

Research Article

Knowledge of ICU Nurses Regarding the Ongoing Nursing Assessment of ICU Patients in Khartoum City, 2020

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Abstract

Background: An ongoing nursing assessment is the most significant point in the nursing process to be executed in the beginning of every shift which can be accomplished by using different approaches. It needs to be conducted accurately to guide professional nurses' decision-making ability to further provide holistic nursing care to patients in the intensive care units (ICUs). This study was aimed to assess the ICU nurses' knowledge regarding ongoing nursing assessment of ICU patients.

Methods: This descriptive cross-sectional hospital-based study was conducted in Khartoum city, and included 86 out of the 135 participants working in the critical care units of the main governmental hospitals in Khartoum city. Data were collected using a structured self-administered questionnaire after being tested for validity and then analyzed using mean, standard deviation, and correlation. Data were then presented as frequencies and percentages.

Results: The study participants were aged between 20 and 40 years with a female to male ratio of 3:1, and varied levels of experience. Overall, 71.7% of the studied participants scored good on the standardized knowledge classification tool used, with few areas of knowledge gap, impacted by increased experience. Moreover, 36% of the participants used the ABCDE approach for ongoing nursing assessment, followed by the head-to-toe assessment approach (21%).

Conclusion: The nurses' knowledge regarding ongoing nursing assessment was good with a few areas of weakness raising the need for continuous educational and training programs.

Keywords: ICU ongoing nursing assessment, critical care unit continuing nursing assessment, critical care room evolving nursing judgment

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1. Introduction

A nursing assessment is the assembly of data about a patient's physiological, psychological, sociological, and spiritual needs in order to categorize the existing and potential patient care requirements. The nursing process is a problem-solving approach to meet patient's or client's healthcare and nursing needs, and includes five systematic steps: assessment, formulation of nursing diagnosis, putting a plan for intervention, intervention, and evaluation [1–4].

Nursing assessments are non-static, one of the aspects of the nursing assessment procedure is that a set of customized results are agreed upon, which can be achieved through established teamwork and efficient communication [5].

An accurate collection of assessment data leads the decision-making and personalized risk assessment required to define a plan of care with specific interventions to be made for each patient [6].

An ongoing nursing assessment is a type of nursing assessment done at the beginning of every shift on every client and the assessment data thereof is used to formulate a plan of care.

A prime concern for nursing professionals when admitting a patient with an acute medical condition to hospitals is to ensure their safety. However, many studies published over the last 20 years have showed that significant harm is caused to patients unintentionally through nurses' inability to recognize the signs of clinical deterioration [4].

Patients in Intensive Care Units (ICUs) are generally admitted due to their critically ill health or injury that may develop life-threatening deteriorations. These patients usually experience problems with consciousness and have limitation in mobility and sensation due to sedation and/or the disease processes [7].

Basically, the nursing observation of patients has included the measurement and documentation of vital signs. And over the past decade, vital signs measurements were used to develop protocol-based early warning score (EWS) tools that aim to detect patient's clinical deterioration at an early stage [4].

Initial nursing assessment is registered on the flowsheet and the following assessments or changes are registered in the progress notes [5].

A study done on hospitalized patients compared the effects of nursing assessment on predictive delirium models, and showed that nursing assessment data can improve performance of delirium prediction models better than the demographic, laboratory, diagnosis and procedure and previous transfer data [8].

Because of the limited data regarding the application of ongoing nursing assessment in the ICUs of hospitals in Khartoum city, the study was aimed to assess the ICU nurses' knowledge regarding ongoing nursing assessment.

2. Materials And Methods

This descriptive, cross-sectional, hospital-based study was conducted in the ICUs of four governmental hospitals including: the Khartoum Teaching Hospital, the Soba University Hospital, the Alshaab Teaching Hospital, and the National Center for Neurological Science.

2.1. Sampling technique

A full-coverage sampling method was used.

2.2. Sample size

Out of the 135 ICU nurses in the selected Khartoum hospitals, 86 nurses who were qualified with BSc and higher degrees and agreed to participate in the study were included. Nurses who were absent during the study period (either on vacation at the time of study or on a sick leave) were excluded.

