

## Factor Affecting Nurses' Performance Regarding Nursing Management of Patients with Hepatic Encephalopathy

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### Abstract

**Background:** Hepatic encephalopathy (HE) is a decline in brain function that occurs as a result of severe liver disease. The nurses play a vital role in improving hepatic encephalopathy patient prognosis through providing quality of care to those patients. So, it is important to understand nurses' perception and to comprehend the factors influence their care. **Aim of the study** was to assess factors affecting nurses' performance regarding nursing management of patient with Hepatic encephalopathy. **Subjects and methods: Research design:** A descriptive study was utilized to meet the aim of this study. **Settings:** Data were collected from Medicine intensive care units and Endemic ICU at Zagazig University Hospitals. **Subjects:** A convenience sample of all available nurses who working in the above mentioned setting. **Tools of data collection:** Three tools were used, An Interview Questionnaire, Observational Checklist and Factors Affecting Nurses' Performance Questionnaire. **Results:** This study revealed that only 14.0% and 24.0% of the studied nurses had satisfactory knowledge and practice level respectively regarding management of patient with HE, as well as 90.0% of the studied nurses reported that their performance was affected by nurse, patient, and work related factors. **Conclusion:** This study concluded that the highest percentage of the studied nurses has unsatisfactory total knowledge and practice level regarding management of patient with HE. Also, the most of the studied nurses' performance was affected by nurse, patient, and work related factors. **Recommendations:** The nurses working in the study settings is need for more addressing the factors affecting performance by hospital administration in order to improve their performance regarding management of patients with HE.

**Keywords:** Factors affecting Nurses' Performance, Hepatic encephalopathy management.

### Introduction:

Hepatic encephalopathy (HE) development is attributed to the accumulation of neurotoxic substances including ammonia in the bloodstream and brain<sup>(1)</sup>, as the liver can't adequately remove toxins from blood and this causes buildup of these toxins in blood stream, which can lead to brain damage. HE is a wide range of neuropsychological clinical findings to coma<sup>(2)</sup>.

Hepatic encephalopathy is usually observed in patients with cirrhosis<sup>(3)</sup> as up to fifty percent of cirrhotic patients is suffer from at least one attack of HE<sup>(4)</sup>. HE is associated with increased morbidity and mortality and imposes a significant burden on

the caregivers and healthcare system<sup>(5)</sup>. It is characterized by personality changes, intellectual impairment and a depressed level of consciousness<sup>(6)</sup>.

As well as HE can present with a wide range of signs and symptoms. Initial signs of HE can be hyperreflexia, rigidity, tremors, positive Babinski's sign, or asterix (jerky movements of hands-on outstretched arms at wrists). Severe HE presents with agitation, disorientation in time-space and person, somnolence, rapidly developing confusion, and ultimately coma. The physical exam may demonstrate signs of chronic liver disease<sup>(7)</sup>. The major precipitating factors of HE were infection

(pneumonia, urinary tract infection, spontaneous bacterial peritonitis, cellulitis, sepsis of unknown source), gastrointestinal bleeding and electrolyte imbalance (hypokalemia and hyponatremia). Dehydration, constipation and unknown precipitants are considered <sup>(8)</sup>.

In general, nursing care of patients with HE includes evaluation of mental status, prevention of aspiration pneumonia, assessment of potential triggers of HE (particularly bacterial infections and GI bleeding), nutritional support, prevention of skin breakdown, and bowel cleansing as well as proper administration of medications to control HE is a key for these patients. Also patients with HE should be reoriented to time, place, and person frequently <sup>(9)</sup>.

Critical care nurses play a vital role in facilitating communication among all health care provider and patients. Nurses should have special skills and knowledge about the latest evidence to prevent complications because they are the person who spends the most time caring the patient <sup>(10)</sup>. Nurses in Critical care units should have the ability to maintain the patient's physiological and psychosocial stability with responding to their unique needs. Critical care nurses should be able to provide safe, healing and caring environment, and capable to adapt to any change that happened to patients' condition <sup>(11)</sup>.

Many factors may affect nurses caring of patients with HE and affecting their ability to apply its components such as lack of nurses' knowledge, inadequate time, shortage of nursing staff, increased work load and unavailability of supplies and equipments; So, it is important to understand nurses' perceptions and to comprehend what factors influence their care to patients <sup>(12)</sup>, because of their vital role in the global provision of health care <sup>(13)</sup>.

