Factors Affecting Nurses' Role Regarding Care of Patients with Diabetic Ketoacidosis

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Abstract:

Background: Diabetic ketoacidosis is a life-threatening condition of diabetes due to complete or incomplete lack of insulin, characterized by hyperglycemia, ketoacidosis, and ketonuria. The study aimed to evaluate factors affecting nurses' role regarding care of patients with diabetic ketoacidosis. A descriptive exploratory design was utilized. Data were collected from Paid ICU and ICU of medical intensive care units at Zagazig University Hospitals. The study was conducted on fifty ICU nurses from the same hospital setting which have been selected to the study. Two tools were used for data collection, First: An interviewing questionnaire to collect personal characteristics of study nurses and questions to assess nurses' knowledge regarding diabetic ketoacidosis and factors affecting nurses' role regarding care of patients with diabetic ketoacidosis. Second tool was an observational Checklists to assess nurses' practice regarding care of patients with diabetic ketoacidosis. Results of this study showed that 62.0% of studied nurses were more than 25 years, female and had technical institute. More than half of them were single, had experience in ICU more than 3 years and had training courses regarding DKA, 36.0% reported that presence of guidelines regarding DKA. 80.0% of studied nurses had unsatisfactory level of total knowledge, nurses' role was affected by nurses' related factors, health setting related factors and patients related factors (40.0%, 74.0% and 68.0%) respectively. 72.0% of studied nurses had unsatisfactory practice level. Conclusion: the majority of studied nurses had unsatisfactory level of total knowledge score, more than two thirds of the studied nurses had unsatisfactory level in total practice regarding care of DKA patients and nearly two thirds of the studied nurses had factors affecting their role. In addition, there is a statistically significant positive correlation between knowledge score and practice score. Also, statistically significant positive correlation between practice score and factors affecting nurses' role. It is recommended to periodic refreshing training and educational program to enhance knowledge and practice for nurses regarding diabetic ketoacidosis.

Keywords: Diabetic ketoacidosis, Factors affecting, Nurses' role.

Introduction:

Diabetic ketoacidosis (DKA) is an endocrine emergency presented with metabolic disturbances due to the indirect or direct lack of insulin. Decreased glucose transport into tissues leads to hyperglycaemia, which gives rise to glycosuria with loss of water and electrolytes - sodium, potassium, calcium, magnesium, phosphate and chloride. Increased lipolysis causes overproduction of fatty acids, some of which are converted into ketones, giving ketonaemia, metabolic acidosis and ketonuria **(Murphy et al., 2023)**.

Diabetic ketoacidosis in persons with established diabetes is typically brought on by a comorbid condition or by skipping insulin administration. Infection is the most frequent contributing cause in type 2 diabetes mellitus and may also be the presenting characteristic of newly diagnosed type 1 diabetes mellitus **(Harvin, 2023)**.

Patients commonly suffer from polyuria, polydipsia, nausea, vomiting and marked fatigue for a day or more with eventual stupor that can progress to coma. Abdominal pain and tenderness may be experienced without abdominal disease. Also, fruity smell breath, hypotension and tachycardia may be present because of a decrease in blood volume, increased heart rate as the body compensates for a decrease in blood volume, and the rate and depth of respiration increase (i.e., Kussmaul respiration) as a compensatory mechanism to prevent further decrease in pH **(Norris, 2024)**.

It is characterized by hyperglycaemia with glucose is greater than 11 mmol/l (200 mg/dl), pH less than 7.3, bicarbonate (HCO_3-) is less than 15 mEq/l, serum anion gap is greater than 16 mmol/l, moderate to severe dehydration is seen and creatinine ratio is increased, and ketones (ketonemia and ketonuria $\geq$3 mmol/l) are present.**(Mohajan & Mohajan, 2023)**.

Management of DKA includes: respiratory support; fluid replacement; insulin treatment, electrolyte replacement; monitoring for and prevention of complications of hypoglycaemia, hypokalaemia, hyperglycaemia and fluid volume overload **(Aitken, 2024)**. Patients in DKA should be admitted to an intensive care unit/intermediate care unit that can handle frequent laboratory studies, hourly glucometer checks, and the administration of electrolyte supplements and insulin **(Willis & Myers, 2023)**.

