

## Barriers that Hinder Caring of Obese Patients in the Intensive Care Unit

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### Abstract

**Background:** Nurses hardly tried to provide professional care in safely and concerned manner for obese patients but they encounter barriers when caring for them . These barriers must be identified for providing safe and quality health care for these patients. **Aim:** This study aimed to assess barriers that hinder caring of Obese Patients in the intensive care units. **Research design:** A descriptive exploratory design was utilized to achieve aim of the study. **Setting:** The study was conducted at the Intensive Care Units in Sayed Galal Hospital. **Subject:** A Convenient sample of (96) nurses in different category of intensive care units and purposive sample of 96 obese patients that present at the time of the study. **Tools:** Three tools were used in this study, **Tool I:** Patient demographic characteristics and medical data. **Tool II:** Nurses self-administered questionnaire which included two parts. Part I: Nurses demographic characteristics, Part II: Nurses' knowledge assessment questionnaire, Part III: Nurses' knowledge assessment questionnaire. **Tool III:** Barriers assessment questionnaire for care of obese patients which included two parts. Part I: Barriers assessment questionnaire regarding clinical practice, Part II: Barriers assessment questionnaire regarding equipment. **Results:** The majority of the studied nurses had satisfactory total knowledge regarding obesity and about two third of them had high barriers in caring of obese patients. **Conclusion:** There was a statistically significant positive correlation between total knowledge and total barriers scores of the studied nurses. **Recommendation:** Provide clear protocol, practice standards, educational programs and ongoing training for nurses about Care of obese patients.

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**Key Words:** Barriers, Intensive care unit, Obese patients.

### Introduction

Obesity can affect nearly every organ system, from the cardiovascular system (CVS) to the endocrine system, central nervous system, and the gastrointestinal (GI) system. In addition, obesity is associated with the growing prevalence of several abnormal conditions (Jin et al 2023). The highly complex etiology of obesity and its dynamic encompassing genetic, physiologic, environmental, psychological, social, economic, and even political factors interact in several ways to promote and aggravate the obesity epidemic (Halpern et al 2022).

Barriers are parts of every working system that affect performance and are directly linked to the immediate working environment. In ICU, numerous perceived barriers can waste the energy and time of nurses. Barriers among ICU nurses include a disorganized workplace, worn-out equipment, wasting too much time explaining the patient's condition to the attendant, and ineffective morning rounds. Inadequate nurse-to-patient ratios, ineffective nurse-to-doctor interaction, and unclear prescription orders can all be barriers in nursing. (Khurshid et al., 2023).

Hospitalization of obese patients has faced patients and healthcare team with many challenges. Professional healthcare teams should provide patients with optimum care through efficiently communicating with obese patients and addressing their problems. The personnel reports recorded which reveal their problems with inappropriate equipment and space, short age of nursing personnel, high pressure while transferring patients, and incidence of physical injuries (Westbury et al., 2023).

### Significance of study

Obesity is rampantly soaring at an alarming rate globally and simultaneously causing an increased incidence, and predisposition to various comorbidities (Afolabi et al 2023). The prevalence of obesity has nearly tripled in recent decades, and it may be responsible for the loss of approximately 4 million people a year. Due to this high mortality rate, most of the world's population lives in countries where more obese people die than those with low weight, reiterating the magnitude of this problem (Derenzo et al 2023).

Available data have shown that in 2022, 12.5% of the global population was obese, with 890 million of adult population being obese and 2.5 billion were overweight. In 2022, the 75th World Health Assembly presented an accelerated plan to stop obesity among member states due to the growing economic impacts of the epidemic and the fundamental projection that about one billion adults will be obese by 2030 (WHO 2023).

Obesity is the most prevailing health problem (15% globally) associated with an increased propensity for development of several medical illnesses, obesity-associated adverse outcomes causing fatal complications that are difficult to manage (Afolabi et al 2023). Egypt ranks 18<sup>th</sup> with the highest prevalence of obesity worldwide. In Egypt, obesity is a serious epidemic issue. One from fifth of patients admitted to ICU with obesity and one from four of them classified as extremely obese (Aboulghate et al., 2021). According to reports, 35.3% of Egyptian adults are obese (Abbas et al 2023).