2.3. Data collection

Data were collected using a structured self-administered questionnaire to assess nurses' knowledge, and the results were evaluated using a standardized evaluation tool by classifying the knowledge level in percentage as: excellent ($\geq 90\%$), very good (89–80%), good (79–70%), average (69–60%), poor (59–50%), and very poor ($< 50\%$).

The questionnaire was tested by piloting to ensure its validity and reliability, and then distributed to the participants by the researchers. Following the data collection, the data were analyzed using the Statistical Packages for Social Sciences (SPSS) version 20 using mean, standard deviation, and correlation.

The authors excluded 49 questionnaires which were not properly filled resulting in a total of 86 questionnaires with a response rate of 64%.

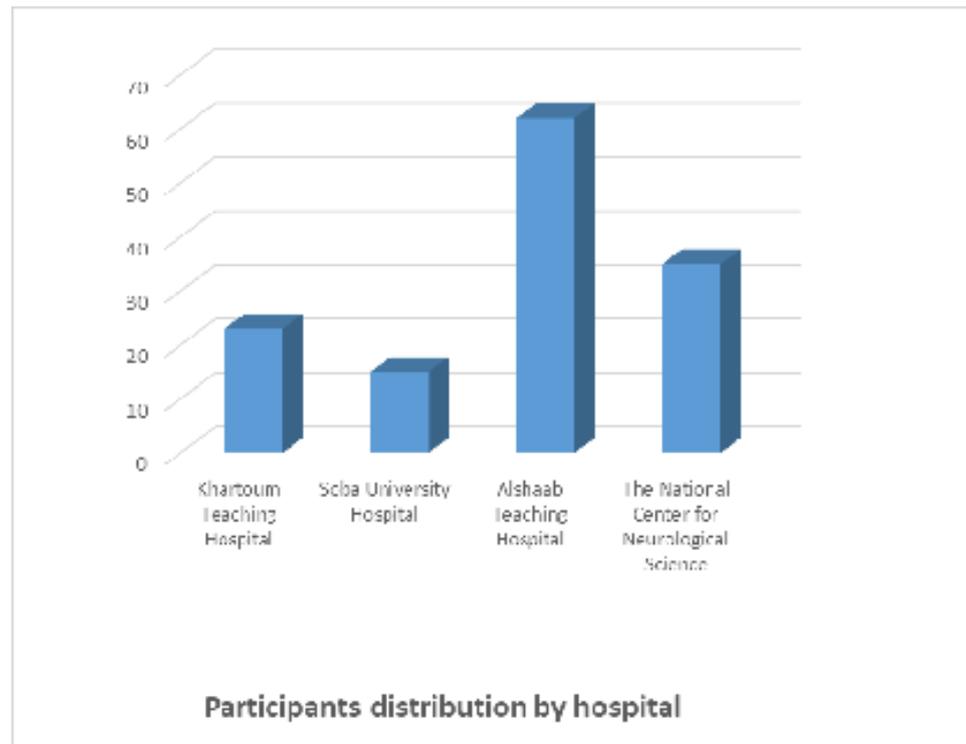


Figure 1: Distribution of participants by hospital.

3. Results

This descriptive study was conducted in the ICUs of the four main governmental hospitals in Khartoum city, including a total of 86 participants with response rate of 64% (Figure 1).

The majority of the participants (91.9%) were aged between 20 and 30 years, while only 8.1% were 30 to 40 years old, with a mean age range of 20–30 years (SD 0.27). Of them, 24.4% were male while 75.6% were female, with a male-to-female ratio of 1:3 (SD 0.43).

With respect to the qualifications, the majority of the participants (94.2%) had a BSc degree, 3.5% had an MSc, and only 2.3% had a PhD degree (SD 0.35), this indicates that the majority had the same level of qualification.

Moreover, 72.1% of the participants had an experience of <2 years, 19.8% had 2–5 years, 3.5% had 6–10 years, and 4.7% had >10 years. This is largely due to the migration (brain drain) of the experienced staff to the Arabian Gulf region leaving the juniors without proper guidance (Table 1).