Nurses play an important role in caring for patients with DKA and have responsibilities to ensure the safe delivery of patient care in accordance with local and national clinical guidelines. Nursing care includes ongoing physical and clinical assessment and monitoring of the patient's hemodynamic state. This involves monitoring vital signs, level of consciousness, and fluid balance, including accurate intake and output charts, as well as capillary blood glucose and ketone levels, which are required at least hourly during the acute phase **(Aly et al., 2024)**.

Sustaining a healthy nursing workforce is central to the delivery of high-quality nursing and safe patient care. The critical care work environment negatively influenced the physical and psychological health and well-being of nurses and therefore affecting their working capacity **(Lamb et al., 2024)**. Also, **Senosy (2024)** reported that the lack of cooperation between nurses and patients, lack of supplies and equipment during care an unequal nurse-patient ratio, many nursing tasks, and a lack of patients' knowledge were major factors affecting nurses' performance**.**

Significance of the study:

Diabetic ketoacidosis (DKA) is the most frequent acute hyperglycemic emergency in persons with diabetes mellitus, between 25 and 40% of individuals with type 1 diabetes mellitus may present with DKA at initial diagnosis, and it can also affect at least 34% of people with type 2 diabetes **(Eltom et al., 2024)**. Egypt is listed as the 9th among the top 10 countries with diabetes and a mortality rate ranging from 2% to 10% is linked to DKA **(Abouzid et al., 2022)**.

Nurses play a central role in the management of diabetic ketoacidosis, from initial triage to patient education about preventive strategies. Their responsibilities encompass critical care, continuous monitoring, and multidisciplinary collaboration **(Bosana, 2024)**. Nursing is a dynamic field facing numerous challenges due to continuous restructuring and policy reforms. These challenges, including limited resources and complex patient cases, lead to adverse outcomes such as lower nurse retention rates and heightened job insecurity **(Jaradat et al., 2024)**. So, the current study will be carried out to evaluate factors affecting nurses' role regarding care of patients with diabetic ketoacidosis.

Aim of the study:

To evaluate factors affecting nurses' role regarding care of patients with diabetic ketoacidosis.

Research Questions:

- What is the level of nurse's knowledge regarding care of patients with diabetic ketoacidosis?
- What is the level of nurses' practice regarding care of patients with diabetic ketoacidosis?
- What are factors affecting on nurses ' role regarding care of patients with diabetic ketoacidosis?

Subjects and Methods

Study Design:

A descriptive exploratory research design was utilized.

Setting:

The current study was conducted in two intensive care units (Paid Intensive Care units and general intensive care unit). Paid Intensive Care units and internal medicine hospital at Zagazig university Hospital.

Subjects:

The study sample was a convenience sample which includes all available nurses (50) working in the above mentioned setting (30 nurses in Paid ICU and 20 nurses in general ICU of internal medicine hospital) Zagazig university, Egypt.

Tools of data collection:

Data of this study was collected by the researcher using two tools as the following:

Tool I: An interviewing questionnaire (Appendix I):

It was designed in simple clear Arabic language to avoid misunderstanding. It was designed by the researcher after reviewing of related literature references and opinions of experts for content of validity. It consists of 102 questions and composed of three parts as the following:

Part I: Demographic characteristics of the studied nurses: this part included data about demographic characteristics of the study subjects which consisting of seven close ended questions such as (age, sex, marital status, qualification, years of experience in ICU, attendance of previous training courses and presence of written instructions regarding DKA care in ICU**.**

Part II: Nurses' knowledge assessment: It was used to assess nurses' knowledge regarding diabetic ketoacidosis and nursing care required for those patients: This consists of 48 questions in the form of (MCQ) and classified under three main sections:

Section A: It included 11 questions about nurses' knowledge regarding diabetic ketoacidosis disease such as definition, risk factors, causes, signs and symptoms, diagnosis, management and complications.

Section B: It included 25 questions about nurses' knowledge regarding nursing care of patients with diabetic ketoacidosis such as fluid therapy, insulin infusion, potassium administration, intake and output measurements, fluid balance chart, skin care, subcutaneous insulin injection, ABG result normal ranges, CVP, Glasgow coma scale.

