

Assessment of Nursing Informatics Competency and characteristics of Workplace's Creativity at Magdi Yacoub Heart Foundation- Aswan

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Abstract:

Background: Nursing informatics is an important quality resource for patient care, which promotes, enhances, and increases the organization's growth and influences the innovativeness level of the individuals. **The study aimed to** assess nursing informatics competency and characteristics of workplace's creativity at Magdi Yacoub Heart Foundation- Aswan. **Research design:** A Descriptive correlational Research Design. **Sample:** convenience sample consisted of 255 nurses. **Setting:** The study was conducted at Aswan heart center (Magdi Yacoub heart foundation) in Aswan City. **Tools of data collection:** three tools were used, 1st tool consisted of Personal as well as occupational Data , 2nd tool Assessment of Nursing Informatics Competence Questionnaire, and 3rd tool Creativity at Workplace Scale **Results:** reveals that (89.9%) of nurse's have capability to informatics competence, also (10.2 %) of them have the partial capability to informatics competence, also (83.2%) of nurse's have high creativity at workplace, as well as only (3.9%) of them have low creativity at workplace **Conclusion:** There was positive correlation between nursing informatics competence and creativity at workplace. **Recommendations:** Conducts competency based nursing informatics training programs for nursing personnel according to their needs and to be up to date with new competencies

Keywords: Assessment, Creativity in Workplace, Nurses, Nursing Informatics competency.

Introduction

The 21st century being the information age, the importance of digitalization has been emphasized in all spheres of life. Similarly, digital health technologies, which use computing platforms, connectivity, software, and sensors for health, are emerging in healthcare. Indeed, the World Health Organization (WHO) presented the "Global Strategy on Digital Health 2020–2025," with the goal of strengthening the healthcare system through the application of digital health technologies to patients, healthcare professionals, and the industry (WHO, 2020). Digital health encompasses broad categories, such as mobile health, health information technology (IT), wearable devices, telehealth and telemedicine, and personalized medicine (Park & Park, 2023).

Therefore, digitalization and the use of information are central to such strategies. Health informatics, the basis for these digital technologies, is the scientific discipline concerned with the cognitive, information processing, and communication tasks of healthcare practice, education, and research, including the information science and technology needed to support these tasks. To address the set objectives and provide better healthcare, it has evolved to applying and exploring the uses of relatively new instruments such as electronic computers and microcomputers. In addition, big data science is now one of the foremost research topics in health informatics (Lumpkin & Magnuson, 2020).

Health informatics arose from its predecessor, the science of medical informatics, which originated in 1974. Although the two disciplines share many concepts and the terms are often interchangeable, health informatics is all-embracing, and medical and nursing informatics can be viewed as its subsets. Over the last three decades, health IT

has been penetrating the healthcare sector (Park & Park, 2023).

Specifically, nursing informatics (NI) is the specialty that integrates nursing science with multiple information management and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice. Nursing informatics enhances decision-making in all direct and indirect nursing roles through the collection, extraction, aggregation, analysis, and interpretation of standardized data, using emerging data science principles and methods (Unal & Intepeler, 2020).

Nursing informatics is a practice-based field, a graduate major recognized by professional nursing organizations as a specialty area, and part of nursing education programs alike. Also NI is a recognized practice area for informatics that lays emphasis on representing and shaping nursing knowledge in standard forms. It tries to emphasize learning, managing, and using representations of nursing knowledge to promulgate use of clinical practice guidelines and evidence-based practice, as well as to standardize curriculum content. This can also be used for the nursing services provided directly or indirectly by nurses in their communities (Honey et al., 2020).

The importance and utility of NI have increased gradually. It is important to ascertain the knowledge structure of nursing informatics and understand the research trends that connect data into meaningful information as this develops wisdom in nursing practice (Longhini et al., 2022).

Developments in information technology have resulted in fundamental changes in healthcare processes focused on using computers and the introduction of electronic communication. Health services are one of the primary fields where innovation occurs, for many reasons, for example, evolving population structure, growing chronic diseases, and

patronizing societal expectations. Innovation is considered a solution to persistent problems in a complex health care environment. Besides, innovation is essential in developing and maintaining quality in nursing care and for the nurses to be open to novelty to recognize and respond to the patient's needs (**Le Roux et al., 2024**).

