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KNOWLEDGE OF UNDERGRADUATE NURSING STUDENTS REGARDING NURSING INFORMATICS IN KHYBER MEDICAL UNIVERSITY PESHAWAR.

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Abstract

Introduction Nursing informatics is a specialty that "integrates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge, and wisdom in nursing practice". Nursing students entering different programs of nursing have different backgrounds; therefore their informatics competencies and preparation are different from each other. **Objective:** the study was conducted to assess the knowledge of nursing students regarding basic computer skills and nursing informatics. **Design and Methodology:** A Cross-sectional descriptive study was conducted in a two months period from 10 November 2021 to 10 January 2022 from 129 participants at institute of nursing sciences Khyber medical university after approval from director of nursing institutes. **Results:** Participants in this study were mostly female which was (51%) n=66, while the Male students were (49%) n=63, The study showed that the excellent category regarding knowledge of 4 years BSN students were high 25.67%, than the knowledge of 2 years Post-Rn students 12.81%, and the mean score of the Excellent category regarding knowledge of 4 years BSN students were 19, more than the knowledge of 2 years Post-Rn students 6.6. Furthermore the knowledge regarding nursing informatics of Excellent category of 4 years BSN students were 16.04%, more than the knowledge of 2 years Post-Rn students 13.52%, and the mean score of nursing informatics in the Excellent category regarding knowledge of 4 years BSN students were 11.87, more than the knowledge of 2 years Post-Rn students 5.18. **Conclusion:** In this study the results provide input to educators that the students of 4 years BSN perform significantly well than 2 years Post-RN BSN students, therefore it should now be the responsibility of higher authorities to work hard with every nursing students to promote patient safety, and evidence based practice.

Keywords: Nursing Students, Knowledge, Basic Computer Skills, Nursing Informatics.

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INTRODUCTION

The latest and innovative technologies have changed the health care system and brought a revolution in the last few years; information technology is used for effective patient care and to reduce medication errors. Nurses are the key leader in developing the organization of nursing informatics for effective and efficient health, that transform the delivery of care for both patient and colleague nurses¹. "integrates nursing science with multiple information and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice" is the mission of the field of nursing informatics.² Nursing informatics (NI) is a well-secured specialty of nursing, which plays a vibrant role in the provision of health care systems that supports safe, high quality, and patient-centered care³. In a survey of Healthcare informatics and management system society, informatics nurses are involved in multiple activities of information technology like workflow analysis, patient safety, and change management⁴. To become a competent nurse with good informatics expertise, it is necessary to prepare and train our nursing students for tomorrow. Creating a baseline of informatics competencies in nursing students is to promote safe and evidence-based nursing care⁵. Nursing students entering different programs of nursing have different backgrounds; therefore their informatics competencies and preparation are different from each other. A quasi-experimental study was conducted in India at Tabriz University of Medical Sciences in 2015. The study found that Gender, age, and

students' attitudes toward nursing process software were statistically correlated. The mean score of students' attitude toward nursing process software was high (80.70 ± 5.58)⁶. Another cross-sectional study was conducted at nursing college of Northwest India in 2019 regarding Assessment of Knowledge Regarding Nursing Informatics among Nursing Faculties. The study reported that nursing faculty was having average awareness towards nursing informatics. Hence nursing faculties require knowledge in order to bring up efficient student nurses, consequently a better nursing care.⁷ Another Cross sectional descriptive study was conducted by Poreddi Vijayalakshmi, Ramachandra, and Suresh Bada Math in 2014 regarding the attitude of nursing students towards computer in healthcare. When compared to the participants who had not received formal instruction in a computer course, those who had completed the course agreed that "computers are great solving tools" ($2 = 9.663, p.047$) and "computers are natural to use in health care" ($2 = 11.623, p.020$)⁸. The purpose of this study was to: (i) identify the basic computer skills and nursing informatics skills of undergraduate students in the institute of nursing sciences, Khyber medical university and, (ii) to compare the basic computer skills and nursing informatics skills between 2 undergraduate programs i.e. 4 years BSN and 2 years Post-Rn BSN.