Section C: It included 12 questions about nurses' knowledge regarding instructions that must be given to patients with diabetic ketoacidosis to be followed after their discharge from the hospital such as blood glucose measuring, diet, exercise, insulin (administration time, site, storage), DKA prevention, warning signs and first aid before arrival to the hospital.

The scoring system regarding the previous parts of knowledge:

The Scoring system: was 48 points (100%) graded according to the items of interviewing questionnaire. The answers of respondents (nurses) were evaluated using model key answer prepared by researcher. Each correct answer scored one grade and zero for incorrect answer. For each area of knowledge, the scores of the items were summed- up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into percentage scores. Total nurses' knowledge was considered satisfactory if the percent score was ≥ 80% and unsatisfactory if < 80% based on statistical analysis.

Part III: This part was concerned with factors affecting nurses' role regarding care of patients with DKA. It was adapted from **(Abd Elawhabe et al., 2019)** and modified by the researcher to suit the aim of the study. It was translated into Arabic language and it included 47 point divided into three items:

1- **Factors related to nurse**: included 17 points into four sections: physical factors (Three points), psychological factors (Three points), socioeconomic factors (Three points), occupational factors (eight points).

2- **Factors related to health setting:** included 22 points into three sections: factors related to work organization (nine points), factors related to work environment (five points) and factors related to relationship between health care providers (eight points).

3- **Factors related to patient:** included eight points as age, sex, educational level, psychological state, poor health status, ability to follow instructions, good communication between nurse and patient and communication with relatives of patients.

The scoring system for factor items:

The responds to these statements were on two scales as follows: affected =one and not affected = zero. Total score for whole factors assessment tool was calculated for every nurse and the mean of total score was calculated. The nurses' performance was affected with this factor when the total score equal or above 60% and not affected when the total score below 60% based on statistical analysis

Tool II: Observational Checklists (Appendix II):

Observational checklists included practical skills to evaluate nurses' practice regarding care of patients with diabetic ketoacidosis which included 167 steps into seven procedures adapted from **(Burns & Delgado, (2019), Perry et al., (2020), Lister et al., (2020), Peate& Dutton, (2021), Urden et al., (2022), Berman et al., (2022), Lippincott Nursing Procedures, (2022), Taylor et al., (2023)**:

Emergency care for patient on admission: (44 items),

Blood glucose test by using test strip: (17 items),

Urine ketone test strip: (12 items),

Intravenous fluid infusion therapy: (27 items),

Intravenous insulin infusion via volume control administration set: (22 items),

Taking arterial blood gases (ABG) sample: (30 items) and

Routine care for DKA: (15 items).

The Scoring system regarding practice:

For observational checklists consisted of given score one for done step and score zero for the not done, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. The nurses had a satisfactory level of practice when the total score equal or above 80% and unsatisfactory if it below 80% based on statistical analysis.

Content validity and Reliability:

Content validity was conducted to determine whether the content of the tools cover the aim of the study. It was be used to modify the tools. It was ascertained by five jury of expertise (three of them professors and two assistant professors of nursing) who reviewed the tool for clarity, relevance, comprehensiveness, understanding, and applicability. All recommended modifications were done. Cronbach's Alpha that used to measure the internal consistency (reliability of used tool) was 0.0.816 for knowledge, 0.799 for nurses' practice. While factors that affecting nurses' role was 0.0.886.

Table test of reliability of study tools by Cronbach's Alpha

Tool	Cronbach's Alpha	N of Items
Nurses' knowledge	0.816	48
Factors affecting nurses' role	0.886	47
Observational Checklist for nurses' practice	0.799	165

Filed work:

Field work of the present study was executed in twelve months from October 2023 to January 2025, as the following three months prepare literature review, three months prepare the tools, three months collect the sample, two month statistics and five months write the tables and discussion and recommendations.

Before collect the sample, meetings head units to clarify the objective of the study. A nurse's time schedule and the nurses 'assignment sheets were obtained in order to plan data collection. Also meetings all of the study nurses were given the same instruction, the researcher met personally with each of them and explaining the purpose of the study and their role in filled the questionnaire, then giving them the questionnaire to fill it.

Distribution of the questionnaire was done every day at the end of morning shift for nurses working at morning shift and gave the afternoon (evening shift) nurses before starting their work. The researcher gave each nurse individually to fulfill the questionnaire, the time required for completion of the questionnaire was ranged from 30-45 minutes. Observation was done continuously, every day at morning and afternoon shift during the previous procedures before filling the questionnaire.