Moreover, healthcare sectors include many technological tools that require nurses to have an understanding of informatics competency in order to manage data and information of patients in a complex health care environment. Therefore, nursing informatics competency has become a fundamental requirement for nurses to fulfill their professional roles safer, more effective, and more efficient. Thus, there is growing concern regarding the competency level of nursing informatics and how technological skills can affect creativity among the health care providers (**Almarwani, 2024**).

Nurses' creativity, on the other hand, is considered a key criterion of organizational innovation. It refers to an employee's ability to generate a new concept or technique, and to develop a new useful and profitable product or service. The importance of creativity in nursing administration and practice has been emphasized in a study in Iran which clarified that creative vision and thinking can lead to better decision-making and thus improve the organizational effectiveness and the quality of care provided (**Cheraghi et al., 2021**). Meanwhile, creativity is considerably influenced by organizational factors that may either encourage or prohibit any innovative approaches, and thus such factors should be addressed to promote creativity and flourishing (**Ho et al., 2022**).

In addition, the support for creativity from the supervisor and how much the supervisor supports creativity among subordinates through information and feedback is of great importance. Such support can enhance subordinates' interest and care for creativity through underscoring workplace top management cares about employees' creative performance. Conversely, a workplace that resists creativity due to potential associated disruptive behaviors and that does not provide enabling working conditions impedes the generation of new ideas, and leads to job stress among innovative employees (**Sawyer & Henriksen, 2024**).

So creativity and innovation are essential to promote work and improve its quality, particularly in a rapidly developing profession like nursing. Creativity is associated with change, and this is often associated with resistance in addition to the potential failures. In such an ambiance, nurses may be reluctant to be creative. However, helping workplace factors and employees' perception of organizational support may help alleviate creativity challenges (**Fathy Saad & Mohamed Abd Rabou, 2023**).

Last and not least, in today's dynamic health systems, technology plays an important role in both education and nursing work. The increase in nursing informatics shows that nurses are being automatically integrated into IT; therefore, they should be able to utilize it successfully to improve the quality of care outcomes. Thus, highlighting the appropriate IT educational needs of nurses is necessary. To take advantage of IT to enhance nursing creativity as well as outcomes and healthcare quality, an educational arrangement that equips nurses at different levels to implement IT instruments in all aspects of their profession and integrates them with the ever-increasing pace of technological advances is recommended (**McGonigle & Mastrian, 2024**).

Significance of the study

Nursing informatics competency is considered a main factor that affects the quality of services in healthcare. As a vital component of the clinical staff, nurses have a great role in clinical practice, and the success and failure of medical intervention are significantly dependent on their abilities and competencies (**Khezri & Abdekhoda, 2019**). Creativity at an individual level becomes a critical mechanism for the development of employees working in the healthcare sector in the era of advanced technologies (**Liu, 2020**). Therefore, the advancement of the healthcare sector becomes crucial in order to cope with the changing environment all over the world (**Dardoon, 2021**).

Previous international studies (**Jokari et al., 2012**), indicate that creativity and innovation play important roles in nurses' productivity, there is also a significant relationship between knowledge, motivation, personality, and environment and nurses' productivity. According to **Khezri & Abdekhoda, (2019)** clearly acknowledge that self-efficacy, job satisfaction, time spent on health information systems and clinical experience have a direct and significant effect on nurses' informatics competency.

In Egypt, a study done by **Hassona & Ali (2019)** about the relationship between nursing informatics competency and innovativeness among qualified nurses, found a positive, highly statistically significant correlation evidenced between the overall score of informatics competency and individual innovativeness for qualified nurses.

Since the beginning of my appointment, they still did not use nursing informatics in the hospital, and most of the obstacles we faced during that period were the loss of time waiting for administrative procedures and the lack of records sometimes. Therefore, the hospital administration applied of nursing informatics to save time and effort in administrative procedures and to improve work performance. So, there is a need to assess the competence of nursing informatics and its correlation to creativity in the workplace. The findings and recommendations of the study will be critical for organizations to achieve competitiveness and make sure the effectiveness of applying nursing informatics in the hospital among professionals to succeed.

Aim of the study

The present study aims to assess nursing informatics competency and characteristics of workplace's creativity at Magdi Yacoub Heart Foundation- Aswan

Research Questions

- 1- What is the level of nursing informatics competencies for nurses?
- 2- What is the level of creativity in the workplace among nurses?
- 3- Is there a correlation between the competencies of nursing informatics and creativity in the workplace?

