while 22% were novices or advanced beginners in terms of ''Use data and statistical reports for unit-based quality improvement initiatives and practice evaluation'. In the field of ''Use nursing data for improving practice and for clinical decision-making'','' Use information technology as a primary means of patient safety, such as bedside laboratory verification, barcode scanning, etc.'', and '' Find information stored in the clinical information system to guide patient care, such as standardized care plans and guidelines'', approximately 73% found themselves competent in these skills, while around 23% were novices or advanced beginners. In the areas of ''Use electronic communication with colleagues, patients, or other departments'' and ''Protect confidential patient data by logging out, suspending sessions, and password protection'', around 76% consider themselves competent, and 24% are novices or advanced beginners. Finally, in the terms' Use electronic health

records and other clinical information systems as per organizational policy for documentation'', around 74% of bedside nurses found that they were competent, and about 26% were novices or advanced beginners.

Overall, the analysis for the competency level of clinical information management items shows that about 75% of nurses rated themselves as competent in this field, while 25% considered themselves novices and advanced beginners.

3.3 The Level of nursing informatics competency

Table 4.3 shows the average percent of NIC level for each category as well as the average total percent of level based on nurses' scores in the three NICAT categories. Based on Table 4.5, the average level of competency across all categories was significantly tilted toward 'Competent, Very Competent, and Expert' (74%), with a substantially lower percent in 'Novice or Advanced Beginner' (26%).

Table 3: Total Level of Competency

	Level of competency						
	Novice and advanced beginner			Competent, very competent and expert			
	Novice	Advanced beginner	Total	Competent	Very competent	Expert	Total
NICAT' category items							
Basic computer skills	4.5%	20.5%	25%	36 %	24 %	15%	75%
Information literacy	6%	22%	28%	36%	23%	13%	72 %
Clinical information management	4%	21%	25%	39%	23%	13%	75%
The Average total level of competency	26%			74 %			

3.4 The Relationship between NIC level and the demographic information of bedside nurses

In this section, a correlation analysis was conducted to determine the relationship between the level of nursing informatics competency and the demographic information of bedside nurses, including age, gender, years of nursing experience, years of using health information system, and educational level.

3.4.1 The Correlation between age and NIC

Pearson's correlation was conducted to determine if there is a correlation between age and NIC among bedside nurses Based on the findings, there was no correlation between age and the level of NIC (p = 0.852).

3.4.2 The Correlation between NIC and years of nursing experience

Pearson's correlation was conducted to determine if there is a correlation between years of nursing experience and the level of NIC among bedside nurses. Based on the findings, there was no correlation between years of nursing experience and the level of NIC ($p = 0.075$).

3.4.3 Correlation between NIC and years of using HIS

Pearson's correlation was conducted to determine if there is a correlation between years of using HIS and NIC among bedside nurses. Based on the findings, there was no correlation between years of using HIS and the level of NIC ($p = 0.113$).

3.4.4 The Association between NIC and Gender

The Pearson chi-square was conducted to determine if there is an association between the gender of nurses and the level of NIC. Based on the findings, there was no association between the gender of nurses and the level of NIC. ($p=0.904$).

3.4.5 The Association between NIC and Educational level

The Pearson chi-square was conducted to determine if there is an association between the educational level of nurses and the level of NIC. Based on the findings, there was an association between the educational level of nurses and the level of NIC. ($p=0.033$).

4. DISCUSSION

4.1 Perceived nursing informatics competency perceived scores

The results were presented following data analysis of bedside nurses' responses to the Nursing Informatics Competency Assessment Tool (NICAT) questionnaire in three main categories: basic computer skills, information literacy, and clinical information management competencies. The sections that follow will go into more details on the responses in each category.

4.1.1 Basic computer skills' perceived scores

Basic computer skills show the psychomotor skills to use computer tools as well as knowledge of basic hardware and software functionality (9) .The analysis for the competency level of basic computer skills items shows that about 75 % of nurses (147 nurses out of 196) rated themselves as competent and above in this field classified as: 36% were competent, 24 % as a very competent and about 15 % as an expert. While 25 % (49 nurses out of 196) considered themselves as a novices and advanced beginners (4.5 % were novices and 20.5% as an advanced beginners).

Additionally, the results reveal that the highest score of competencies related to the items of identifying fundamental computer components, perform basic computer systems' troubleshooting such as checking power source, rebooting computer, and printing and demonstrating proficiency in using word processing functions, and managing computer

files. This suggests that the nurses are proficient in using computers for general tasks, navigating basic computer components, diagnosing minor computer issues, and efficiently using word processing tools. However, the lowest score was reported for using remote communication tools which may be attributed to the limited use of telecommunication tools like telehealth by nurses at PMAH, using software to create presentations such as Microsoft PowerPoint and manage computer systems security to protect data, devices, and passwords.