Pilot study:

A pilot study was performed on five (10%) nurses to test clarity, comprehensiveness and estimation of time needed to fill out the questionnaire sheet. It not excluded from the study sample because of no modifications in the tool.

Administrative and Ethical consideration:

An official permission for data collection in Zagazig University Hospitals was obtained from the hospital administrative personnel by the submission of a formal letter from the Dean of the faculty of Nursing.

Meetings were held between the researcher and the responsible nursing administrative personnel (head nurse of hospital and the head nurse of ICU) to explain the aims and the important of the research topic, as well as, to get better cooperation and facilitations during the implementation phase of the research, also nurses verbal consent were obtained before starting data collection.

The research approval was obtained from ethical committee of faculty of nursing before starting the study. Also, the researcher clarified the objective of the study to nurses included in the study. The researcher was assured maintaining anonymity and confidentiality of subjects' data. Furthermore, nurses were informed that they are allowed to choose whether to participate or not in the study and that they have the right to withdraw from the study at any time.

Statistical analysis:

All data were collected, tabulated and statistically analyzed using SPSS 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean $\pm$ SD & median (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. All tests were two sided. Pearson' correlation coefficient was calculated to assess association between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. p- value < 0.05 was considered statistically significant, p and p-value ≥ 0.05 was considered statistically insignificant (NS).

Results:

Table 1: Clarifies that about two thirds (62.0%) of studied nurses were more than 25 years, female and had technical institute. More than half (56.0%) of them were single. In addition, more than half of studied nurses had experience in ICU more than 3 years and had training courses regarding DKA (54.0%, 58.0%) respectively. While one third only (36.0%) reported that presence of guidelines regarding DKA.

Figure (1): illustrates that 20.0% of the studied nurses had satisfactory level of total knowledge regarding care of patients with diabetic ketoacidosis, while 80.0% of studied nurses had unsatisfactory level of total knowledge score.

Table 2: Shows that the nurses' role affected by nurses' related factors: physical, psychological, social and occupational (84.0, 76.0, 72.0 and 70.0%) respectively. In relation to health setting related factors showed 84.0% organization factors, 72.0% environment factors and 90.0% carrier factors, while 68.0% 0f factors related to patients' factors. While 62.0% of the studied nurses had total factors affecting their role regarding care of patients with diabetic ketoacidosis

Figure (2): demonstrates that 72.0% of studied nurses had unsatisfactory practice level, while 28.0% of the studied nurses had satisfactory practice level.

Table 3: Shows that there is no significant relation between factors affecting nurses' role regarding care of patients with diabetic ketoacidosis and their demographic characteristics P>0.05.

Table 4: shows there is a statistically significant positive correlation between knowledge score and practice score p=0.0001. Also, statistically significant positive correlation between practice score and factors affecting nurses' role p=0.001.

Discussion:

The current study clarified that about two thirds of studied nurses were more than 25 years, female and had technical institute and more than half of them were single. In my opinion this result may be due to greater fraction of nurses in Egypt was female and may also nursing in Egyptian universities were exclusive for female till few years ago and most of bedside nurses graduated from technical institute and bachelor nurses usually working as head nurses or supervisors. These findings were in accordance with **Mekky et al., (2023)** who studied "Effect of an Educational Program on the Nurses' Performance and Patients' Health Outcomes regarding Diabetic Ketoacidosis" reported that two fifths of the studied nurses were more than 25 years, single and more than half of them were female and had technical institute.

Concerning years of experience, the present study showed that more than half of studied nurses had more than three years of experience in ICU, this result agreed with **McCue (2021)** who studied "Self-Efficacy: Nurses' Perceptions of Caring for Patients Living with Diabetes" stated that three quarters of the studied nurses had experience more than three years.

Regarding training courses about diabetic ketoacidosis, more than half of studied nurses reported that they attended training courses regarding DKA, the findings were almost similar to those reported by **Uğur et al., (2015)** who studied "Postgraduate education needs of Nurses' who are caregivers for patients with diabetes" reported that more than two thirds of studied nurses had attended an educational session about diabetes after graduation.