### Significance of the Study:

Hepatic encephalopathy occurs as complications of advanced liver disease such as liver cirrhosis which consider the end-stage of different chronic liver diseases, and is often neglected until complications like hepatic encephalopathy occurs, as 30-45% of patients with cirrhosis develop HE. Egypt had the highest age-standardized mortality rate for cirrhosis and according to the World Health Organization WHO (2017) liver disease deaths in Egypt rank number one in the world <sup>(14)</sup>. As well, there are approximately 7-11 million cases of HE prevalent in the United States, with approximately 150,000 patients newly diagnosed each year <sup>(15)</sup>.

Nurses are critical in the delivery of essential health services and are core in strengthening the health system <sup>(16)</sup>. The role of the nurse in recognizing symptoms of HE is critical to care. Daily assessment by the nurse may prevent symptoms from progressing from minor non-life-threatening to life-threatening issues requiring urgent intervention <sup>(17)</sup>. Thus, assess the factors affecting nurses' performance regarding management of patients with hepatic encephalopathy is more important.

### Aim of the Study:

The aim of the study was to assess the factors affecting nurses' performance regarding nursing management of patients with hepatic encephalopathy.

### Research questions:

- What is the level of nurses' knowledge regarding nursing management of patients with hepatic encephalopathy?
- What is the level of nurses' practice regarding nursing management of patients with hepatic encephalopathy?
- What are the factors affecting nurses' performance regarding care of

patients with hepatic encephalopathy?

### Subjects and Methods:

#### Research Design:

Descriptive study was utilized to meet the aim of this study.

#### Study Setting:

This study was conducted in Medicine intensive care units (Hematemesis and Paid ICU) and Endemic ICU at Zagazig University Hospitals.

#### Study Subjects:

A convenience sample of all available nurses who working in the Medicine intensive care units (32 nurses) and Endemic ICU (18 nurses) at Zagazig University Hospital during the period of the study. Their total number was 50 nurses.

#### Tools of data collection:

Three tools were used in the current study as the following:

##### **Tool I: An interview questionnaire:**

This tool was designed by the researcher to assess nurses' level of knowledge regarding management of patient with HE based on review of relevant literatures Papadakis & McPhee<sup>(18)</sup>; Smeltzer et al.,<sup>(19)</sup>. It comprised the following parts:

**Part 1: Nurses' demographic data:** This covered by eight closed ended questions as age, sex, social status, and residence, qualification, experience years in nursing field, experience years at endemic and medicine intensive care units, and attendance of training courses about management of patients with HE.

**Part 2: Nurses' knowledge questionnaire:** This part was concerned with assessment of nurses' knowledge regarding care of patients with HE. It composed of two sections as the following:

**The first section** concerned with assessment of nurses' knowledge regarding HE disease as definition, signs, symptoms, causes, risk factors, types, grades, diagnosis, methods of treatment, and complications, which consists of 23 questions in the form of multiple choice questions (MCQ).

**The second section** concerned with assessment of nurses' knowledge regarding nursing care of patients with HE, which consisted of 33 questions (22 questions in the form of MCQs and 11 questions in the form of true and false).

**Scoring system:** The knowledge items, a correct answer was scored 1 and the incorrect zero. 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 area. These scores were converted into percent scores. The knowledge was considered satisfactory if the percent score was 70% or more and unsatisfactory if less than 70% based on data entering and statistical analysis.

##### **Tool II: An Observational checklist:**

This tool was used to assess the adequacy of nurse's practice regarding the care of patients with HE. It was developed by the researcher based on pertinent literature Checklists for Nettina,<sup>(20)</sup>; Wilkinson et al.,<sup>(21)</sup>. It covered the following areas of practice as;

- **Application Glasgow coma scale to assess level of consciousness (LOC) (3 scales included 15 items):**
  - Eye Response Scale (4 steps)
  - Verbal Response Scale (5 steps)
  - Motor Response Scale (6 steps)
- **Enema Administration (30 items):**
  - Before procedure steps (14 step)
  - During procedure steps (7steps)
  - After procedure steps (9steps)

- **Nasogastric Tube Insertion (23 items):**
  - Before procedure steps (8 steps)
  - During procedure steps (9 steps)
  - After procedure steps (6 steps)
- **Nasogastric Tube Feeding (25 items):**
  - Before procedure steps (7 steps)
  - During procedure steps (10 steps)
  - After procedure steps (8 steps)
- **Nasogastric Tube Irrigation (17 items):**
  - Before procedure steps (7 steps)
  - During procedure steps (5 steps)
  - After procedure steps (5 steps)
- **Oral Care (15 items):**
  - Before procedure steps (4 steps)
  - During procedure steps (7 steps)
  - After procedure steps (4 steps)
- **Oropharyngeal suctioning (33 items):**
  - Before procedure steps (7 steps)
  - During procedure steps (12 step)
  - After procedure steps (14 step)
- **Administration of medication (28 items):**
  - Before procedure steps (8 steps)
  - During procedure steps (14 step)
  - After procedure steps (6 steps)

