Tripolitana Medical Journal; 2023, Vol. 12, No. 2, pp. 26 - 33

Research Article
ISSN 2077-5628

Nursing Students' Attitudes towards Nursing Informatics in the Faculty of Nursing at University of Tripoli, Libya

Mabrouka A .Jelpan and Ma .Liza P .Tingzon@

Faculty of Nursing, University of Tripoli, Libya

Received 15 Sebtember2023 / Accepted 18 October2023

ABSTRACT

Nursing students must be proficient in nursing informatics and attitude towards its use is crucial for understanding their readiness and acceptance in healthcare education and nursing practice.

This study aimed to determine the nursing students' attitudes towards nursing informatics.

This descriptive and cross-sectional study conducted at the Faculty of Nursing University of Tripoli. A total of 380 Bachelor of Science in Nursing students from levels 1-4 completed the modified Nursing Informatics' Attitude Survey questionnaire. Descriptive as well as inferential statistics were used in data analysis.

This study found that with the use of t-test, the P-value was greater than 0.05 indicating that there is no statistically significant difference in attitudes toward nursing informatics between male and female nursing students. With the use of Pearson correlation, this study found no statistically significant association between the semester level of nursing students and their attitude towards nursing informatics. Lastly, majority of them hold positive attitudes toward nursing informatics.

This study showed that regardless of gender, nursing students generally have similar attitudes toward nursing informatics. However, despite variations across different semesters, overall, students' attitudes tended to be neutral or similar regardless of their academic progression.

Further research could explore specific factors influencing attitudes toward nursing informatics, considering gender-related variables. Further research can be targeted to include nursing informatics to courses in Bachelor of Science in Nursing curriculum to foster positive approach to nursing informatics in nursing education and practice.

Key words *-Nursing informatics ;Attitude ;Nursing Students.*

INTRODUCTION

Nursing Informatics was and still is the most important development that took place in the world. It has changed human life in all fields in general, particularly on the development of technology in the field of hhealth care. From the use of electronic devices to enter data to knowing the necessary information for nursing. The evolution of nursing from traditional nursing that relies on medical prescriptions given by the doctor to modern nursing that relies on the use of modern technologies and advanced technology resulted to better care for patients.[1]

In recent years, the use of technology in nursing education has grown quite dramatically, where inclusion of information technologies into the nursing curriculum is critical to ensure the success of all stages of education and future careers of nursing students.[2] In today's digital age the competent and effective use of data, information and technologies for the improvement of nursing care is crucial.[3] Hence, nursing information (NI) should be used to improve clinical documentation and support the development of computerized nursing process programs otherwise described as the integration of computer technology in university education. In this context, nurses must possess sufficient knowledge, skills and critical thinking in information technologies to provide modern, evidence-based health care as well proper attitudes on nursing informatics for the nursing students.[4]

Nursing students' attitude towards nursing informatics may influence successful adoption of information competencies, willingness to learn computer system as well as prepare the nursing students to meet the Nurse Core Competencies. Also, the integration of NI into the nursing curriculum is essential to ensure success throughout the education and future careers of nursing students. Thereby, it is essential that they learn and acquire the knowledge and technology skills necessary for all nursing students[5]

Nurses comprise the largest segment of the healthcare workforce. Hence, the future nurse's attitudes towards NI or technology are important to understand. They need to critically understand how these technologies are being viewed and utilized in practice. Since it is the management and processing of health and nursing data and information by applying computers and information technology[3], nursing students must receive formal education in the use of nursing technologies. As NI made use of nursing science with computer science and information science, it will be easier to combine data, information, knowledge, and wisdom. All of which will aid patients, nurses, and other healthcare professionals in making decisions throughout the delivery of healthcare.[6]

Hence, the purpose of this study was to determine nursing students' attitudes towards nursing informatics.

Background of the study

Globally, recent developments on information technologies led to significant changes to the nursing education. Where it

@Author to whom correspondence should be addressed :Dr .Ma. Liza P .Tingzon *;Tel*091:vvvvvv *;E-mail* :vvvvvvvv

counts NI as an increasingly essential component of nursing education and practice, the increasing demand on the use of technology requires nursing students to be competent in nursing informatics. In Libya, the current research regarding nursing students' attitudes towards nursing informatics is lacking. Todays' nursing students must be equipped with the necessary knowledge and skills for utilizing and managing information though NI is not yet visible and used in this country. Thus, the data from this study will be the basis to provide intervention which fosters positive attitudes towards NI to prepare the future nurses to thrive in technology-driven health care.