As regard to presence of guidelines about DKA in ICU, the present study clarified that only one third of studied nurses reported that presence of guidelines regarding DKA, this findings in accordance with **Allotey et al., (2024)** who studied "Management of Diabetic Ketoacidosis among Nurses: An Interventional Study at the New Tafo Government Hospital" stated that less than half of the studied nurses reported presence of protocol on the management of DKA in their unit.

The present study clarified that the studied nurses had unsatisfactory level of knowledge regarding care of patients with diabetic ketoacidosis. This unsatisfactory level of knowledge may be due to most of studied nurses had technical institute, lack of training program and nearly, there is no protocol or guidelines about DKA management. this findings in agreement with **Shaker et al., (2020)** who studied "Effect of Training Program on Nurses' Performance and Health Outcomes for Patients with Diabetic Ketoacidosis" declared that majority of studied nurses had unsatisfactory level of knowledge regarding care of patients with diabetic ketoacidosis before implementation of the training program. Also, these results were consistent with **Mekky et al., (2023)** who studied "Effect of an Educational Program on the Nurses' Performance and Patients' Health Outcomes regarding Diabetic Ketoacidosis" found that less than one fifth of studied nurses had satisfactory level of knowledge about DKA and its management pre the program.

The current study revealed that more than two thirds of the studied nurses had unsatisfactory level in total practice regarding care of DKA patients. From the point of researcher's view, the unsatisfactory practice may be

due to lack of knowledge, training, qualification, motivation, years of experience, insufficient equipments, improper environment and workload and nearly, there is no protocol, guidelines, nursing care standard or close observation. this result was similar to **Ali & Ajil (2023)** who studied "Effectiveness of Intervention Program on Nurses` Practices about Caring of Children with Diabetic Ketoacidosis" clarified that majority of studied nurses had poor levels of total practice about care of children with DKA during pretest, Also, **Abdelrahman et al., (2020)** who studied "Assessment of Nurses' Knowledge and Practices Regarding Care Of Patients With Diabetic Coma" illustrated that most of nurses had unsatisfied practice regarding care of patients with diabetic coma.

The current study revealed that the nurses' role was affected by nurses' related factors: physical, psychological, social and occupational, these findings in the same line with **Khan & Muhammad (2022)** who studied "Perspective of Nurses Regarding Factors Affecting Quality of Nursing Care in Intensive Care Units: A Qualitative Study" clarified that the physical and mental health of the nurses had a close relationship with the quality of nursing care in ICU. Also, **Hosawi & Angawi (2022)** who studied "The Effect of Occupational Stress on Critical Care Nurses' Performance in a Tertiary Hospital in Makkah, Saudi Arabia" reported that the critical care department's unique features, such as dealing with uncertainty, violence, deaths, trauma, accidents, and life-threatening cases frequently raised nurses' occupational stress.

Also, the present study represented that the nurses' role was affected by health setting related factors: organizational, environmental and carrier factors, these findings agreed with **Abd Elnaby et al., (2023)** who studied "Relationship between hospital work environment and nurses' performance in critical setting" revealed that several nurses staff suffered from the practice workload, lack of available resources, lack of managers and administrator's appreciation and reword, poor communication and decision making, lack of other staff personnel respect and cooperation especially physicians, poor training and improvement programs this all affected their level of work environment satisfaction and performance.

Moreover, the current study declared that the nurses' role was affected by patients related factors, these findings were in the same consequence with **Soliman et al., (2020)** who studied "Factors Affecting Nurse's Performance Regarding Post-Operative Care of Patient with Open-Heart Surgery" clarified that patients related factors influenced the studied nurses' performance and the over questions of patient about his or her condition, positive interaction and cooperation with the patient were common factors affecting their performance.

Regarding total factors affecting nurses' role, this study displayed that more than three fifths of studied nurses had factors affecting their role, these findings were consistent with **Gouda et al., (2019)** who studied "Factors affecting postoperative nursing performance in the surgical units" reported that the majority of the studied nurses had factors influencing their performance.