Subjects and Methods:

Research Design:

Descriptive correlational Research Design was utilized to fulfill the aim of this study.

Setting

The study was conducted at Aswan heart center (Magdi Yacoub heart foundation) in Aswan City, Aswan governorate, Egypt.

This center in 2009 Magdi Yacoub Foundation secured a long term lease to three floors of an existing Aswan public hospital. The building was renovated by the foundation and Aswan Heart Centre started work in the second quarter of 2009. At inception in 2009 the facility had two surgical suites, one cath. suite, and 12 ICU beds. Over the past few years the work model was refined and Aswan Heart Centre grew from an idea in the making to what is now a state of the art modern hospital with more than 600 Egyptian dedicated personnel with 100 doctors and 270 nurses contributing to one of the most respected medical centers in Egypt and the world.

Sample type:

Convenient sample of all nurses who worked in the previously mentioned center during the period of data collection.

Subjects:

The total number of nurses were (255) and classified as follows:

Hospital name	Unit	Number
Magdi Yacoub heart foundation Hospital	Adult Intensive care unit	56
	Pediatric Intensive care unit	53
	Cardiac Care Unit	14
	Adult Ward	19
	New ward	18
	Pediatric ward	21
	CATH LAB Department	17
	Outpatient Department	25
	Education Department	5
	Operation theater	27
TOTAL		255

Data Collection Tools

Data were collected through the utilization of three tools as follows:

Tool I: Personal Data:

It used to collect data about the personal characteristics of the study participants as (age, gender, educational qualification), and the occupational data included “department, job position, years of experience, and if attended any nursing informatics training course before”.

Tool II: Assessment of Nursing Informatics Competence Questionnaire

This tool was designed by Hunter et al., (2013) from the Technology Informatics Guiding Education Reform (TIGER) model of nursing informatics competencies. This tool was intended to assess the level of nursing informatics competence among nurses. It was a self – administered questionnaire. It included 49 Items, and it consists of three dimensions. The first dimension was computer literacies (14 questions). The second dimension was information management literacies (15 questions). The third dimension was informatics literacies (20 questions).

Scoring System

Nursing informatics competence	no. of items	Not capable	Partially capable	Capable
Computer literacies	14	0-9	10-19	20-28
Information management literacies	15	0-10	11-20	21-30
Informatics literacies	20	0-9	10-19	20-28
Total nursing informatics competence	49	0 -32	33 -65	66 -98

TOOL III: Creativity at Workplace Organization Scale:

This tool was developed by Musek, Janek. (2020) and modified by the researcher. This tool was intended to assess the level of creativity among nurses in their workplace and measured by using 20 questions each statement measured by five points Likert scale ranging as follows: (3 agree, 2-neutral, and 1 disagree)

The scoring system

Creativity at Workplace	no. of items	Low	Moderate	High
Total Creativity at Workplace	20	20 -33	34-47	48-60

Validity of the study scales:

The tools (I, and II) were translated into Arabic by the researcher, then a panel of three nursing administration specialists in the faculty of nursing as (one professor and 2 assistants from Minia) evaluated the tools' face validity and made the required revisions. A review of the tools' content coverage, clarity, phrasing, length, format, and overall appearance was requested from each member of the expert panel, and necessary modifications were made.

Reliability of the study scales

To establish the consistency of the tools were tested for reliability. The Cronbach's alpha test was used to determine the degree to which the tool's items measured the same idea and were correlated with one another. The results showed that the tools in the current study had good internal reliability, and were distributed as follows:

Cronbach alpha	α
Computer literacies	.89
Information management literacies	.76
Informatics literacies	.91
Total nursing informatics competence	0.92
Total Creativity at Workplace	0.94

Pilot Study:

A pilot study was carried out before starting the data collection of nurses from Aswan heart center (Magdi Yacoub heart foundation). This pilot study aimed to test the clarity, comprehensiveness, accessibility, and applicability of the tools and to estimate the appropriate time required to fill out the questionnaire. The pilot study involving 26 nurse (ten percent) of the nurses, was carried out. The pilot study's findings were added to the final results without alteration.