### Aim of the study:

This study aimed to assess barriers that hinder caring of Obese Patients in the intensive care units through the following:

1. Assess nurse's level of knowledge regarding care of obese patients in the intensive care units.
2. Determine perceived barriers that hinder nurse's practices during care of obese patients in intensive care units.

### Research questions:

1. What is the nurse's level of knowledge regarding care of obese patients in the intensive care units?
2. What is the perceived barriers that hinder nurse's practices during care of obese patients in the intensive care units?

### Subjects and methods:

#### Research design:

A descriptive exploratory research design was utilized in the present study.

#### Study Settings:

The study was conducted at the intensive care units in Sayed Galal Hospital.

#### Study Subjects:

A Convenient sample of 96 nurses in different category of intensive care units that present at the time of the study work in the previous setting and purposive sample of 96 obese patients that present at the time of the study.

#### Tools for data collection:

Data was collected through using the following three tools:

##### Tool I: Patient demographic characteristics and medical data:

It was used to assess patients' demographic data. This part consisted of 7 items including age, gender, BMI categories, diagnosis, history of chronic disease, ICU unit and nutritional status. .

**Tool II: Nurses self-administered questionnaire** designed by the investigator and consisted of two parts as the following:

**Part one: Nurses demographic characteristics** was used to assess nurse's demographic data. This part consisted of 7 items including age, gender, marital status, level of education, years of experience, vocation and attendance of training program about care of obesity.

**Part two: Nurses knowledge assessment questionnaire** was used to assess nurses knowledge about obesity and care

of obese patient in ICU. This part consisted of 17 items of closed end questions and included: 9 questions about knowledge regarding obesity and 8 questions about knowledge regarding causes of obesity.

**Tool III: Barriers assessment questionnaire for care of obese patient** was adapted from (Elsayed,2022) to assess perceived barriers toward caring for bariatric patients among ICU nurses. this tool contains 27 statement on 5 point likert scale. it was modified to two parts of 26 statement on 3 point likert scale:

**Part one:** It was used to assess barriers of caring of obese patient regarding clinical practice and included 20 items.

**Part two:** It was used to assess barriers face critical care nurses during the care of critically ill obese patients regarding equipment and included 6 items.

### Validity:

Content and face validity were conducted to determine whether the tools covered the aim and test its appropriateness, comprehensiveness, accuracy, correction, clearance, and relevance through a jury of 5 experts (assistant professors of medical surgical nursing) from the Faculty of Nursing- Helwan University. Their opinions were elicited regarding tools consistency, rephrasing for some statements, and scoring system. As well as Ethics, values, culture, and beliefs were respected.

### Reliability:

Cronbach's Alpha was used to determine the internal reliability of the tools. The reliability of the questionnaire normally ranges between 0 and 1. Higher values of Cronbach's alpha (more than 0.7) denote acceptable reliability. The tools showed good reliability, it was (0.845) for Nurses 'knowledge assessment questionnaire, (0.816) for Barrier's assessment questionnaire.

### Pilot Study:

The pilot study was done on 10% (9) nurses and (9) patients of the sample to examine the clarity of questions and the time needed to complete the study tools. Based on the pilot study results, no modifications were needed, and subjects of pilot study were included in the actual study sample.

### Fieldwork

- The official letter was issued from the Dean of Faculty of Nursing, Helwan University and was directed to the director of Sayed Glal hospital including the aim of the study to obtain permission.
- Data was collected over a period of six months from the beginning of April to the end of November in 2024.
- The investigator was going to the hospital two days/week (on Sunday & Wednesday) in the morning shift 9.00am to 12.00pm and afternoon shifts.16.00pmto 18.00pm).
- The investigator introduced herself to studied nurses and briefly explains the nature and purpose of the study to each nurse before data collection.
- The studied nurses were assured that the information collected would be treated confidentially and that it would be used only for the study.
- Purpose of the study was simply explained to studied nurses and patients who agreed to participate in the study prior to any data collection.
- The questionnaires were distributed to nurses in their clinical setting. The tools were beginning with self-administered questionnaire that took (10- 15minutes), and then barriers assessment questionnaire for care of obese patient took (15-20 minutes) in the presence of the investigator to answer any questions.
- The investigator checked the completeness of each filled sheet to ensure the absence of any missing data.