In fact nursing professionals' thoughts on the nursing process and how it is applied are impacted by their attitudes toward information technology. Hence, the objective of the study was to determine nursing students' attitudes towards nursing informatics.

Significance of the study:

Since, the world is evolving and humanity is highly dependent on technology, it is necessary to keep pace with this development and be able to use educational applications and gain knowledge and information online for education.

The findings of this study hold critical importance to nursing education mainly because of advanced future nurse who will be capable of using modern technologies in the field of healthcare to care for patients.[1] It can help educators tailor NI content effectively as well as focus on strengthening students' skills in utilizing electronic health records, telehealth platforms, and other digital tools. Therefore, the study is necessary to shape nursing students into proper attitudes toward nursing informatics, thus prepare them for more technological development.

For nursing research, the assessment of attitudes will inform researchers about potential barriers or facilitators to implementing evidence-based practices. Also, assessing receptivity helps identify areas where novel technologies can be successfully integrated. In nursing practice, the result of the study will identify the barriers and motivators for technology adoption, ensuring that nurses can efficiently use digital resources to provide high-quality care. In short, patient care efficiency and error reduction.

Lastly, the study provides identification of areas where technology investments are most needed, whether it's updating software, providing training, or implementing new systems. Administrators can address resistance, promote acceptance, and facilitate smoother transitions through the determination of nursing students' attitudes towards NI.

Statement of problem:

To reiterate, the attitudes toward nursing informatics in the academic community in Libya are largely unknown. No studies explicate Libyan nursing students' attitudes toward nursing informatics, hence the research questions as follows:

Q1: What is the demographic profiles of the nursing students?

Q2: What is the nursing students' attitudes toward nursing informatics?

Q3: Is there a significant difference in mean values in relation to the nursing students' attitude

towards the nursing informatics when grouped as males and females?

Q4: Is there an association between the educational level of the nursing students and their attitude

towards nursing informatics?

Literature review:

Although the value of nursing informatics in nursing practice has been amply demonstrated through global research, its implication to nursing education and the perceived relevance to nursing practice for nursing students have not been thoroughly investigated.

Informatics is increasingly being used in nursing practice and nursing education nowadays. One, it enhances the virtual teaching and learning environment associated with educational outcomes.[3] Two, in terms of effects of nursing informatics in nursing care specifically the genetics and genomes, means of diagnosis and treatment, 3D printing of tissues and human organs. Also, noted are the surgical robot techniques, and other therapeutic services, as well as the use of modern technologies in measuring vital signs. That is in addition to electronic medical records which include medical, nursing and administrative information, the patient and computerized system of physician and healthcare provider orders.

Based on the literature reviews, the NI field is an exciting approach that has precious advantages in all nursing specialty areas comprising the healthcare system, the nursing profession, education, and research.[7]

The Health Information and Management Systems Society (HIMSS), also illustrated the critical role NI play in the design, integration, and advancement of clinical technologies, such as electronic health or medical records, computerized order entry, and clinical nursing documentation.[8]

The Essentials of Core Competencies for Professional Education issued by the American Association of Colleges of Nursing (AACN, 2021) issued that graduates of baccalaureate in nursing should acquire proficiency in both patient care techniques and information management systems. It goes to say that NI is very important routine of nursing profession and indeed revolutionize the field of healthcare. To quote, a study[9] demonstrated that, nursing students who possess informatics skills are conscious of their professional obligations, have necessary nursing informatics knowledge, abilities, and attitudes to advance through their educational program thus ready for their future careers as nurses. A study which explored the types of information and communication technology (ICT) applications used as well the skills level of nursing students at a selected university in South Africa, indicated that there was a progressive increase in skills on NI with the level of their study.[7] With the upper-level students being more skilled than the lower levels with the ownership of digital devices, such as laptops and tablets, was significantly associated with the skills level of using ICT applications.