Data Collection Procedure:

- Official letters approval was requested from the faculty dean and the Scientific Research Ethics Committee of the Faculty of Nursing, Minia University; these letters included a succinct description of the study's aims.
- An official letter was acquired from the director of Aswan heart center (Magdi Yacoub heart

foundation), before the conduction of the pilot study as well as the actual study.

- Tools were translated into Arabic before getting the go-ahead from the jury to use them to gather research data.
- Agreement was obtained from nurses who participated in the study, after explaining the nature and purpose of the study.
- After describing the goal and procedure of data collection, the tools were given to all of the nurses.
- During their morning shift, the researcher distributed the tools to the nurses and answered their questions
- Nurses took 25 to 27 minutes to respond to the tools as measured by the pilot study. Then collected the sheets from the nurses after completing the tools filling.
- Between the beginning of 10th of February 2023 to the 8th May 2023, data collection from nurses was carried out.

Administrative design

- The Scientific Research Ethics Committee of the Faculty of Nursing at Minia University provided a formal initial of the study.
- The Minia University Faculty Dean of the Nursing Faculty authorized the issuance of an official letter.
- An official letter acquired from the director of Aswan heart center (Magdi Yacoub heart foundation)

Ethical Considerations:

- The nurses were made aware that taking part in the study was entirely voluntary and that declining to do so would not have any negative effects.

- Consent was obtained from nurses who were willing to participate in the study, after explaining the nature and purpose of the study.
- The study subjects had the right to refuse to participate and or withdraw from the study without any rationale at any time.
- Study subjects' privacy was considered during the collection of data. Participants were assured that all their data were highly confidential; anonymity was also assured by assigning a number for each nurse instead of names to protect their privacy.

Statistical Design:

The collected data was tabulated, computerized, analyzed, and summarized by using descriptive statistical tests to test research questions using the SPSS version (25). Qualitative data were expressed as frequency and percentage. Probability (P-value) is the degree of significance, less than 0.05 was considered significant. The smaller the P-value obtained, the more significant the result (*), and less than 0.001 was considered highly significant (**). T-test and ANOVA test were used for qualitative data test was used to detect the relation between socio demographic data of nursing staff and their study variables.

The statistical method of correlation is used to determine the type and degree of a link between two numerical variables. The co-sign efficient indicates the type of the relationship (positive/negative), while the value indicates its strength, as follows: Rho values below 0.25 indicate a weak correlation, 0.25-0.499 indicate a fair connection, 0.50-0.74 indicate a moderate correlation and values above 0.74 indicate a strong correlation.

Results

Table (1): Percentage distribution of the nurse’s personal as well as occupational data (no.=255).

Items	Nurses (no.= 255)	
	no.	%
Age		
• 20-<25yrs.	80	31.4
• 31-41yrs.	130	51
• >42yrs.	45	17.6
Mean ± SD	35.16±2.453	
Gender		
•Male	122	47.8
•Female	133	52.2
Years of experience		
•<1yrs.	39	15.3
•1<3yrs	49	19.2
•3-<6yrs.	88	34.5
•6-10yrs	65	25.5
•> 10 yrs.	14	5.5
Mean ± SD	4.16±2.143	
Department		
•Adult ICU	51	20
•Pediatric ICU	56	22
•CCU	15	5.6
•Adult Ward	19	7.5
•New ward	20	7.8
•Pediatric ward	22	8.7
•CATH LAB department	17	6.8
•Out-patient department	21	8.4
•Education department	5	2
•Operation theater	20	7.6
•Specialty nurses	9	3.6

Table (1) displays that (51%) of nurses have age from 31 to 41 yrs., regarding their gender (52.2%) of them are females, and (34.5%) of them have from three to less six years of experience in nursing, moreover (22%) of them working in Pediatric ICU.

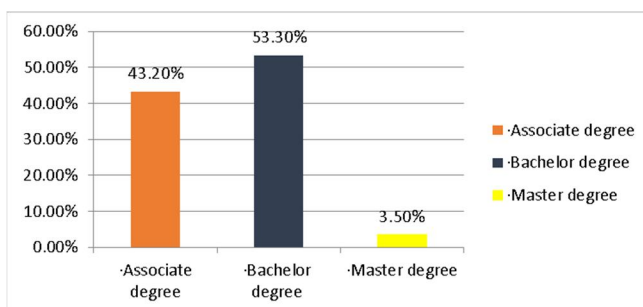


Figure (1): Percentage distribution of the nurse's educational qualification (no.=255).