### Ethical Considerations:

Official permission was obtained from the scientific research ethics committee of the Faculty of Nursing at Helwan University to conduct the proposed study. Participation in the study is voluntary and subjects were given complete information about the study and their role before signing the informed consent. The ethical considerations will include explaining the purpose and nature of the study, stating the possibility

to withdraw at any time, and confidentiality of the information will not be accessed by any other without obtaining the permission of the participants. Additionally, Ethics, values, culture, and beliefs will be respected.

### Statistical analysis:

Upon completion of data collection, collected data were organized, tabulated and analysed using Statistical Package for Social Science (SPSS), version 24 for analysis. For quantitative data, numbers, percentage, mean, and standard deviation (SD) were used to describe results. For qualitative data which describe a categorical set of data, frequency and percentage of each category were calculated.

### Significance of the results was considered as the following:

Appropriate significance was adopted at  $P < 0.05$  for interpretation of results (Siregar, 2021). The observed associated differences were considered as Highly Significant (HS) if  $p > 0.001$ , not significant if  $p > 0.05$  and significant if  $p < 0.05$ . Appropriate inferential statistics such as chi square test was used as well.

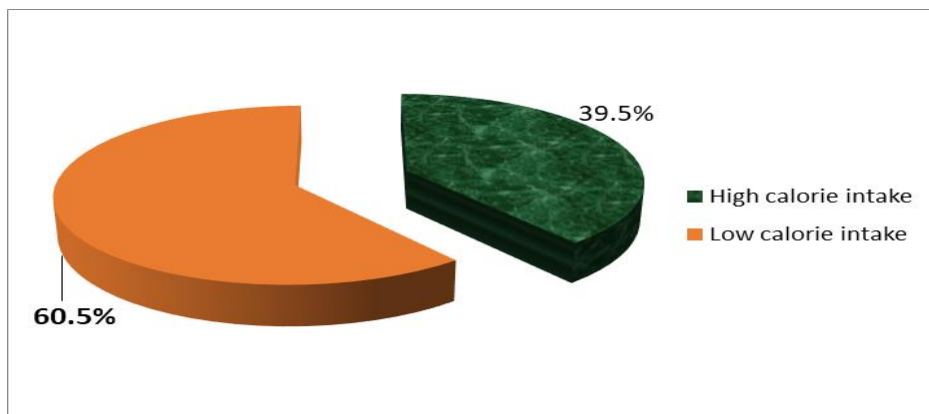
### Results:

**Table 1:** Frequency and percentage distribution of the studied patients according to their demographic and medical data (N=96).

Patients' characteristics		N	%
Age ( in years)	20 <30	21	21.9
	30 <40	35	36.4
	40 <60	40	41.7
Mean $\pm$ SD	45.71 $\pm$ 9.139		
Gender	Male	40	41.7
	Female	56	58.3
BMI categories	30- 34.9	13	13.6
	35-40	52	54.1
	More than 40	31	32.3
Mean $\pm$ SD	37.85 $\pm$ 5.165		
Diagnosis *	Respiratory diseases	31	32.3
	Cardiac diseases	36	37.5
	Neurological diseases	3	3.1
	Trauma diseases	21	21.8
	GIT diseases	13	13.6
History of chronic diseases *	Diabetes mellitus	30	31.25
	Cardiac disease	32	33.3
	Hypertension	49	51.0
	Renal disease	1	1.04
	Chronic obstructive pulmonary disorder	6	6.25
	Liver disease	8	8.33
ICU unit *	Medical ICU	34	35.4
	General ICU	34	35.4
	Cardiac ICU	23	23.9
	Emergency ICU	11	11.4

\* This variable isn't mutually exclusive

**Table (1):** reveals that, 41.7% of the studied patients were in age group 40 to less than 60 years old with a mean age  $45.71 \pm 9.139$  and were males. Also, 54.1% of the studied patients had BMI of 35-40 with a mean  $37.85 \pm 5.165$ , 37.5% of the studied patients had cardiac diseases and 51.0% of them had hypertension as a chronic disease. Additionally, 35.4% of them were present in medical ICU and general ICU respectively.