METHODOLOGY

The research design used for this study was cross-sectional descriptive, which was conducted in a two months period from 10

November 2021 to 10 January 2022 at institute of nursing sciences Khyber medical university. All the undergraduate students of the institute of nursing sciences were the population and using 95% confidence interval, 5% error 133 students was the sample size for the study. In data collection the data of 4 students were incomplete, therefore 4 students were skipped and 129 participants were finalized for this study. The participants of the study were the students who enrolled in the 4 years BSN degree program and Post-Rn BSN students. The data were collected through convenient sampling. In the start of questionnaire there was a detail statement of consent that every participant who was participated in this study will be voluntary, and their data will be kept confidential. The inclusion criteria for the study was Students who are enrolled in INS-KMU, those students who are willing to participate in the study, and student nurses enrolled in graduation program (4 years BSN and Post-Rn BSN). While students nurses who have undergone MS Nursing and PhD Nursing program and who are not willing to participate in the study were excluded from the study.

Study Instrument

The data was collected through a modified valid and reliable questionnaire, which contains two parts. Part-one contain demographic data of the participants while part-two contain two portion”

1st portion contain 20 items related to basic informatics skills through 5 points Likert scale.

2nd portion contains 35 items regarding informatics knowledge and skills through 5 points Likert scale. The cronbach alpha of the questionnaire was 0.97⁹.

DATA COLLECTION, ANALYSIS AND ETHICAL CONSIDERATION

The questionnaire of the study was designed and printed with consent form. Through convenient sampling technique the students were approached and the objective and goal of the study were explained to each student. Frequency and percentages were categorical variables while mean and standard deviation were calculated for continuous variable through SPSS 20. The study was approved by the ethical board of institute of nursing sciences (INS) Khyber medical university while permission were granted by the director of INS for data collection. Each student were explained verbally and mentioned in the consent form that their participation is voluntary and they can withdraw anytime from the project, all those who became participants their data will be kept confidential.

RESULTS:

Information technology is not only important element in health care, but play a vital role in the prosperity and development of the nations. Nursing informatics is the fastest growing part of nursing therefore every nurse should be aware and to know its uses, it will save our time as well as promote quality care and patient outcomes.

Demographic characteristics:

The demographic variable were divided into, gender, their ages, program they enrolled and their clinical experience. Data from 129 students are collected, which were selected for the study. Participants in this study were mostly female which was (51%) n=66, while the Male students were (49%) n=63. The age group of below the 20 years were (3) n=4, while the major category within the participant age group were from 20-30 years (80%) n=102, furthermore the age group above 30 years were (17%) n=23, and the mean age of the participants were 24.7 years. (See table 1).

Knowledge of nursing students regarding basic computer skills and nursing informatics

Considering the (table 2), it was observed that the higher mean and standard deviation of basic computer skills among nursing students were 3: Good (41.2 ± 10.1). It was observed that the higher mean and standard deviation of nursing informatics knowledge among nursing students 3: good (49.1 ± 13.2) (see table 2).

Comparing the basic computer skills of 4 years BSN and post Rn BSN Students

Comparing the knowledge of basic computer skills average among the 4 years BSN students and 2 years post-Rn BSN students, the Excellent category regarding knowledge of 4 years BSN students were

25.67%, more than the knowledge of 2 years Post-Rn students 12.81%, while the mean score of Excellent category regarding knowledge of 4 years BSN students were 19 ± 12.98 , more than the knowledge of 2 years Post-Rn students 6.6 ± 4.77 . (See table 3).

Comparing the Nursing informatics of 4 years BSN and post Rn BSN Students

Comparing the knowledge of nursing informatics average among the 4 years BSN students and 2 years post-Rn BSN students, the Excellent category regarding knowledge of 4 years BSN students were 16.04%, more than the knowledge of 2 years Post-Rn students 13.52%. While the mean score in the excellent category regarding knowledge of 4 years BSN students were 11.87 ± 6.09 , more than the knowledge of 2 years Post-Rn students 5.18 ± 2.40 (see table 4)..

Table 1: Demographic characteristics of the participants			
Characteristics	Categories	n=129	Percentage
Gender	Male	63	49%
	Female	66	51%
Age	Below 20	4	3%
	20-30	102	80%
	Above 30	23	17%
Program Enrolled	4 Years BSN	74	57%
	Post-RN BSN	55	43%
Clinical Experience	1-2 years	62	48%
	2-5 years	46	36%
	Above 5 years	21	16%
Marital status	Single	94	73%
	Married	35	27%

Table 2: knowledge of the participants regarding basic computer skills and nursing informatics					
Level of Knowledge	1: Poor	2: Fair	3: Good	4: Very good	5: Excellent
Basic computer skills	9.4 ± 7.1	15.1 ± 9.2	41.2 ± 10.1	35.55 ± 7.4	27.75 ± 17.1
Nursing informatics	7.9 ± 5.9	20.3 ± 8	49.1 ± 13.2	31.7 ± 8.1	19.9 ± 19.3