Figure (1) shows that (53.3%) of nurses have bachelor's degree in nursing, and (3.5%) of them have master degree in nursing.

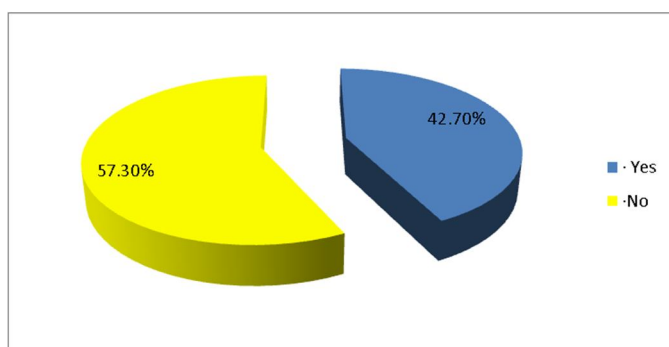


Figure (2): Percentage distribution of the nurse's attended any nursing informatics training course (no.=255).

Figure (2) illustrates that (42.7%) of nurses have attended nursing informatics training course, and (57.3%) of them not attended any nursing informatics training course.

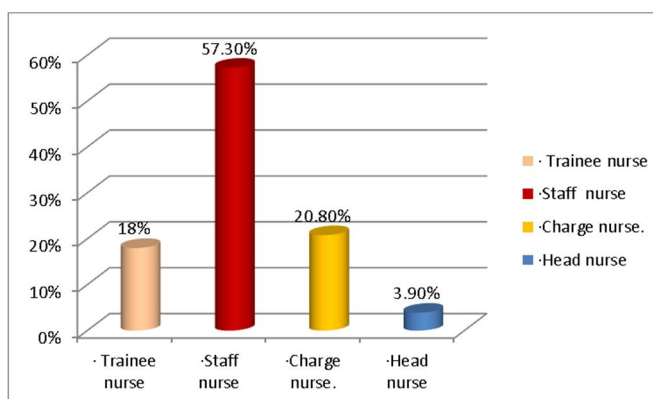


Figure (3): Percentage distribution of the nurse's position (no.=255).

Figure (3) mentions that (57.3%) of nurses have staff nurse, and (20.8%) of them have charge nurse, moreover (18%) of them have trainee nurse.

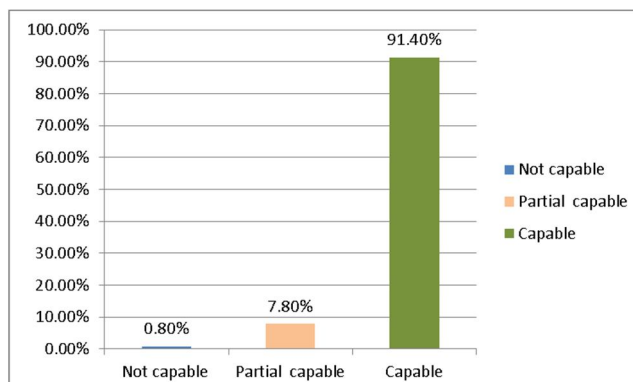


Figure (4): Percentage distribution of the nurse's total computer literacies dimension of nursing informatics competence (no.=255)

Figure (4) shows that (91.4%) of nurse's have capability to computer literacies, also (7.8 %) of them have the partial capability to computer literacies .

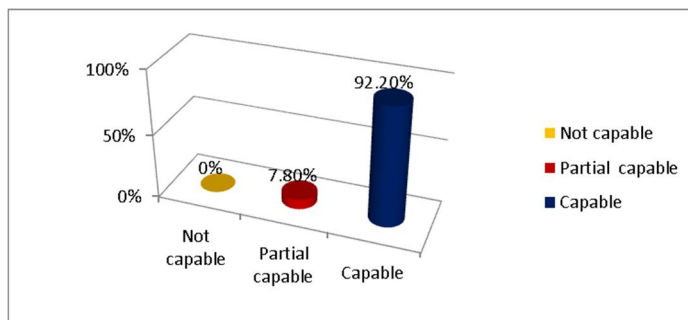


Figure (5): Percentage distribution of the nurse's total information management literacies dimension of nursing informatics competence (no.=255)

Figure (5) illustrates that (92.2%) of nurse's have capability to information management literacies, also (7.8 %) of them have the partial capability to information management literacies.