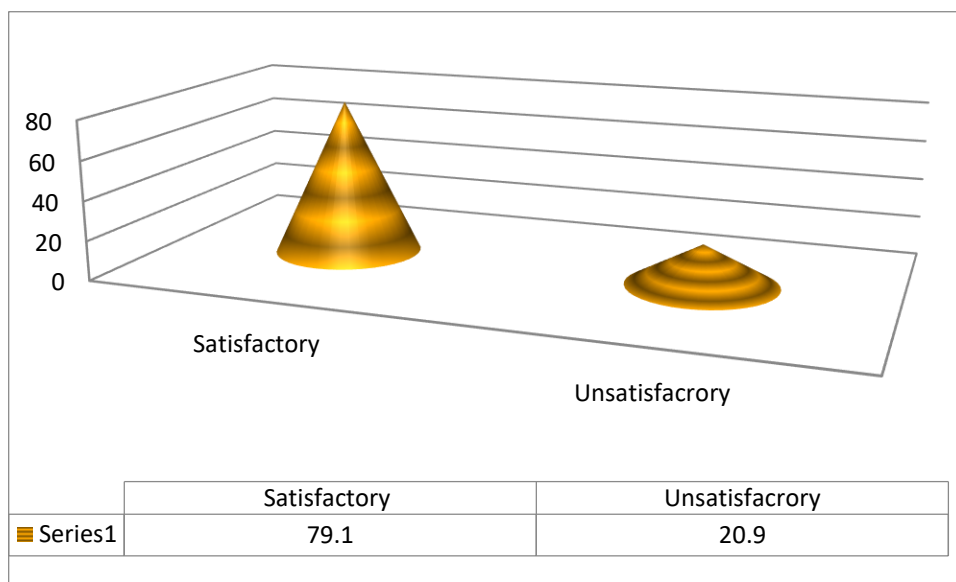
**Figure (1):** Percentage distribution of the studied patients according to nutritional status (N=96).

**Figure (1):** reveals that, 41.7% of the studied patients were in age group 40 to less than 60 years old with a mean age  $45.71 \pm 9.139$  illustrates that, 60.5% of the studied patients had low calorie intake, while 39.5% had high calorie intake.

**Table (2):** Frequency and percentage distribution of the studied nurses according to their demographic and work-related characteristics (N=96).

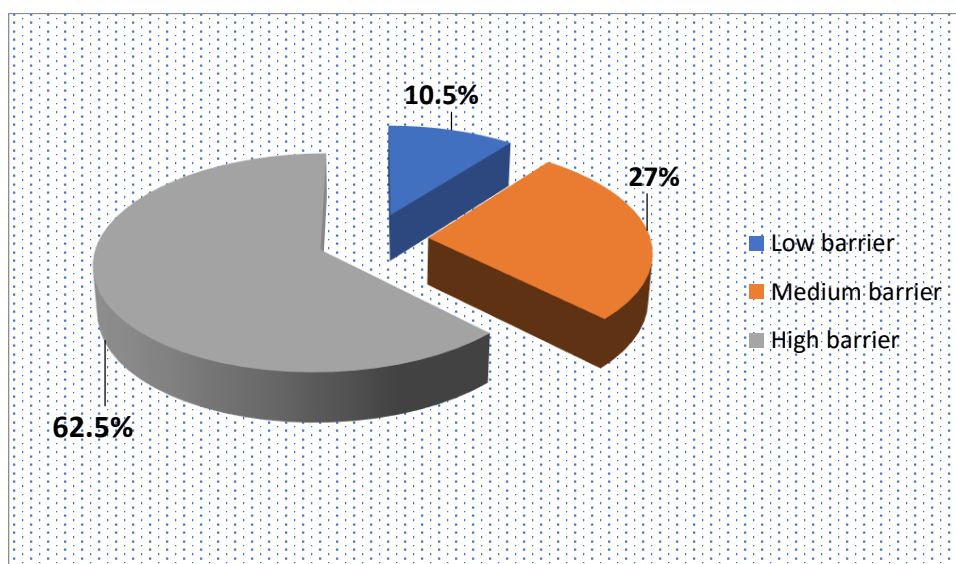
Nurses' characteristics		No	%
Age ( in years)	20 <30	68	70.9
	30 <40	20	20.8
	40 <50	6	6.2
	50 years or more	2	2.1
Mean $\pm$ SD		$25.71 \pm 5.939$	
Gender	Male	15	15.6
	Female	81	84.4
Marital status	Single	40	41.7
	Married	50	52.0
	Divorced	4	4.2
	Widowed	2	2.1
Level of education	Diploma degree	5	5.2
	Technical Institute of Nursing	50	52.0
	Bachelor's degree	40	41.7
	Post graduate study	1	1.1
Years of experience	Less than 5 years	48	50.0
	5- 10 years	26	27.1
	More than 10 years	22	22.9
Vocation (working area)	General ICU	30	31.2
	Cardiac ICU	21	21.9
	Medical ICU	37	38.6
	Emergency ICU	8	8.3
Attending training program about care of obesity	Yes	24	25.0
	No	72	75.0