**Scoring system:** Each practice item observed to be done correctly was scored 1 and the not-done zero. For each area of practice, the scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the area. These scores were converted into percent scores. The practice was considered satisfactory if the percent score was 70% or more and unsatisfactory if less than 70% based on data entering and statistical analysis.

### **Tool III: Factors affecting nurses' performance Questionnaire:**

This tool was used for assessing the factors affecting nurses' performance regarding nursing management of patient with HE. It included three sets of factors (78 items), namely Nurses' related factors (27 items), Patient related factors (9 items), and Work related factors (42 items). Nurses' related factors such as (physical, psychological, socio-economic, and occupational factors); Patient related factors such as (patient's age, gender, difficulty health states, psychological states, ability to communicate, mobility, not following instructions, communication with the patient's family, and privacy and confidentiality of information); Work related factors such as (the relationship with colleagues from the nursing staff, relationship with doctors, appropriate appreciation from others, work organizing, and work environment).

**Scoring system:** Each factor item observed to affect on nurses' performance was scored "one" and the not affect was scored "zero". The scores of the three factors were summed-up and the total divided by the number of the items, giving a mean score for the total factors. This was converted into a percent score. The factor was considered to have a affected on nurses' performance if the percent score was 70% or more and unaffected on nurses' performance if less than 70%.

### **Content Validity and Reliability:**

Once the tool was prepared in their preliminary form, the data collection tools were presented to a panel of three experts from nursing field, these include three professors of medical surgical nursing from faculty of nursing at Zagazig University. These experts reviewed the tools for relevance comprehensiveness, accuracy, clarity, and ease of administration. Minor

modifications were done according to the experts' judgement. Internal consistency reliability of all items of the tools was assessed using a Chronbach's Alpha test and presented as the following: 0.84 for knowledge (tool I), 0.64 for practice (tool II), and 0.93 for Factors that affect nurses' performance questionnaire (tool III).

### **Field work:**

The researchers secured all necessary permissions from the Director of Zagazig University Hospital, the General Medical Hospital, and the ICU directors. The researcher visited the study settings, met with the director, explained to them the aim of the study as well as the process of collection of the data to have their cooperation during data collection and to set its schedule so that it does not interfere with nurses' work. The researcher then met with the nurses individually, explained to them the aim of the study and the process of collection of the data, and invited to participate after being informed about their rights.

The researcher met with each nurse individually to fulfil the questionnaires that related to nurses' knowledge and factors affecting their performance, while observational checklist was collected by the researcher through observing the nurses during their actual practices with the patients. The average time required for the completion of each tool was around 30-40 minutes. The data collection process of this study was carried out through seven months in the period from the beginning of April to the end of October (2020). The researcher collected data from two shifts, the morning and the afternoon shifts, three days per week.

### **Pilot study:**

A pilot study was conducted on five nurses representing 10% of the main study sample. The purpose of the pilot was to check and ensure the

clarity, applicability, and feasibility of the tools, to identify the difficulties that may be faced during data collection. It also helped to estimate the time needed to fill-in the forms. Since no modifications were done in the tool, those who shared in the pilot study were included in the main study sample.

### **Administrative and Ethical Considerations:**

The research approval was obtained from the faculty ethical committee before starting the study. The researcher clarified the objectives and aim of the study to nurses included in the study before starting. Researcher assured the anonymity and confidentiality of the nurses included in the study. The nurses under study were informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time without giving any reasons. The researcher assured that the data collected and information will be confidential and would be used only for the purpose of study.

### **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 & (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. Spearman correlation coefficient was calculated to assess relationship 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 (S), and p-value  $\geq$  0.05 was

considered statistically insignificant (NS).

### Results:

**Table 1:** Frequency and percentage distribution of demographic characteristics of studied nurses (n=50) clarifies that studied nurses' age range between 19 - 43 with mean± SD 31.6±7.6 years, more than three quarters (76%) of the studied nurses were females, 66.0% were married, and 52% living in urban area. Regards qualification, the same table shows that the highest percentage (46%) of studied nurses had diploma degree, while only 14% had nursing bachelor's degree. In addition, two thirds (66.0%) of studied nurses had ≥10 experience years in nursing field, while more than half (52%) of nurses had < 5 experience years at medicine and endemic ICU. Furthermore, the current table shows that more than three fifths (64%) of studied nurses had attended training courses about management of patients with hepatic encephalopathy.