Therefore, it is not a question if the use of technology in nursing education is essential to prepare future nurses. Another study assessed the level of knowledge and use of NI among nurses in Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos. It revealed that the respondents had a good knowledge of NI with good use of nursing informatics. It implied that the management should continue to provide avenues for more training on NI in order to sustain the knowledge and use of informatics among the respondents.[6]

A study conducted to determine the attitudes of students towards technology, with the use of Attitudes Toward Technology Scale found that the students have positive opinions on technology and their attitudes towards technology varied when the sex, type of device, purpose of using the technology, social networks, and Microsoft programs.[1] As explained and described by a study, the perspectives of student nurses at a private nursing education institution on the use of Information Technology (IT), was operationally used NI in nursing education.[10] The respondents acknowledged the importance of IT in nursing education but also experienced challenges in terms of training and internet connectivity, owned at least one IT device, used IT frequently for study and work purposes, reported IT competence, and had positive attitudes to IT. The findings of that study claimed numerous advantages to IT in nursing education, IT challenges as a reality for student nurses. It was recommended that the identified gaps must be closed to ensure that IT is accepted, adopted and used effectively and efficiently. The purpose of the study ascertained how final-year nursing students perceived and used NI, as well as how they felt about the use of computers in nursing practice. Nursing students in their last year from a chosen institution in the Western Cape region of South Africa made up the study population.[4] With two validated scale, the Nurses' Attitudes toward Computerization scale and the validated Nursing Informatics Competency Assessment Tool (NICAT) were used to provide data for a descriptive study. The respondents' opinions about the use of computers in healthcare received an overall favorable rating. It implied that information management, computer literacy, and informatics literacy were pertinent to nursing practice.

The study aimed self-assessing the NI competencies and attitudes among baccalaureate-nursing students in the Nursing Department of Applied Medical Sciences College, University of Hafr Al-Batin. Through the adapted self-assessment NI competencies and attitudes toward using nursing informatics in the healthcare system generally and the nursing profession specifically. They found out that most of participants assessed themselves as competent, less than a quarter were beginners, and only a portion were novices in NI competencies. Majority hold positive attitudes towards the use of NI in the healthcare system and the nursing profession.[11] Then, a study on knowledge of and attitudes towards the introduction of informatics to nursing training, reported that participants thought that NISs help them in improving nursing care. They all had positive attitude towards the introduction of informatics to the training of nurses.[12] There was no significant adherence in the attitude towards the introduction of NI along with gender attributes, and there was no association between the qualifications and attitude of respondents towards the introduction of informatics to nursing. To add, a study examined the attitudes of Junior and Senior undergraduate nursing students toward NI and compared the differences in attitude scores between the level students and English as Second Language (ESL) and non-ESL students. The results of this study revealed that there is no significant difference found between Junior and Senior students. The same also with their differences in attitude scores between the Junior and Senior level students however, English as Second Language (ESL) and non-ESL students were significantly higher in Juniors than Seniors.