**Table (2)** shows that 70.9% of the studied nurses were in the age group from 20 to less than 30 years with a mean age  $25.71 \pm 5.939$ , 84.4% of the studied nurses were females and 52.0% of them were married and had technical institute of nursing respectively, 50.0% of them had experience of less than 5 years, as well 38.6% of the studied nurses were working at medical ICU. and 75.0% of them didn't attend previous training program about care of obesity.



**Figure (2):** Percentage distribution of the studied nurses according to total knowledge regarding obesity (N=96).

**Figure (2):** illustrates that 79.1% of the studied nurses had satisfactory total knowledge regarding obesity, while, 20.9 % of them had unsatisfactory total knowledge.



**Figure (3):** Percentage distribution of the studied nurses according to total score of barriers (N=96).

**Fig (3):** illustrates that 62.5% of the studied nurses had high barriers of caring of obese patients, 27 % of them had medium barriers of caring of obese patients. while, 10.5 % of them had low barriers of caring of obese patients.



**Table 10:** Correlation between total knowledge and total barriers scores regarding care of obese patients of the studied nurses (n=96)

Items	Knowledge scores	
	Correlation coefficient (r)	P-Value
Total barriers score	0.703	0.041*

\* significant  $P \leq 0.05$

**Table (10):** shows that there was statistically significant positive correlation between total knowledge and total barriers scores of the studied nurses with p-value  $<0.05^*$ .

## Discussion

**Considering the demographic characteristics** of studied patients, the results of the current study revealed that less than half of the studied patients were in age group 40 to less than 60 years old. From the investigator point of view, this indicates that about half of the studied patients were old due to, hormonal changes that occur during aging may cause the accumulation of fat. The study was conducted in Egypt in contrast with **El Kotb et al. (2022)**, in study entitled "Diversified program and targeting lifestyle modification among obese patients with non-alcoholic fatty liver disease" who illustrated that about half of the studied patients age varied from 30 to 62 years old.

**Concerning gender** of studied patients, the results of the current study clarified that more than half of the studied obese patients were females. From the investigator point of view, this could be due to the prevalence of obesity is almost more in females as compared to males in Egypt. The study was conducted in Austria in contrast with **Großschädl & Bauer (2022)**, in study entitled "The relationship between obesity and nursing care problems in intensive care patients in Austria" who illustrated that about half of the obese patients in ICU were female.

**Concerning BMI categories** of studied patients, the current study results illustrated that more than half of the studied patients had BMI of 35-40. From the investigator point of view, most of obese patients had comorbidities which made them higher risk for entrance to ICU and their status more difficult to be treated in other place in hospital. The study was conducted in Australia and New Zealand in disagreement with **Subramaniam et al. (2023)**, in study entitled "The impact of body mass index on long-term survival after ICU admission due to COVID-19: A retrospective multicentre study" who illustrated that about half of patients in ICU had a BMI of 30 kg/m<sup>2</sup>.

In addition, the study was conducted in the south of Brazil in disagreement with **Athayde et al. (2024)**, in study entitled "Prevalence of malnutrition during patient admission in Intensive Care Unit (ICU) through GLIM criteria: a cross-sectional study" who illustrated that less than one third in ICU had a high BMI.