Additionally, 22.3% of the participants worked in the general ICUs of the Khartoum Teaching Hospital and Soba University Hospital, 22.1% in the respiratory ICU of the Alshaab Teaching Hospital, 25.6% in the cardiothoracic ICU of the Alshaab Teaching

TABLE 1: Participants' demographic data.

Age (yr)	20–40
Gender	24.4% (male), 75.6% (female)
Qualifications	94.2% (BSc), 3.5% (MSc), 2.3% (PhD)
Experience (yr)	>1–10<

Hospital, 14% in the neurological ICU, and 15% in the neurosurgical ICU of the National Center for Neurological Science.

Regarding the position of nurses in the studied ICUs, 8.1% were head nurses and 91.9% were staff nurses, this is reasonable as usually there is only one head nurse in each unit.

Regarding the use of ongoing nursing assessment approaches in the area of study, 36% of the participants used the ABCDE approach, 10.5% used the body systems approach, 20.9% had the head-to-toe approach, 5.8% did not indicate the exact approach used (mostly because they do not know if they have an approach they have to follow or not), while 23% had no approach for ongoing nursing assessment to follow in their units.

Table 2 shows that the ICU nurses' knowledge was excellent in the areas of nursing process definition, components of patient's orientation assessment, and if the bed sores are assessed as part of the skin assessment. Moreover, knowledge was very good regarding the definitions of assessment and seriously ill patient, approaches commonly used in the assessment, pupillary and lung field assessment, if the ventilator settings are needed to be checked as part of the ongoing assessment, if the ostomy and drains should be assessed when assessing the abdomen, and if it's part of ongoing assessment to assess the other tubes and lines connected to the patient. Further, the patients scored good in areas of ongoing nursing assessment definition, vital signs components, rectal assessment, sensory, and edema assessment. Average knowledge was scored in a question about abdominal classification when assessing for bowel sound. However, the ICU nurses' knowledge in the rest of assessment questions was very poor.

The researchers selected the results of those questions that are most representative of the knowledge of the ongoing nursing assessment and correlated them to the nurses' qualifications and years of experience to evaluate the impact these data had on the participants' knowledge (Table 3).

Table 3 shows that the qualifications had a significant negative impact on the participants' knowledge regarding question 7 (The most known protocols used in ongoing assessment may involve the body systems approach and the ABCDE Approach) ($p =$

TABLE 2: Knowledge score per question in percentage.

No.	Questions	Percentage of the correct responses	SD
1	Nursing process is defined as methodological, rational manner of planning and performing of individualized nursing care	91.1	0.3
2	Elements of the nursing process in a sequence are: evaluation, diagnosis, planning, intervention, and assessment	39.5	0.5
3	Assessment is defined as systematic collection, verification, ordering, interpretation, and registration of data by healthcare members	84.9	0.6
4	Components of assessment are: history of illness, physical assessment, and laboratory and diagnostic investigations	91.7	0.4
5	Ongoing (shift) nursing assessment is defined as: the assessment that should be done each time the nurse encounters a patient for the first time in each shift	77.9	0.5
6	Seriously ill patients are the patients who are at great risk for actual or eminent life-threatening health problems	87.2	0.4
7	The most known protocols used in ongoing assessment may involve the body systems approach and the ABCDE approach	81.4	0.6
8	The ongoing assessment may start with introduction of self and general survey	75.6	0.6
9	Level of consciousness can be assessed by using (AVPU) Alert, Verbalization, Pain, and Unresponsive	81.4	0.5
10	The total Glasgow Coma Scale score is 12	89.5	0.3
11	Patient orientation is assessed by asking the patient regarding place, person, and time	95.3	0.3
12	Vital signs assessment involves respiratory rate, pulse rate, blood pressure, temperature, and pain assessment	74.4	0.5
13	Pupillary assessment is for shape, size, and reaction to light, symmetry, and accommodation	84.9	0.6
14	When assessing the neck veins, the patient should be in a 15° position	25.6	0.9
15	Lung fields should be assessed for air entry, symmetrical chest movements, and adventitious sounds	86	0.5
16	Regarding mechanical ventilation, the nurse needs to evaluate the settings and functioning of the mechanical ventilator	89.5	0.4
17	Oxygen saturation (SPO ₂) should be assessed when assessing the abdomen	72.1	0.5
18	Heart sounds that should be assessed are S1 and S2 and extra sounds (s3 and s4)	51.2	0.9
19	Capillary refill time gives us clue regarding the peripheral tissue perfusion	82.6	0.6
20	Abdominal assessment involves assessing for the presence of ostomy and abdominal drain	81.4	0.6
21	To assess bowel sounds, we may need to classify the abdomen into four quadrants	69.8	0.8
22	Rectal assessment involves assessing for bowel motion	77.9	0.7
23	Motor assessment involves assessing for optic neuropathy	37.4	0.7
24	Sensory assessment includes light touch identification, sharp versus dull determination, pain and temperature sensation	79.1	0.6
25	Peripheral edema is assessed by pressing the skin against bony prominences	75.6	0.6