Theoretical framework

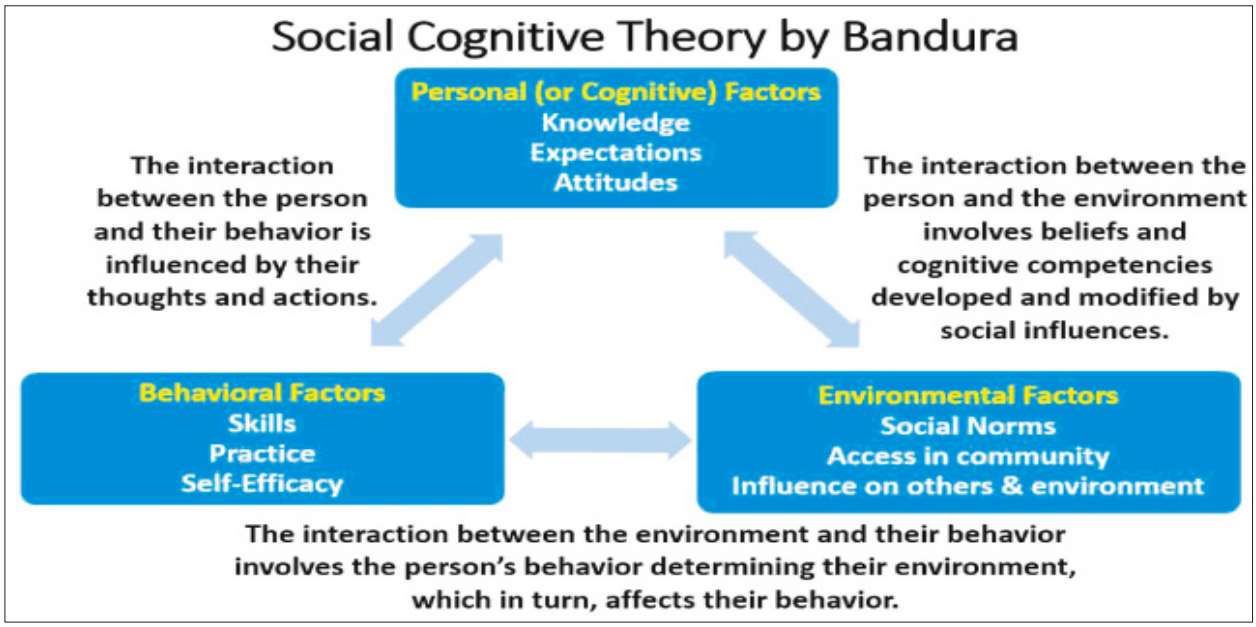

Figure :**1** Theoretical scheme of the Social Cognitive Theory

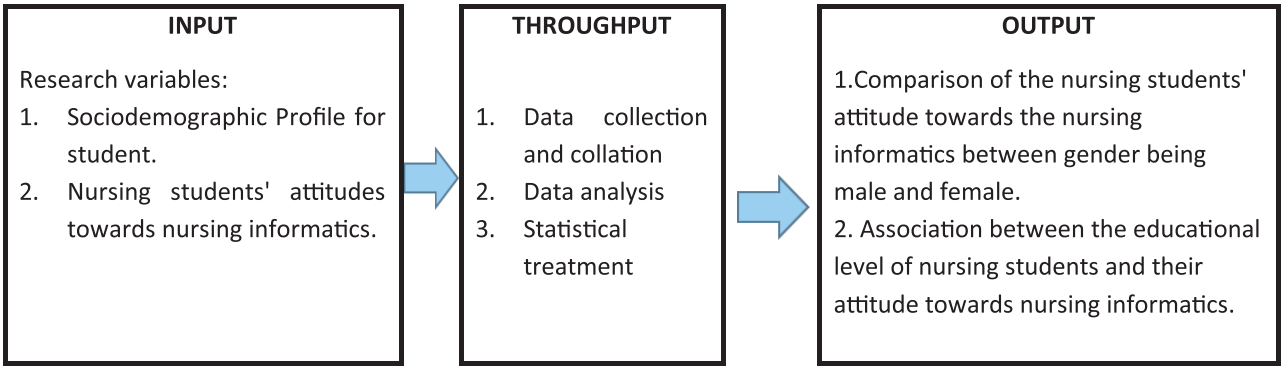

Figure :**2** Research Paradigm/Conceptual Framework of the Study

The present research is anchored on the Social Cognitive Theory (SCT) as a theoretical framework. That gives researchers a window while studying the nursing student's attitude towards nursing informatics. The Social Cognitive Theory (SCT) aids in understanding how people's attitudes, judgments, and motives affect their cognitive processes and, in turn, how these latter aspects influence their behavior. The theory posits that learning takes place in an environment where one learns through observing the behavior of others (Bandura, 1998). In this context, the goal of the current study is to determine the nursing student's attitudes toward nursing informatics by adapting the social cognitive theory to the Nursing Informatics Attitude Survey NIAS.[14,15]

The Research Paradigm

As shown in the research paradigm of this study, there are study variables namely the sociodemographic profile of students as well as nursing students' attitudes towards nursing informatics. Shown in the first box named "Input" followed by an arrow that points to the "Throughput". Data collection, collation, and analysis using the statistical package, an arrow leads to the third box. The output box revealed the outcome of the study, which showed that there is no significant difference in the nursing students' attitude towards the nursing informatics between the students male and female. Also, there is no association between the educational level and of nursing students' attitude towards nursing informatics. It showed that nursing student' attitudes towards nursing informatics very important.

Research hypotheses:

There (2) null hypotheses were tested by the study. They were in the null form and tested at 0.05 level of significance. They were:

H1: There is no significant difference in mean values in relation to the nursing students' attitude toward the nursing informatics when classified into males and females.