Overall, these findings suggest that nurses possess a competent level in various basic computer skills, with some areas requiring more development and training than others including presentation tools, telehealth communications and data security. Additionally, further exploration of competencies might be advantageous in the development of tailored interventions and enhancing the general proficiency in basic computer skills among nursing professionals.

4.1.2 Information literacy competency's perceived scores

Information literacy is the nurses' ability to recognize, retrieve, evaluate, and use information for patient care appropriately (9) .The analysis for the competency level of information literacy skills items shows that about 72 % of nurses (141out of 196) assess themselves as s competent level and above classified as: 36% were competent, 22% were very competent and about 14 % as an expert. Additionally, about 28 % of nurses (55 out of 196) rated themselves as novices (6 %) and advanced beginners (22%).

Furthermore, the results reveal that the skills related to collecting and documenting patient data (vital signs, height, weight), using admission/discharge systems, and finding information online have the highest average competency scores compared to other skills. Their stronger skill in these areas suggests that they are familiar with using technology for patient care and data management. In contrast, the skills related to use of medication dispensing systems such as Pyxis and Omni cell, conduct literature searches in the accessible proprietary database systems such as CINAHL, EBSCO, etc. and respond appropriately to alerts from clinical decision-making tools such as algorithms and best practice alerts have the lowest average competency scores compared to other skills. These skills need a deeper knowledge of medication administration systems, familiarity with specialized medical databases, and the ability to evaluate clinical decision support tools. The lower results in these categories indicate that the group could benefit from further training or assistance in these areas.

4.1.3 Clinical information management's perceived score

The clinical information management competency assesses the nurses' perceived skills in utilizing data, communicating electronically, and ensuring information security within their practice (9) .The analysis for the competency level of basic computer skills items shows that about 75 % of nurses (147 out of 196) considered themselves as a competent and above in overall clinical information management competency items classified as: 39 % were competent, 23% were very competent and about 13 % of nurses were expert. In

contrast, about 25 % of nurses (49 out of 196) rated themselves as novices (4%) and 21% as an advanced beginner. Furthermore, the results reveal that the skills related to use data and statistical reports for unit-based quality improvement initiatives and practice evaluation, use electronic communication with colleagues, patients, or other departments and use electronic health record and other clinical information system as per organizational policy for documentation have the highest average competency scores compared to other skills. This suggests that nurses demonstrated proficiency in analyzing data and reports to identify areas of improvement in patient care. They were also experienced in communicating electronically with colleagues, patients, and other departments to share knowledge and perform their duties efficiently. Nurses also demonstrate experience in the use of EHRs and other clinical information systems to appropriately document patient information in accordance with organizational regulations.

In contrast, the skills related to find information stored in the clinical information system to guide patient care such as standardized care plans and guidelines and use information technology as a primary means of patient safety such as bedside laboratory verification, barcode scanning etc. have the lowest average competency scores compared to other skills. This suggests that this group of nurses have difficulty in acquiring the necessary data in the health information system, which could lead to delays in treatment or the missing of critical information regarding standardized care plans and guidelines. Furthermore, inadequate use of information technologies for verification and scanning operations could increase the probability of errors in medication administration, blood transfusions, and other procedures. This suggests that there is a need for development training programs specifically focused on navigating the HIS for care plans and recommendations in order to increase nurses' ability to access important information efficiently. Furthermore, including IT safety measures such as bedside verification and barcode scanning into standard workflows helps assure consistency and increase patient safety.

4.1.4 The level of NIC competency

The level of NIC among bedside nurses was determined by the total score of the three categories: basic computer skills, information literacy and clinical information management. The results show that 74 % of nurses rated themselves to have a competent level (competent, very competent and expert) in overall NIC categories while 26 % reported a non-competent level (advanced beginner and novice). This indicates that the majority of nurses at PMAH have the ability to efficiently navigate computer systems, retrieve information, and manage clinical data in a healthcare setting and furthermore they have an enough skills and knowledge to use HIS properly. The proper use of HIS will lead to achieve the high quality of patient care and maintain patient safety (11).furthermore, a significant portion (14%) identified themselves as experts, indicating confidence in their advanced informatics skills.

Additionally, while overall competency appears to be high, it would be useful to examine the distribution of competency among nurses at the 'Novice and Advanced Beginner' levels in each category. Exploring the specific skills examined under each area could provide additional clarity into weaknesses and, more importantly, build educational strategies to enhance those skills and improve the NIC for nurses (12).