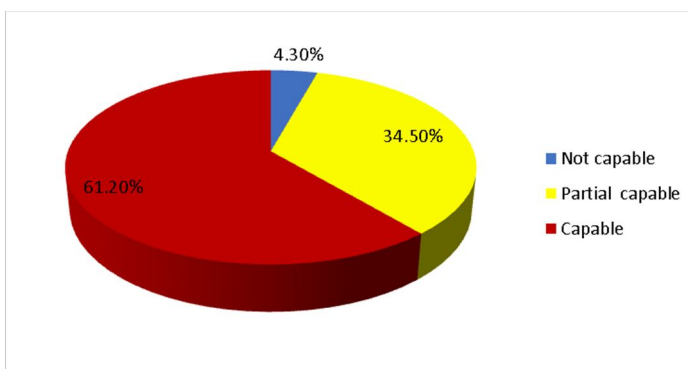


Figure (6): Percentage distribution of the nurse's total informatics literacies dimension of nursing informatics competence (no.=255)

Figure (6) show that (61.2%) of nurse's have capability to informatics literacies, also (34.5 %) of them have the partial capability to informatics literacies.

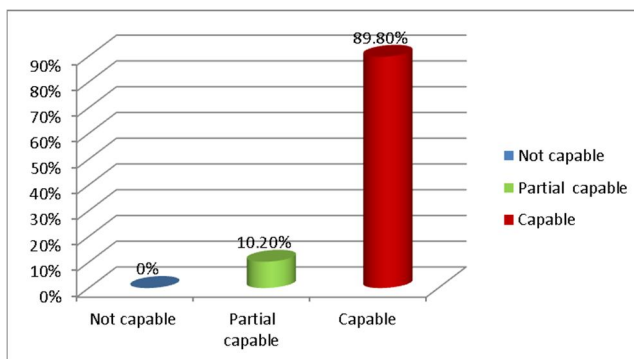


Figure (7): Percentage distribution of the nurse's total nursing informatics competence (no.=255)

Figure (7) illustrates that (89.9%) of nurse's have capability to informatics competence, also (10.2 %) of them have the partial capability to informatics competence.

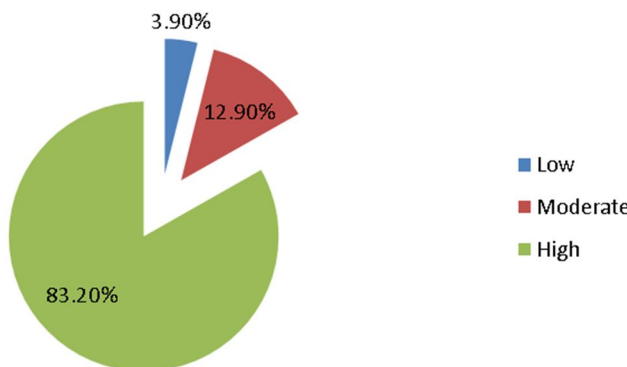


Figure (8): Percentage distribution of the nurse's total creativity at workplace (no.=255)

Figure (8) reveals that (83.2%) of nurse’s have high creativity at workplace, also (12.9%) of them have high creativity at workplace as well as only (3.9%) of them have low creativity at workplace

Table (2): Correlation between nursing informatics competence and creativity at workplace (no.= 255).

Items		Nursing informatics competence	Creativity at workplace
Nursing informatics competence	r P- value	1	0.122* 0.052
Creativity at workplace	r P- value	0.122* 0.052	1

Table (2) reveals that there is positive correlation between nursing informatics competence and creativity at workplace (p=0.052).

Discussion

Nowadays, technology is integral part in every role of nurses, nursing informatics competencies crucial competencies required in the contemporary healthcare system. When nurses have an expected level of informatics practice, they will utilizing patient data in way that grantees increase quality maximize outcome, enhance patient satisfaction and promoting evidence-based practice as well as creativity in workplace (Al-Balawi et al., 2020).

Nursing informatics is the specialty that integrates nursing science, information science, computer science, and cognitive science for the purpose of identify, manage, communicate and enhance healthcare data, information, knowledge, and wisdom to improve patient care and the nursing profession. Supporting “Triple Aim” of healthcare, which is improving care provided, enhancing population health, and minimizing cost of healthcare services is a major goal of nursing informatics. This support is accomplished through the use of information structures, information processes, and information technology (Park & Park, 2023).