H2: There is no association between the educational level of nursing students and their attitude toward nursing informatics.

MATERIALS AND METHODS

The study was conducted among nursing students at the Faculty of Nursing at the University of Tripoli in the academic year 2022-2023 Spring. A non-probability convenience sampling and a quantitative descriptive research design was used. Selection criteria for participants included all nursing students who are officially enrolled in the current semester 2022-2023 Spring. Three hundred eighty-four (384) students agreed to participate in the data collection however; four questionnaires were discarded as these were incomplete. Hence, 380 questionnaires were analyzed for this study, which is eighty-eight point thirty seven percent of the total study population.

Variables

- Dependent variables**:** The nursing students' attitudes towards nursing informatics.
- Independent Variables: Socio-demographic variables; Gender, Educational Level, The nursing students' attitudes towards nursing informatics.

Definition

- Nursing Informatics: a specialty that integrates nursing science, computer science, and information science, manages and communicates data and knowledge in nursing practice to support patients, nurses and other health care providers in their decision-making. Example: Electronic Medical Records (EMR) and Computer assisted instruction.
- Attitude: defined as a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation.
- Nursing students: defines a student nurse as a student enrolled and registered with a college or a university to pursue a nursing program leading to the award of a certificate to practice nursing.

Research Instrument:

Data was collected via a modified self-assessed questionnaire, divided into two parts. First, the Demographic Variables consisted of 3 items, and the second part, the nursing student's attitude towards nursing informatics with 20 items. Designed by the researchers, the Technology Attitude Survey (TAS) was reviewed and determined to be valid and reliable.[16] It was later edited and modified in this current study by adding 5 additional questions to the Technology Attitude Survey (TAS), to be named in our study Nursing Informatics Attitude Survey

(NIAS) deemed fit to appropriately describe the attitudes of the participants. The questionnaire took approximately 10 minutes to complete.

Initially drafted in English and translated into the local language, 20 items were used to determine the nursing student's attitudes toward Nursing Informatics. Attitude scale scores were calculated as (2) score for agree, and (1) for disagree. The scores from 20 questions were summed up then divided by the score of (33) and was then converted into a percent score. The total attitude score was considered positive attitude if the score is 90% and > (29.7 points) and considered negative attitude if the score <90% (≤ 29.6 points). The maximum and minimum scores that can be obtained from the analysis are 90 for a positive attitude and 15 for a negative attitude. A pilot study was conducted among 30 nursing students. Cronbach's alpha coefficient was used to test the validity and reliability of Nursing Informatics Attitude Survey NIAS which showed the value of 0.552 = "Good" score for reliability and validity.

Data gathering procedure

A permit was approved by the dean of the faculty of nursing. Participants were introduced to the aims and procedures of the study to decide if they would like to participate. After they agreed to participate verbally, the researchers gave them the questionnaire.

Data analysis:

Data were analyzed using the Statistical Package for the Social Sciences (SPSS V.24.0). The data were analyzed using appropriate statistics and results were presented in narratives and tables. Descriptive (frequency and percentage) and inferential statistics:

1. T-Test was used to analyze nursing students' attitudes towards nursing informatics based on binominal qualitative variables (Gender).

2. Pearson correlation coefficient was used to compare the mean score of nursing students' attitudes towards nursing informatics based on binominal qualitative variables (Education Level).

3. Statistical significance is considered as Significant when P value < 0.05, highly significant when P - value< 0.001, and no significant result when P – value > 0.05.

Ethical consideration:

Written approval for the execution of the research was received from the relevant Research Review Board. The participants were informed that they had the right of refusing to participate in the study or withdrawal from the study at any time without any negative consequence. Name of respondents as identifying information was not included and therefore kept the individual responses confidential.

RESULTS

A total of 380 students participated in the study, the results showed in Table 1 that n=215 were females of the study sample members represent or 56.6% of the total study sample, and they are the largest group. Correspondingly, there were n=165 males 'or 43.4% of the total study sample. The respondents' education level ranged from level 1 to level 4 corresponding to Bachelor of Science in Nursing first year to fourth year level of education in the faculty of nursing. The majority of respondents who comprised 32.4% was level 4, followed by level 3 with 26.1%, then level 1 with 23.9% and finally level 2 17.6%.