4.1.5 Comparison between the three NIC categories perceived scores.

A majority of nurses (75%) achieve a competent score and above in basic computer skills and clinical information management competency categories, followed by information literacy (72%). This suggests that more focus should be placed on information literacy to help bridge the gap between categories. Additionally, the results indicate that most of the respondents had a competent level and above in overall NIC categories, which suggests that these categories are better understood and mastered. These results agree with the research study conducted by Klieb M. in Canada, Alberta, which found that nurses revealed a high level of self-reported competence in general (13). Additionally, the scores for basic computer skills and clinical information management were slightly higher than for information literacy. This is in opposite to the results of the study by Hero Khezri and Mohammadhiwa Abdekhoda in 2019 that showed that basic computer skills had the lowest level of competence compared with information literacy and information management competency levels (14) .However, it is essential to provide regular training and continuing education in these areas to ensure that all staff are up to date with current best practices. This would also ensure that all staff have the necessary skills to do their job effectively. Furthermore, providing regular feedback and assessment would help to ensure that staff are meeting the required standards.

Overall, the majority of PMAH's nurses appear to have high level of competency in all three categories, with slightly higher scores in basic computer skills and clinical information management compared to information literacy. It's important to note that these are self-reported scores, and further assessment might be needed to gain a more comprehensive understanding of the nurses' actual skills and knowledge.

4.2 Demographic data

The correlation study results indicate that there is no statistically significant correlation between age and total level of nursing informatics competency (NIC). The negative correlation coefficient of -0.013 is very weak and statistically insignificant, showing that age has no influence on the total NIC level, and the p-values for both age and total NIC level of 0.852 indicate a non-significant link. These findings are consistent with the findings of Al-Balawi et al. (15) And contradict the findings of Hassona & Ali (16) Farzandipour et al. (4), Kleib & Nagle (13) and Khezri & Abdekhoda (14), who found a positive link between age and degree of NIC among nurses.

The correlation analysis between years of nursing experience and total level of Nursing Informatics Competency (NIC) demonstrates a weak positive correlation coefficient (r = 0.075) that is statistically non-significant (P = 0.295), implying that nurses with more

experience have slightly higher NIC scores, but this relationship is not strong enough to be statistically conclusive. These findings are consistent with those of Al-Balawi et al.(15) and Farzandipour et al. ((4) who discovered a negative link between nursing experience and level of NIC, as well as the findings of Hassona & Ali (16) and Khezri & Abdekhoda (14).The correlation analysis results show a weak positive correlation coefficient (r = 0.113) that is statistically non-significant (P = 0.114) between years of using health information systems and the total level of Nursing Informatics Competency (NIC), implying that nurses with more HIS experience have higher NIC scores, but this relationship is not strong enough to be statistically conclusive. These findings contrast those of Farzandipour et al. (4) Kleib and Nagle (13), and Khezri and Abdekhoda (14). The Pearson Chi-Square test performed to examine the relationship between gender and total level of nursing informatics competency (NIC) found no statistically significant results (P = 0.94). This is consistent with Farzandipour et al(4) and Al-Hawamdih and Ahmad (17) .The Pearson Chi-Square test findings show a statistically significant relationship between educational level and overall level of nursing informatics competency (Pearson Chi-Square = 0.33). This is consistent with (Al-Balawi et al (15), Yang et al (18), and Kleib & Nagle (13), but contradicts the findings of Farzandipour et al.(4).

5. CONCLUSIONS AND RECOMMENDATIONS

The study showed that the level of nursing informatics competency among bedside nurses at PMAH was considered high and acceptable with some areas of competencies needing to be improved. Additionally, study showed that there is no significant relation between demographic data of nurses except for educational level with the level of NIC.

This research study recommended developing a strong foundation of computer literacy, information literacy, and informatics management skills. These are required for optimal healthcare information technology (HIT) use. Additionally, focus on improving the level of low-scoring competency items, for example, using remote communication tools, conducting literature searches, and using medication dispensing systems. This can be achieved by developing targeted training materials and resources that specifically address the areas of low competency. Furthermore, continuously assessing and evaluating the effectiveness of training programs using assessments, surveys, and feedback from participants and supervisors will help identify the NIC field that must be improved.

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APPENDICES

Ethical Approval letter from Jawatankuasa Etika Penyelidikan (Manusia) - JEPeM USM.

Jawatankuasa Etika Penyelidikan Manusia USM (JEPeM)

Human Research Ethics Committee USM (HREC)

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JEPeM Code : USM/JEPeM/22120773
Protocol Title : Assessment of Nursing Informatics Competency Level for Bedside Nurses in Prince Mohammed bin Abdul-Aziz Hospital.