TABLE 2: Table continued.

26	Skin assessment involves assessment for bed sores	94.2	0.4
27	BRADEN scale is used to assess skin status	38.4	0.9
28	MORSE scale is used to assess falls risk	26.7	0.9
29	Pain assessment is referred to as the 6 th vital sign	26.7	0.8
30	Assessment for tubes and lines is a part of ongoing assessment	81.4	0.6
Total knowledge score		71.7	

TABLE 3: Correlation between questions 1, 3, 7, 9, 12, 15, 19, 20, 26, and 30 and nurses' qualifications and experiences.

Questions	Q1	Q3	Q7	Q9	Q12	Q15	Q19	Q20	Q26	Q30
Correlation with the qualification	-0.066	0.126	-0.309	0.031	0.003	0.047	0.002	-0.104	-0.057	0.217
Correlation with the years of experience	-0.150	0.136	0.207	0.070	0.068	0.076	0.100	-0.078	0.012	0.152

0.004). However, an insignificant negative impact was seen on the participants' knowledge regarding questions 1 (Nursing process is defined as methodological, rational manner of planning and performing of individualized nursing care) ($p = 0.5$); 20 (Abdominal assessment involves assessing for the presence of ostomy and abdominal drain) ($p = 0.3$); and 26 (Skin assessment involves assessment for bed sores) ($p = 0.6$). Nevertheless, a significant positive impact was noted regarding question 30 (Assessment for tubes and lines is a part of ongoing assessment) ($p = 0.045$) and an insignificant positive impact on the participants' knowledge regarding the rest of the questions.

The years of experience had an insignificant negative impact on the participants' knowledge regarding questions 1 ($p = 0.17$) and 3 ($p = 0.2$), while the impact was insignificantly positive regarding the other questions.

4. Discussion

The results from this study suggest that the ICU nurses' knowledge score regarding the ongoing nursing assessment of ICU patients was good according to the standardized knowledge classification tool used. There was an obvious knowledge deficit in stating the components of nursing process, the degree of positioning the patient when assessing the neck vein, involved parts of motor assessment, indications for use of BRADEN & MORSE scales, and indicating pain assessment as the 6th vital sign (Table 2). These lower percentages indicate a knowledge gap in these areas mostly because of the common negligence of these assessment components by ICU nurses when they assess their patients; it is also noticed that even the critical care workshops are less likely

to include the areas relating to use of BRADEN scale for skin assessment and MORSE scale for fall risk assessment. In contrast, the findings in the other areas of knowledge revealed a very good score as they are the commonly practiced and discussed elements in the training courses ($p > 0.001$).

These results are very important for evaluating the ICU nurses' knowledge as it is considered that the assessment is a major step of the entire nursing process "base or foundation." And in the light of these, nurses may formulate an appropriate nursing diagnosis and then plan and implement an accurate intervention as it is known that with an improper assessment, nurses may formulate an inappropriate nursing diagnosis and then plan and implement wrong interventions [9].