Based on the following (Table 2), 'Understanding how to use nursing informatics is a necessary skill' for them (97.6%) followed by 'They enjoy using nursing informatics' (90.5%). Then to 'They feel confident in their ability to learn nursing informatics' (93.2%). 'Learning nursing informatics is worthwhile' for them (92.9). As students, they 'will apply their understanding of nursing informatics in a variety of ways' (87.9%). They 'need to be aware of nursing informatics for their future career' (89.7%). 'Using nursing informatics will help them learn more' (93.9). They 'know that they can succeed if they make the effort to learn about nursing informatics' (92.9%). They 'will be better students if they are familiar with nursing informatics' (88.7%). They 'should educate themselves about nursing informatics' (92.1%). They will perform better academically if they have knowledge of nursing informatics' (92.9%). 'Knowledge of nursing

Table 1: The distribution of the participants according tosocio-demographic characteristics (n=380)

Demographic characteristics		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	M	165	43.4	43.4	43.4
	F	215	56.6	56.6	100.0
	Total	380	100.0	100.0	
Educational Level	Level1	91	23.9	23.9	23.9
	Level2	67	17.6	17.6	41.6
	Level3	99	26.1	26.1	67.6
	Level4	123	32.4	32.4	100.0
	Total	380	100.0	100.0	

Table 2. Distribution of nursing students based on their attitudes towards NI

Nursing Students Towards NI		F	Percent	Mean	SD	Variance	Level
Understanding how to use nursing informatics is a necessary skill for me.	Disagree	9	2.4	1.98	0.152	0.023	middle
	Agree	371	97.6				
I enjoy utilizing informatics in nursing.	Disagree	36	9.5	1.91	0.293	0.086	middle
	Agree	344	90.5				
I feel confident with my ability to learn about nursing informatics.	Disagree	26	6.8	1.93	0.253	0.064	middle
	Agree	354	93.2				
Learning about nursing informatics is worthwhile.	Disagree	27	7.1	1.93	0.257	0.066	middle
	Agree	353	92.9				
I become nervous when using nursing informatics.	Disagree	264	69.5	1.31	0.461	0.213	low
	Agree	116	30.5				
I will apply my understanding of nursing informatics in several ways as a student.	Disagree	46	12.1	1.88	0.327	0.107	middle
	Agree	334	87.9				
Informatics in nursing makes me feel foolish.	Disagree	306	80.5	1.19	0.397	0.157	low
	Agree	74	19.5				
I need to be knowledgeable about nursing informatics for my future career.	Disagree	39	10.3	1.90	0.304	0.092	middle
	Agree	341	89.7				
I›m just not the kind to excel in nursing informatics.	Disagree	231	60.8	1.39	0.489	0.239	low
	Agree	149	39.2				
Using nursing informatics will help me learn more.	Disagree	23	6.1	1.94	0.239	0.057	middle
	Agree	357	93.9				
I know I can succeed if I put up the effort to learn about nursing informatics.	Disagree	27	7.1	1.93	0.257	0.066	middle
	Agree	353	92.9				
I anticipate finding it challenging to use nursing informatics.	Disagree	203	53.4	1.47	0.499	0.249	low
	Agree	177	46.6				
I will be a better student if I am familiar with nursing informatics.	Disagree	43	11.3	1.89	0.317	0.101	middle
	Agree	337	88.7				
I get uncomfortable when using nursing informatics.	Disagree	257	67.6	1.32	0.468	0.219	low
	Agree	123	32.4				
Nursing informatics will not improve my academic performance.	Disagree	244	64.2	1.36	0.480	0.230	low
	Agree	136	35.8				
I must educate myself on nursing informatics.	Disagree	30	7.9	1.92	0.270	0.073	middle
	Agree	350	92.1				
I expect using nursing informatics to be difficult.	Disagree	227	59.7	1.40	0.491	0.241	low
	Agree	153	40.3				
I›ll perform better academically if I have knowledge about nursing informatics.	Disagree	27	7.1	1.93	0.257	0.066	middle
	Agree	353	92.9				
Having knowledge of nursing informatics will help me as a student.	Disagree	21	5.5	1.94	0.229	0.052	middle
	Agree	359	94.5				
I anticipate that nursing informatics may take priority in the future field of nursing.	Disagree	32	8.4	1.92	0.278	0.077	middle
	Agree	348	91.6				
General Average * (from 3 points)				**1.721**	**0.097**		**middle**

informatics will help them as students' (94.5%). They 'expect nursing informatics to be a priority in the field of nursing in the future' (91.6%).