Dear Mr.,

We wish to inform you that your study protocol has been reviewed and is hereby granted approval for implementation by the Jawatankuasa Etika Penyelidikan Manusia Universiti Sains Malaysia (JEPeM-USM). Your study has been assigned study protocol code **USM/JEPeM/22120773**, which should be used for all communications to JEPeM-USM in relation to this study. This ethical approval is valid from **11th January 2024** until **10th January 2025**.

Study Site: Prince Mohammed bin-Aziz Hospital, Saudi Arabia.

The following researchers are also involved in this study:
1. Dr. Shuhaila Mat Sharani
2. Dr. Hazrina Yusof Hamdani
3. Dr. Norhasmah Mohd Zain
4. Dr. Noraini Abdul Ghafar

The following documents have been approved for use in the study.
1. Research Proposal

In addition to the abovementioned documents, the following technical documents were included in the review on which this approval was based:
1. Participant Information Sheet and Consent Form (English version)
2. Nursing Informatics Competency Questionnaire

The list of JEPeM-USM members present during the full board meeting reviewing your protocol is attached.

While the study is in progress, we request you to submit to us the following documents:
1. Application for renewal of ethical approval 45 days before the expiration date of this approval through submission of **JEPeM-USM FORM 3(B) 2022: Continuing Review Application Form.**
2. Any changes in the protocol, especially those that may adversely affect the safety of the participants during the conduct of the trial including changes in personnel, must be submitted or reported using **JEPeM-USM FORM 3(A) 2022: Study Protocol Amendment Submission Form.**
3. Revisions in the informed consent form using the **JEPeM-USM FORM 3(A) 2022: Study Protocol Amendment Submission Form.**
4. Reports of adverse events including from other study sites (national, international) using the **JEPeM-USM FORM 3(G) 2022: Adverse Events Report.**
5. Notice of early termination of the study and reasons for such using **JEPeM-USM FORM 3(E) 2022.**

Approval letter from IRB at PMAH

مستشفى الأمير محمد بن عبدالعزيز بالرياض
Prince Mohammed bin Abdulaziz Hospital in Riyadh

التجمع الصحي الثاني بالمنطقة الوسطى
Second Health Cluster in Central Region

(IRB) INSTITUTIONAL REVIEW BOARD
National Registration Number with NCBE-KACST, KSA: H-01-R-131

Date: January 25, 2024
IRB Log Number: 24-004
Department: Pharmacy Administration
Category of Approval: EXEMPT
Affiliation: Prince Mohammed Bin Abdulaziz Hospital

Dear Principal Investigator

I am pleased to inform you that your submission dated Jan. 24, 2024 for the study titled The: **Assessment of Nursing Informatics Competency level for bedside Nurses in Prince Mohammed bin Abdul-Aziz Hospital,** was reviewed and was approved according to ICH GCP guidelines. Please note that this approval is from the research ethics perspective only. You will still need to get permission from the head of department or unit in PMAH or an external institution to commence data collection.

Protocol Title	Assessment of Nursing Informatics Competency level for bedside Nurses in Prince Mohammed bin Abdul-Aziz Hospital
Principal Investigator	Sofyan Ibrahim
Affiliation	Prince Mohammed Bin Abdulaziz Hospital
Documents Reviewed	-IRB application form -CV, Ethical Certification & others

We wish you well as you proceed with the study and request you to keep the IRB informed of the progress on a regular basis, using the IRB log number shown above.

Please be advised that IRB for administrative purpose requires that you submit a progress report on your research every 6 months. You are required to submit any manuscript resulting from this research for approval by IRB before submission to journal for publication.

This approval is valid only for one year starting from the date of issuance.

The investigator assures that the IRB will be immediately informed of any information, unexpected or adverse events that would increase the risk to the human subjects and cause the category of review to be upgraded to Expedited or Full Review.

As a researcher you are required to have current and valid certification on protection human research subjects that can be obtained by taking a short online course at the US NIH site or the Saudi NCBE site followed by a multiple choice test. Please submit your current and valid a certificate for our records. Failure to submit this certificate shall be a reason for suspension of your research project.

Sincerely Yours,

Dr. Hanan Ali AlHamzi
Chairman of Institutional Review Board –IRB
Consultant, Rheumatology Medicine Department
Prince Mohammed Bin Abdulaziz Hospital, KSA
Email: alhamzih@pmah.med.sa
Extension: (+966)11261 6462

Institutional Review Board
Approved
Date: 3 0 JAN 2024

Saudi Arabia – Riyadh
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Phone: 011261666

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