**As regard Diagnosis** of studied patients, the current study results illustrated that more than one third of the studied patients had cardiac diseases. From the investigator point of view, obesity is associated with increased numerous complications including heart disease. The study was on the same line with **Hassanin et al. (2022)**, in study entitled "Prevalence of obesity and its association with cardiometabolic risk factors, heart failure phenotype and mortality among patients hospitalized for heart failure in Egypt" who illustrated that among obese patients, heart failure, ejection fraction prevalence was nearly double that of non-obese patients and more than half of obese patient had history of myocardial infarction and less than one third had arterial fibrillation.

**Regarding history of chronic diseases** of studied patients, the current study results illustrated that, more than half of the studied patients had hypertension. From the investigator point of view, obesity is associated with numerous comorbidities such as hypertension. The study was conducted in Australia, These results were in contrary to **Griffin et al. (2021)**, in study entitled "Efficacy of a dietitian-led very low calorie diet (VLCD) based model of care to facilitate weight loss for obese patients prior to elective, non-bariatric surgery" who illustrated that more than one-third of the obese patients had history of hypertension.

**In the current study**, the results illustrated that, more than one third of the studied patients were present in medical ICU and general ICU. From the investigator point of view, this result might indicate that obesity more related to medical disease. The study was conducted in United Kingdom in congruent with **Zhang et al. (2021)**, in study entitled “Association between obesity and short-and long-term mortality in patients with acute respiratory distress syndrome based on the berlin definition.” Who stated that more than half of obese patients present in medical ICU and more than one third present in surgical ICU/trauma ICU.

**Concerning nutritional status** of studied patients, the current study results illustrated that more than half of the studied patients had low calorie intake. From the investigator point of view this indicated that obesity might be related to other causes like genetic. The study was conducted in Saudi Arabia. in contrast with **Shatwan & Almoraie (2022)** in study entitled “Correlation between dietary intake and obesity risk factors among healthy adults”, and stated that more than two thirds of studied adult patient had obesity despite low calorie intake.

**Regarding age** of studied nurses, the current study results illustrated that more than two third of the studied nurses were in the age group from 20 to less than 30 years. From the investigator point of view, this indicate that studied nurses were within the active –working age group and can tolerate nature of work in ICU. The study was conducted in Korea in agreement with **kim et al. (2021)**, in study entitled “Effects of infection control education for nursing students using standardized patients vs. peer role play.”, and stated that the predominant age group of the studied nurses was between 20-30 years old.

**In the same perspective**, the results of the current study revealed that, majority of the studied nurses were female. From the investigator point of view this result is due to the entry of a large number of females into the nursing profession more than males and a little number of men occupying this job in Egypt. The study was conducted in Egypt in the same line with **Huang et al. (2020)** in study entitled “obesity in patients with COVID-19: a systematic review and meta-analysis.” Who found that near two thirds of nurses were females.

Similarly, this finding was in agreement with **Kausar et al. (2021)**, in Egypt in study entitled “knowledge, attitude and practices of obesity and weight management among nurses”, and found that more than two thirds of nurses in ICU were females.

On the other hand, this finding was contraindicated with **Abukhelaif et al. (2019)**, in Saudi Arabia in study entitled “Personal protective equipment knowledge and practices among nurses working at AlBaha King Fahad Hospital, Saudi Arabia.” who mentioned that most of the professional nurses were male.

**Concerning the same context**, the results of the current study revealed that more than half of the studied nurses were married. From the investigator point of view, this result is due to most of the studied sample ranged between 20\_30 years old. The study was conducted in Egypt in inconsistent with **Ahmed, et al (2022)** in study entitled “Relationship between occupational stress, burnout and job performance among nurses working in ICUs at Benha University Hospital.”, and illustrated that less than half of them were married.

**With respect to educational level** of studied nurses, the results of the current study demonstrated that more than half of the studied nurses had technical institute of nursing. From the investigator point of view, this result is due to majority of the studied sample ranged between 20\_30years old. The study was conducted in Egypt in agreement with **Mansour et al. (2019)**, in study entitled “Nurses’ performance for patient undergoing bariatric surgery.” Who concluded that the most of studied sample had technical institute.