To continue with (Table 2), it is also noted that the percentage of participants who do not agree at a high rate to items on the nursing students' attitudes towards nursing informatics NIAS-Modified starts with: 'become nervous when using nursing informatics (69.5%). This is followed by 'nursing informatics makes them feel foolish' (80.5%). They are 'not the type to excel in nursing informatics' (60.8%). They expect to find it 'difficult to use nursing informatics' (53.4%). They 'feel uncomfortable using nursing informatics' (67.6%). 'Nursing informatics will not improve their academic performance' (64.2%) and lastly, they 'expect the use of nursing informatics to be challenging' (59.7%).

Significant difference in mean values in relation to the nursing students' attitude towards the nursing informatics when grouped according to males and females.

The independent samples *t*-test results (Table 3) indicated that there are no statistically significant differences according to gender (male/female) on the scale of attitudes towards nursing informatics at a significant level $\alpha \leq 0.05$; That is, there is no statistically significant difference between the average gender (male/female) and the average students towards nursing informatics, meaning that there are no statistically significant differences between students that affect both sexes [$t = 0.809$, $P = 0.419 > \alpha$].

A Pearson correlation analysis was conducted to determine the relationship between the educational level and of nursing students' attitude towards nursing informatics. This analysis is presented in the form of a correlation matrix (Table 4).

The results indicate that the educational level were not statistically associated with nursing students' attitude towards nursing informatics ($r = 0.062$, $P = 0.229$), since *P*-value exceeded the 5% level of significance.

Table :**3** Difference of nursing students 'attitude towards the NI grouped as males and females

Independent Samples Test										
		Levene›s Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Attitudes Toward The Nursing Informatics	Equal variances assumed	9.491	0.002	0.837	378	0.403	0.00839	0.01002	-0.01132	0.02810
	Equal variances not assumed			0.809	300.403	0.419	0.00839	0.01036	-0.01201	0.02878

Table 4: Correlation between educational level attitude towards NI of the participants.

Correlations			
		Attitudes Toward The Nursing Informatics	Educational level
Attitudes Toward The Nursing Informatics	Pearson Correlation	1	0.062
	Sig. (2-tailed)		0.229
	N	380	380
Educational level	Pearson Correlation	0.062	1
	Sig. (2-tailed)	0.229	
	N	380	380

DISCUSSION

Nonetheless, there are but a few researches on nursing students' attitudes toward nursing informatics, especially in Arab countries. Hence, this research aimed at determine the nursing students' attitudes toward nursing informatics specifically in Tripoli, Libya. Nursing students have positive attitudes toward nursing informatics in general where the majority of students agreed with the statements presented in the Nursing Informatics Attitude Survey NIAS. This might reflect the college of nursing's efforts to orient students about the nursing informatics' benefits for nursing education and practice.

With regards to hypothesis 1 stated as there is no significant difference in mean values in relation to the nursing students' attitude towards the nursing informatics of males and females. The value of sig=0.419 (>0.05), so hypothesis 1 is accepted. In the same concept, this result is consistent with a study, as there is no significant difference in the attitude towards the introduction of informatics to nursing training between male and female respondents.[12] Also, a study (Maruca, 2017)[13] found, that there no significant differences on the attitudes of Junior and Senior undergraduate nursing students toward nursing informatics. This result was in line also with another study findings, which revealed that, nursing informatics skills were measured in terms of perceived relevance and perceived competence in three areas: Computer literacy skills, Informatics literacy skills and Informatics management skills indicating that no significant differences were observed in any of these areas for either relevance or competence for gender.[4]

On the ground of hypothesis 2, that there is no association between the educational level and nursing students' attitude towards nursing informatics. Accordingly with the result of sig. 0.229 (>0.05) means that hypothesis 2 is accepted. This is consistent with another study result, as there is no association between the qualifications and attitude of respondents towards the introduction of informatics to the nursing training.[12] In this aspect, this present study result contradicts a study finding, as the significant correlations existed between the total score of the participants' self-assessment of informatics competencies and attitudes with their demographic characteristics related to academic year.