Regarding nurses’ personal as well as occupational data. The current study findings revealed that the highest percentage of the nurses' age group was between (31-41yrs). For their gender, the study results noted that more than half of the nurses were female. Concerning their years of experience in the nursing field the current study revealed that more than one-third of them were 3-<6yrs. For their departments, the highest percentage of them about one-fifth work in the Pediatric ICU. Regarding nurses’ educational qualifications, more than half of them had a bachelor's degree in nursing, followed by more than two-fifths of them have an associate degree in nursing. For the distribution of the nurse’s position, the current study finding is more than half of the participants are staff nurses.

Regarding nurses’ attendance in informatics training courses, the highest percentage of them were in favor of a “no” response, and this is supported by Vehko et al. (2019) who suggested that more training courses are necessary to increase nursing informatics competency and to better meet the competency requirements of nursing profession.

Concerning the total of nurses’ computer literacies dimension of nursing informatics competence, the present study revealed that the majority of the nurses had the capability of computer literacies. This could be because modern healthcare heavily relies on electronic health records (EHRs), digital communication, and technology-driven tools for patient care. Nursing education and training now include computer skills as essential components, ensuring that nurses are equipped to handle the digital aspects of their roles effectively. Additionally, the widespread use of smartphones and other digital devices in daily life has enhanced nurses'

familiarity and comfort with technology, making computer literacy a common skill in the profession.

This finding is supported by Farokhzadian et al. (2021) who demonstrated that computer, and information literacy training programs significantly improved nurses’ computer and information literacy skills, suggesting that with proper training, most of the nurses can achieve high levels of computer literacy capability.

However, a study in BMC Medical Education of Abou Hashish and Alnajjar, (2024) in which they assessed digital proficiency among nursing students and found considerable variability in their computer literacy skills. While some students exhibited high proficiency, others struggled with basic computer tasks, indicating that not all nurses or nursing students possess the same level of computer literacy capability. Another study Abdekhoda (2021) highlighted in the Journal of Nursing Management pointed out that despite the availability of training programs, some nurses face barriers such as lack of time, resources, and support, which hinder their ability to develop and maintain computer literacy skills

Concerning the total of nurses’ information management literacies dimension of nursing informatics competence, the current study findings reported that the majority of the participants had the capability to information management literacies. From the researchers’ point of view this could related to, healthcare increasingly relying on data for decision-making, patient care, and quality improvement. Nursing education now emphasizes the importance of managing and analyzing health information and conducting evidence research. As a result, nurses are trained to handle, interpret, synthesize, summarize, and apply data in ways that enhance patient outcomes and streamline healthcare processes, making information management a vital skill in modern nursing practice.

This finding is congruent with Koivunen et al. (2024) who supports the notion that most of the nurses’ capable to handle, utilize, and apply data is crucial for enhancing patient care and streamlining processes.

While the findings are not congruent with Wu et al. (2024), who conducted a study on emergency nurses and revealed varying levels of information management literacy, with a notable percentage of nurses exhibiting low to moderate literacy levels, indicating a need for targeted educational interventions.

Regarding the total of the nurses’ informatics literacies dimension of nursing informatics competence, this study showed that the highest percentage about three-fifths of the nurses had the capability of informatics literacies. This could be because of the increasing reliance on digital tools in healthcare. This literacy allows them to efficiently manage patient information, improve care coordination, and enhance decision-making processes. Continuous professional

development and training in informatics have also equipped nurses with the necessary skills to meet the demands of a technology-driven healthcare environment, ensuring they can effectively integrate these tools into their daily practice.

This finding is aligned with a study published in the Online Journal of Nursing Informatics for **Abdekhoda (2021)** in which who found that the highest percentage more than three-fifths of nurses demonstrated high informatics literacy, significantly enhancing their evidence-based practice capabilities.