In comparison, a study conducted to assess the ongoing patient's assessments involving 127 ICU nurses of a university hospital in Sao Paulo, Brazil had revealed that most of the participating nurses were women, with a mean age of 31.1 years, had graduated >5 years ago, and had a work experience of 1 to 3 years. Regarding the highest score for Glasgow coma scale, nurses who had graduated >5 years prior showed poor knowledge ($p = 0.0476$). As for the interval of the scale to signal for moderate brain trauma, those with most experience showed a high knowledge score ($p = 0.0251$). In contrast, in the same study, nurses from the ICUs had less knowledge compared to the nurses from emergency room ($p = 0.0143$). Moreover, nurses who had graduated >5 ago had a lower knowledge score ($p = 0.0161$), while those with more experience scored better ($p = 0.0119$) in most questions [10].

The researchers attempted to find a link between the ICU nurses' knowledge and their level of qualification and years of experience. The results did not prove that increased qualification and more years of experience can have an impact on the ICU nurses' knowledge.

5. Limitations

This study had a few limitations.. Thirty six percent of the participants did not submit their questionnaire to the researcher. Some participants were working in more than one hospitals and some of them were working as a substitute for others at the time of the study, this reduced the study sample size.

6. Conclusion

This study concluded that the total knowledge score of the participants was 71.7% which is considered as good according to the standardized knowledge classification tool used in this study. There were some specific areas of knowledge gap regarding the ongoing nursing assessment. The increasing number of years after graduation (experience) has negative impact on some areas of the ongoing nursing assessment knowledge, raising the need for continuous educational and training programs.

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Ethical Consideration

Permission was obtained through official letters from the general directors of all four governmental hospitals included in the study, and verbal agreements were taken from the study participants.

Competing Interests

The authors disclose that there was no funding body for this study and it was totally dependent on the authors own fund and there is no conflicting interest.

Availability of Data and Material

The data related to the study is available whenever needed.

References

- [1] Hinkle, J. L. and Cheever, K. H. (2018). *Brunner and Suddarth's Textbook of Medical Surgical Nursing* (14th ed., pp. 254–280). Wolters Kluwer.

- [2] Karns, D. S. (2010). *Meaningful learning development in student nurses: the traditional nursing care plan versus the concept map care plan approach* (Doctoral dissertation). Retrieved from: <https://digscholarship.unco.edu/cgi/viewcontent.cgi?article=1177&context=dissertations>
- [3] Adenova, A., Tazhieva, A., Ramazanova, M., et al. (2014). Nursing process based on the principles of evidence-based medicine. *Bulletin of the Kazakh National Medical University*, vol. 1, pp. 434–435.
- [4] Atkinson, D. (2013). *Nursing observation and assessment of patients in the acute medical unit* (Doctoral dissertation). Retrieved from: https://usir.salford.ac.uk/id/eprint/29466/1/E_Thesis_DA.pdf
- [5] Ceesay, B. (2018). The importance of assessment and communication as fundamental skills of nursing practice. *Links to Health and Social Care*, vol. 3, no. 2, pp. 24–39.
- [6] Solà-Miravete, E., López, C., Martínez-Segura, E., et al. (2018). Nursing assessment as an effective tool for the identification of delirium risk in older in-patients: a case–control study. *Journal of Clinical Nursing*, vol. 27, no. 1–2, pp. 345–354.
- [7] UKEssays. (2018). *The assessment process of patients in intensive care* [Internet]. Retrieved from: <https://www.ukessays.com/essays/nursing/the-assessment-process-of-patients-in-intensive-care-nursing-essay.php?vref=1> (accessed 2021 May 18).
- [8] Veeranki, S. P., Hayn, D., Kramer, D., et al. (2018). Effect of nursing assessment on predictive delirium models in hospitalised patients. *Studies in Health Technology and Informatics*, vol. 248, pp. 124–131.
- [9] Higginbottom, G. M., Richter, M. S., Mogale, R. S., et al. (2011). Identification of nursing assessment models/tools validated in clinical practice for use with diverse ethno-cultural groups: an integrative review of the literature. *BMC Nursing*, vol. 10, no. 1, p. 16.
- [10] Santos, W. C., Vancini-Campanharo, C. R., Lopes, M. C., et al. (2016). Assessment of nurse's knowledge about Glasgow coma scale at a university hospital. *Einstein*, vol. 14, no. 2, pp. 213–218.