The present study resulted in similar findings to the existing literatures.[11] The majority of nursing students a positive attitude towards nursing informatics. Evidence from the present study and the existing literature also suggests that there is a need to conduct further studies to include the course of nursing informatics in the nursing curricula.

CONCLUSION

Overall, nursing students' attitudes toward nursing informatics play a significant role in the successful implementation of information technology in health. The study found the statistical analysis of nursing students' attitudes towards nursing informatics of males and females, revealed no statistically significant difference in nursing student attitude towards the nursing informatics these groups. Also, Pearson's correlation revealed, that the educational level was not statistically associated with nursing students' attitude towards nursing informatics. In line with these results, determine students' attitudes towards nursing informatics proposes means for developing positive attitudes and raising students' awareness of the nursing informatics. Faculty should develop students' knowledge and attitudes while studying. So, it could be suggested to conduct further studies to need to include the course of nursing informatics in the nursing curricula.

ACKNOWLEDGMENTS

Authors would like to acknowledge the nursing students as well as the faculty of nursing for granting us the needed administrative approval.

REFERENCES

1. Terkes, N., Celik, F., and Bektas, H. (2019) Determination of nursing students' attitudes towards the use of technology, *Japan Journal of Nursing Science* **16**(1), 17-24.

2. Vijayalakshmi, P., and Math, S. B. (2013) Response and attitudes of undergraduate nursing students towards computers in health care, *Canadian Journal of Nursing Informatics Online*, **8**(3).

3 - Hübner U, Shaw T, Thye J, Egbert N, Marin HDF, Chang P, et al. (2018) Technology Informatics Guiding Education Reform – TIGER, *Methods Inf Med* **57**(S01), e30-e42.

4. Chipps, J., Le Roux, L., Agabus, J., and Bimerew, M. (2022) Nursing informatics skills relevance and competence for final year nursing students, *Curationis* **45**(1), 8.

5. Alaban, A.G. (2020) Assessment of Undergraduate Nursing Students' Attitudes and Perceptions towards the Use of Computer Technology in Healthcare *Nursing & Care*. Settings, *Iris Journal of Nursing Care*

6. Ademuyiwa, I. Y., Faleke, S. O., and Otetubi, E. E. (2020) Knowledge and Use of Nursing Informatics among Nurses in a University Teaching Hospital in Lagos, Nigeria.

7. Harerimana A and Mtshali NG. (2019) Types of ICT applications used and the skills' level of nursing students in higher education: a cross-sectional survey, *Int J Afr Nurs Sci*. **11**, 1-15

8. Health Information Management Systems Society (2023). HIMSS Nursing Informatics Workforce Survey. Healthcare Information and Management Systems Society, Inc. *Fresenius Kabi* p4.

9. Farzandipour, M., Mohamadian, H., Akbari, H., Safari, S., and Sharif, R. (2021) Designing a national model for assessment of nursing informatics competency, *BMC medical informatics and decision making* **21**, 1-12.

10. Singh, F., and Masango, T. (2020) Information technology in nursing education: perspectives of student nurses, *The Open Nursing Journal* **14**(1).

11. Mohamed, L. K., and Abouzaied, M. T. (2021) Self-assessment of nursing informatics competencies and attitudes among baccalaureate-nursing students, *Egyptian Nursing Journal* **18**(1), 28.

12. Ajibade, B. L., Oladeji, M. O., and Okunlade, J. O. (2013) Knowledge and attitude towards the introduction of informatics to nursing training among selected nurse educators/leaders in Nigeria, *IOSR Journal of Dental and Medical Sciences* **9**(5), 1-7.

13. Maruca, E. R. (2017) Attitudes of Junior and Senior Undergraduate Nursing Students Toward Nursing Informatics. Semantic Scholar.org

14 - Bourne, M. J., Smeltzer, S. C., and Kelly, M. M. (2021) Clinical teacher self-efficacy: A concept analysis, *Nurse Education in Practice* **52**, 103029.

15 - Bandura, A. (1998) Health promotion from the perspective of social cognitive theory, *Psychology and Health* **13**(4), 623-649.

16 - Maag, M. M. (2006) Nursing students› attitudes toward technology: a national study, *Nurse Educator* **31**(3), 112-118.17