Conversely, **Cummins et al. (2021) and Beale and Hull, (2023)**, Nursing Informatics Workforce Survey revealed that while many nurses possess informatics skills, only nearly three-fifths of them have a post-graduate degree in informatics or related fields. This suggests that a substantial portion of nurses may still lack advanced informatics training, potentially limiting their full capability in this area

Regarding the total of nurses' nursing informatics competence, the current study revealed that the majority of the nurses had the capability to informatics competence, this can be justified by the dynamic nature of healthcare today requires them to be tech-savvy and adaptable. As frontline caregivers, nurses are often the first to interact with digital tools, prompting a natural evolution in their skill set. The hands-on experience combined with a growing culture of innovation in nursing practice encourages them to continuously improve their informatics capabilities.

This finding is aligned with the study conducted by **Guo et al. (2024)** in mainland China involving 409 palliative care nurses found that the majority exhibited moderate to high levels of nursing informatics competence.

While, the study finding is not aligned with **Raghunathan et al. (2023)**, who conducted a baseline evaluation of nursing students' informatics competency and revealed that only two-fifths of the participants were at the level of competent.

Concerning the nurse's total creativity at the workplace, the present study findings illustrated that, nearly the majority of the nurses had a high level of creativity. This could be due to

This is aligned with **Zhang et al. (2023)** who reported that involving 500 nurses across various healthcare settings found that the highest percentage nearly three-quarters of the nurses scored high on the Workplace Creativity Scale. The study highlighted that supportive work environments and continuous professional development significantly contributed to these high creativity levels.

While the study findings are incongruent with **Abd-Elrhaman et al. (2023)** who reported that only less than half of nurses in routine-based units scored high on creativity measures. Also, **Keller et al. (2022)** highlighted that high workload and stress levels negatively impacted creativity among nurses. **Ghelichkhani et al. (2022)**, found that in high-stress environments, only less than two-fifths of nurses reported high creativity levels, compared to nearly two-thirds in low-stress settings.

Correlation between nurses' Informatics Competence and creativity at Workplace. Concerning the correlation between the study variables, the current study revealed that there was a positive statistically significant correlation between nursing informatics competence and creativity at the workplace, from the researchers' point of view, this is because informatics skills empower nurses to efficiently manage and interpret data, leading to innovative

problem-solving and improved patient care. By effectively using technology, nurses can streamline processes, identify new approaches, and implement evidence-based practices, which fosters a more creative and adaptive work environment. This synergy between technology and creativity enhances overall productivity and job satisfaction.

This finding is supported by Jouparinejad et al. (2020) who reported that the NI competency of the students improved at the end of the program, and more than half of the nursing students reported the development of their creativity. Also, A recent study by **Jarzembak (2023)** found that nurses with high informatics competence were more likely to engage in creative problem-solving and innovation at the workplace. Moreover, **Mannevaara et al. (2024)** demonstrated that informatics-competent nurses often collaborate more effectively with interdisciplinary teams. This competence facilitates the sharing of ideas and the development of creative solutions, enhancing overall workplace creativity. Furthermore, **Okolo et al (2024)**, noted that informatics competence reflects their proactive approach to enhancing patient care, staying ahead of technological advancements, and contributing creatively to the evolving landscape of healthcare.

However, this study's finding is not attributed to **Hussey and Hannah, (2021)**, who raised concerns that an over-reliance on informatics tools might stifle creativity. they argued that while informatics competence is beneficial, it can sometimes lead to a dependence on technology, reducing the incentive for nurses to think creatively and independently. Also, **Baker (2021)** found that the correlation between informatics competence and creativity is not uniform across all nursing settings. In some environments, high informatics competence did not significantly enhance creativity, suggesting that other factors, such as organizational culture and support, play a crucial role.

CONCLUSION

This research concluded, the highest percent of nurse's had capability to informatics competence, also the minority of them had the partial capability to informatics competence. Furthermore the highest percent of nurse's had high creativity at workplace, also slightly more than tenth of them had moderate creativity at workplace as well as the minority of them had low creativity at workplace. Finally, there was positive correlation between nursing informatics competence and creativity at workplace ($p=0.052$).

RECOMMENDATIONS

The following recommendations were inferred from the study:

1. Conducts competency based nursing informatics training programs for nursing personnel according to their needs and to be up to date with new competencies.
2. Integrated informatics and information competencies into the nursing curriculum to equip nursing graduates to meet the ever-changing technological needs of patients.
3. Enhancing nursing education programs with utilization of educational methods that encourage creativity among nurses
4. Redesign the hospital policies and regulations to be adapted with new vision of the hospital

5. Conduct research to investigate correlation between nursing informatics competencies and patient safety

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