Based on the results of the current study, there was no relation between nurses' personal characteristics and factors affecting their role regarding care of patients with diabetic ketoacidosis. These results agreed with **Ali et al., (2024)** who found that there was no statistical significance relation between factors affecting nurse's performance and all socio demographic characteristics except (gender) in Al-fekria Central Hospital. While these findings disagreed with **Atta et al., (2019)** who found that there was a statistically significant relation between nurses' age, years of experience and qualifications with factors affecting nurses' performance

According to the relation between factors affecting nurses' role and nurses' knowledge regarding diabetic ketoacidosis, the current study revealed that there was no significant relation between total factors affecting nurses' role and total nurses' knowledge regarding diabetic ketoacidosis, theses findings was aggregate with **Abd rabo et al., (2024)** who declared that there was no significant relation between nurses' knowledge and factors affecting their performance.

Regarding relation between factors affecting nurses' role and nurses' practice regarding care of patients with diabetic ketoacidosis, the present study clarified that there was a significant relation between factors affecting nurses' role and total nurses' practice. These findings consonant with **Kim & Shin (2018)** who expressed that there was a significant relation between total factors influencing hemodialysis unit nurses' compliance with standard precautions and their total practice.

Conclusion:

According to the results and discussion of the present study, it concluded that the majority of studied nurses had unsatisfactory level of total knowledge score, more than two thirds of the studied nurses had unsatisfactory level in total practice regarding care of DKA patients and nearly two thirds of the studied nurses had factors affecting their role. In addition, there is a statistically significant positive correlation between knowledge score and practice score. Also, statistically significant positive correlation between practice score and factors affecting nurses' role.

Recommendations:

Based on the results of the present study, the following recommendations can be suggested:

- Hospital should have policies, strategies or guidelines about DKA management.
- Periodic refreshing training and educational program to enhance knowledge and practice for nurses regarding DKA.
- A specific procedure book and information resources about DKA in Arabic language should be available.

- Continuous evaluation of nurses' knowledge and practice is essential to identify their needs.
- Nurses should be encouraged to attend workshops, training and conferences to increase their knowledge and skills.

Suggestion for Further Studies:

- Further research should be conducted to evaluate nurses' knowledge, practice and factors affecting care of patients with diabetic ketoacidosis.
- A further study is necessary to identify effects on educational program on nurses' performance and factors affecting nurses' role regarding care of patients with diabetic ketoacidosis

Table 1: Frequency and Percentage Distribution of the Studied nurses According to demographic characteristics (n = 50).

Items	No.	%
Age		
<25 years	19	38.0
≥25 years	31	62.0
Mean ±SD	26.26±3.56	
Median (Range)	25(22-37)	
Gender		
Male	19	38.0
Female	31	62.0
Social status		
Single	28	56.0
Married	22	44.0
Qualifications		
Diploma	6	12.0
Technical institute	31	62.0

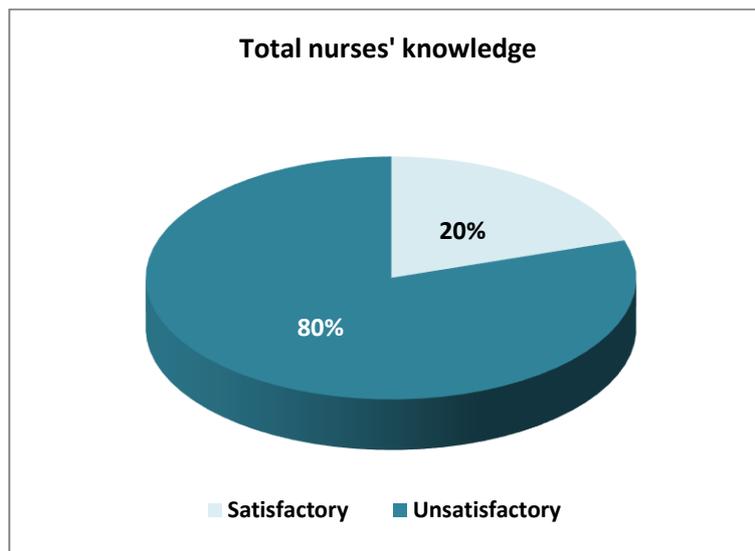|		
Bachelor	13	26.0
Experience years in ICU		
<3 years	23	46.0
≥ 3 years	27	54.0
Mean±SD	4.45±4.86	
Median (Range)	3(six months-21)	
Training courses regarding DKA		
Yes	29	58.0
No	21	42.0
Presence guidelines regarding DKA in ICU		
Yes	18	36.0
No	32	64.0