Variable	Categories	1-Poor	2-Fair	3-Good	4-Very good	5-Excellent
Average	4 Years BSN	11.28 %	11.9 %	26.95 %	24.12 %	25.67 %
	Post-RN BSN	5.36 %	13.90 %	37.90 %	30 %	12.81 %
Mean	4 Years BSN	8.35 ± 5.92	8.85 ± 6.39	19.95 ± 6.52	17.85 ± 5.55	19 ± 12.98
	Post-RN BSN	2.95 ± 2.70	8.15 ± 4.37	20.35 ± 4.38	16.9 ± 4.30	6.6 ± 4.77

Variable	Categories	1-Poor	2-Fair	3-Good	4-Very good	5-Excellent
Average	4 Years BSN	7.77 %	16.80 %	37.33 %	22.04 %	16.04 %
	Post-RN BSN	4.54 %	14.54 %	39.20 %	28.18 %	13.52 %
Mean	4 Years BSN	5.75 ± 4.07	12.43± 4.15	27.62 ±6.56	16.312 ± 5.75	11.87 ± 6.09
	Post-RN BSN	3.18 ± 2.86	8.25 ± 3.07	22.18 ± 2.32	16.187 ± 4.40	5.18 ± 2.40

DISCUSSION:

In this study the nursing participants within institute of nursing sciences belongs to undergraduate programs i.e. two years Post-Rn BSN and four years BSN. Among the participants female students (51%) n=66 became major group than males (49%) n=62, which shown that female nurses are became a major force of nursing profession. The students from 4 years BSN were more (57%) n=74 than 2 years Post-Rn BSN (43%) N=55. The finding indicates that undergraduate student from 4 Years BSN and 2 years Post-Rn BSN programs have the knowledge regarding NI. Promoting the use of informatics tools as an essential practice component and increasing patient safety in clinical practice and duties are two potential outcomes of incorporating technology and multimedia into the nursing curriculum.¹⁰ Another study found that graduate students scored higher than intern students in nursing informatics, while our finding indicate that Mean score within basic computer skills of 4 years BSN and 2 years Post-Rn BSN are very well¹¹. The findings of a study reveals that only 42.6% of medical and nursing students could use a computer while about

60% had used the Internet¹². In our finding the students of 4 years BSN have average excellent knowledge regarding basic computer skills of 25.67%, while the average scores of 2 years Post-Rn BSN was 12.81%, on the other hand the average excellent score regarding nursing informatics of 4 yeas BSN students are 16.03% and post-Rn BSN 13.52%. Similar findings indicate that baccalaureate students who participated in the study were most confident in basic computer skills like word processing, searching the Internet, and systems-operations skills¹³. In our study the basic computer skills overall mean score of 4 years BSN (74) is greater than the score of 2 years Post-Rn BSN students (55). Students in accelerated programs were found to be more proficient in informatics than students in traditional programs, which is consistent with the current study's findings¹⁴, and The informatics competence of students in the RN to BSN track was judged to be higher than that of students in the Traditional Pre-Licensure track. A study found that some of the current study results differ when comparing undergraduate and graduate nursing students' nursing informatics

competencies¹⁵. In our study, the nursing informatics means score of a 4th-year BSN (73.9) was also higher than the 2nd-year BSN mean score (62.2).

CONCLUSION

The study indicating that undergraduate nursing students (4 years BSN, and 2 years Post-RN BSN) students have the competencies regarding Basic computer skills and Nursing informatics. Information technology and its uses is now the central part of health care industry specially nursing profession, therefore nursing informatics education should be the part of nursing curriculum as a subject, and further education should be provided through tutorials, seminars, and clinical training. In this study the results provide input to educators that the students of 4 years BSN perform significantly well than 2 years Post-RN BSN in both basic computer skills and nursing informatics, therefore it should now be the responsibility of higher authorities to work hard with every nursing students to promote patient safety, and evidence based practice.

Ethical Consideration

The study was conducted within Institute of nursing science Khyber medical university, therefore permission were taken from the Director INS and supervisor for data collection.

Conflict of Interest:

The study was purely conducted for the purpose of awareness and education; there is no conflict of interest of the authors.

Consent To Participate: written and verbal consent was taken from subjects and next of kin

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