On the other hand, this finding was contraindicated with **Fasoi et al .(2021)** , in study entitled “Assessment of nursing orkload as a mortality predictor in Intensive Care Units (ICU) using the nursing activities score (NAS) scale” who found that the highest percentage of studied nurse's was graduated from college of Nursing and study was conducted in Ethiopia in contrary with **Liyew et al .(2021)**, entitled “Practices and barriers towards physical assessment among nurses working in Intensive Care Units: Multicenter cross sectional study.” Who concluded that more than two thirds of studied nurses in ICU had bachelor of science degree.



**As regard to years of experience** of studied nurses, the results of the current study clarified that half of the studied nurses had experience of less than 5 years. From the investigator point of view, this might because majority of the studied sample ranged between 21\_30years old. The study was conducted in Adna, Turkey in disagreement with **Turkmen et al. (2021)**, in study entitled "Examination of attitudes of nurses working in surgical services toward obesity and obese patients "who illustrated that most of the studied sample was less than 5 years of experience.

In the other hand the study was conducted in Egypt in inconsistent with **shawara et al. (2023)**, in study entitled "Effect of implementing educational program about patients' morbid obesity care on nurses' performance at Intensive Care Unit "who illustrated more than two thirds of studied nurses was less than 5 years of experience.

**Regarding Vocation (working area)** of studied nurses, the results of the current study reveals that more than one third of the studied nurses were working at medical ICU. From the investigator point of view this result might due to obese patient affected with medical abnormality such as diabetes and its complication , hypertension and its complication as acute kidney injury and hypertensive encephalopathy are more than patients affected with other condition so that number of nurses in medical ICU more than in other ICU . The study was conducted in Egypt in contrary with **Basuony et al. (2023)**, in study entitled "Relation between occupational hazards and nurses' job burnout at intensive care units." Who illustrated that less than one third of nurses work in medical ICU.

**Pertaining to nurses attendance to training program** about care of obesity, the results of the current study revealed that more than two thirds of the studied nurses didn't attend previous training program about care of obesity. From the investigator point of view, this result might be due to the lack of administrative support, increasing workload in clinical area, lack of motivation with the hospital and have no staff development program related to the care of a critically ill obese patients. The study was in agreement with **Turkmen et al. (2021)**, who illustrated that majority of nurses didn't have education about obesity.

Similarly, this study was conducted in Egypt in agreement with **Esmael et al. (2021)**, in study entitled "Effect of obesity on nurses performance and physical well bing at Zagazig University Hospitals "Who illustrated that more than two thirds of studied nurses didn't attended training courses about obesity.

**Pertaining to answering the first question; What is the nurse's level of knowledge regarding care of obese patients in the intensive care units?** the results of the current study indicated that more than two third of the studied nurses had satisfactory total knowledge regarding obesity. From the investigator point of view, this result might indicate that nurses had base of knowledge for their practice. The study was conducted in Iraq in contrast with **Esmael et al (2021)**, Who illustrated that more than half of studied nurses had satisfactory total knowledge regarding obesity compared to some of them had unsatisfactory total knowledge.

**As regard total score of barriers in care of obese patients**, the results of the current study illustrated that about two thirds of the studied nurses had high barrier of caring of obese patient. From the investigator point of view, this result might indicate that difficulty and high demand of obesity caring. The study was conducted in Iraq in contrast with **Lopes et al .(2021)**, Who illustrated that more than two thirds of studied nurse agreed that there was a lot of difficult in managing individuals with obesity.

**Pertaining to correlation between total knowledge and total barriers scores of care of obese patients**, there was statistically significant positive correlation between total knowledge and total barriers scores of the studied nurses. From the investigator point of view, this result might be due to knowledge consider as base for practice so that if nurses didn't have enough knowledge, they would face a lot of barriers in patient care.

## Conclusion

**Based on the findings of the present study, it can be concluded that:**

The majority of the studied nurses had satisfactory total knowledge regarding obesity and about two thirds of them had high barriers in caring of obese patients. Also there was a statistically significant positive correlation between total knowledge and total barriers scores of the studied nurses.

**Recommendations**

**Based on the findings of the present study, the following recommendations were suggested:**

- Provide clear protocol, guidelines and practice standards for the care of obese patients.
- Provide educational programs and ongoing training for nursing workers focusing on care for critically ill patients with obesity.

**Recommendations for further studies:**

- Replication of the study on a larger sample acquired from different geographical areas for generalization of the findings.

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