Figure (1): Percent of nurses' total knowledge level regarding care of patients with diabetic ketoacidosis

Table 2: Frequency Distribution of Factors Affecting Nurses' Role Regarding Care of Patients with Diabetic Ketoacidosis

Items	Affected		Unaffected	
Factors affecting nurses' role	No.	%	No.	%
Nurses' related factors				
Physical factors	42	84.0	8	16.0
Psychological factors	38	76.0	12	24.0
Social factors	36	72.0	14	28.0
Occupational factors	35	70.0	15	30.0

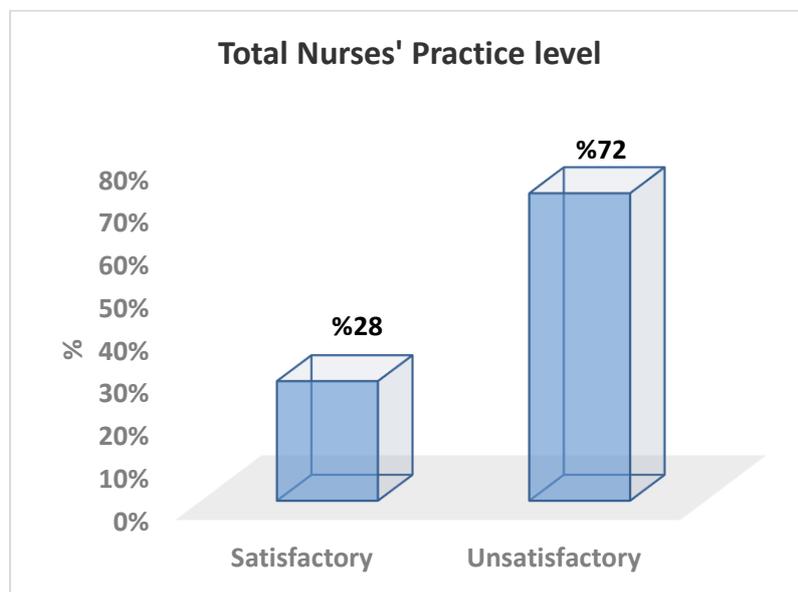|				
Total nurses' related factors	20	40.0	30	60.0
Health setting related factors Organization factors	42	84.0	8	16.0
Environment factors	36	72.0	14	28.0
Carrier factors	45	90.0	5	10.0
Total health setting related factors	37	74.0	13	26.0
Patients related factors	34	68.0	16	32.0
Total factors	31	62.0	19	38.0

Figure (2): Percent of nurses' total practice level regarding care of patients with diabetic ketoacidosis

Table 3: Relation between Factors Affecting Nurses' Role Regarding Care of Patients with Diabetic Ketoacidosis and their demographic characteristics (n = 50):

Items	Factors Affecting Nurses' Role				χ^2	p-value
	Affected n=31		Unaffected n=19			
	No.	%	No.	%		
Age <25 years ≥25 years	 12 19	 63.2 61.3	 7 12	 36.8 38.7	0.017	0.895
Gender Male Female	 10 21	 52.6 67.7	 9 10	 47.4 32.3	1.142	0.285

Marital status						
Single	19	67.9	9	32.1	0.927	0.34
Married	12	54.5	10	45.5		
Qualifications						
Diploma	5	83.3	1	16.7		
Technical institute	16	51.6	15	48.4	3.807	0.15
Bachelor	10	76.9	3	23.1		
Years of experience in ICU						
<3 years	16	69.6	7	30.4	1.035	0.31
≥ 3 years	15	55.6	12	44.4		
Training courses regarding DKA						
Yes	18	62.1	11	37.9	0.07	0.99
No	13	61.9	8	38.1		
presence guidelines regarding DKA in ICU						
Yes	13	72.2	5	27.8	1.247	0.264
No	18	56.3	14	43.8		

$\chi 2$ **Chi square test   non-significant p>0.05**

Table 4 : Correlation matrix between total knowledge score, total practice score and total factors affecting nurses' role score

parameters	Total knowledge score		Total Practice score	
	(r)	p	(r)	p
Total knowledge score	1			
Total Practice score	0.852	0.0001*		
Total Factors score	0.251	0.091	0.446	0.001*

(r) Pearson 'correlation coefficient,   *significant p<0.05

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