**Table 2:** Total Factors Affecting Nurses' Performance regarding nursing management of patient with Hepatic Encephalopathy (n=50) clarifies that 90.0% of the studied nurses their performance was affected by nurse, patient, and work related factors with mean± SD 58.6±6.5 and range from 32 to 71.

**Table 3:** Relation between Studied Nurses' Total Knowledge and their Demographic Characteristics (n=50) shows that there was statistically insignificant relation between nurses' total knowledge level score and their demographic characteristics as  $p>0.05$ .

**Table 4:** Relation between Nurses' Total Practice score and their Demographic Characteristics (n=50) clarifies that there was statistically significant relation between nurses' total practice level score and their age ( $p=0.02$ ), sex ( $p=0.047$ ), education ( $p=0.03$ ), experience years in nursing field ( $p=0.039$ ), experience in endemic

and medicine ICU ( $p=0.001$ ). It is observed for us that nurses' practice level better among female nurses whose age ≥35 years old and diploma graduated. In addition nurses who spend long experience years in nursing field especially at endemic and medicine ICU units and who's attained training courses regarding management of patient with hepatic encephalopathy had better practice.

**Table 5:** Relation between Total Factors affecting nurses' performance level score and Their Demographic Characteristics (n=50) shows that there was no statistically significant relation between factor affecting nurses' performance level score and their demographic characteristics as  $p>0.05$ .

**Table 6:** Correlation matrix between studied nurses' Total knowledge score, practice score, factor affecting nurses' performance score, age of nurses and experience per years (n=50) shows that there was statistically significant positive correlation between studied nurses' total knowledge score and practice score ( $p=0.014$ ). As well as, there was statistically significant negative correlation between factors affecting nurses' performance and their practice score ( $p=0.041$ ). Furthermore, there was a statistically significant positive correlation between nurses' practice score and age of nurses ( $p=0.03$ ), experience years in nursing field ( $p=0.004$ ), and experience in medicine and endemic ICU units ( $p=0.002$ ).

**Figure (1)** demonstrates that only 14.0% of the studied nurses had satisfactory knowledge level, while 86% of studied nurses had unsatisfactory level knowledge regarding management of patients with hepatic encephalopathy.

**Figure (2)** illustrates that only 24.0% of the studied nurses had satisfactory practice level, while 76.0% of nurses had unsatisfactory practice

level regarding management of patients with HE.

**Figure(3)** clarifies that 90.0% of the studied nurses their performance was affected by nurse, patient, and work related factors with mean $\pm$  SD 58.6 $\pm$ 6.5 and range from 32 to 71.

## Discussion

Early detection of any abnormal symptoms/signs and proper management and follow-up is effective in reducing the rate of hospital re-admissions of patient with hepatic encephalopathy Chauhdry; Mitchell et al.,<sup>(22)</sup>. Patients with HE require nursing care anywhere in the healthcare system. Therefore it is beneficial for all nurses to have a basic knowledge and practice about HE Bager<sup>(23)</sup>. Therefore, the study aim was to assess nurses' performance regarding nursing management of patient with HE at endemic care unites at Zagazig University hospitals.

The main findings of the current study indicate that a generally large proportion of the nurses have unsatisfactory knowledge and practice regarding nursing management of patient with HE. The most of nurses have high perception of the factors hindering their proper performance of this management. This part discussed the results of the current study comparing them with the recent literature and other relevant studies. A discussion will be covered five main parts in the following sequences:-

### Part I. Demographic characteristics of studied nurses:

The present study sample involved 50 nurses; more than half of studied nurses their age below thirty-five years. This finding is consistent with Abd-Elrhaman & Ghoneimy<sup>(24)</sup> who assessed "Effectiveness of Educational Program Regarding Professional Nursing Ethics on Workplace Civility" which conducted at ICU units at Benha University Hospital;

found that; the majority of the nurses' ages ranged from 25-35 years .

The current study revealed that the highest percentage of studied nurses were females, has either diploma degree or technical institute in nursing. The high ratio of female to male nurses is still reported in many studies since the admission of male students in nursing schools only dates less than two decades so that the nursing workforce is still more feminine. Many studies are confirming this finding<sup>(25) (26)</sup>.

This finding agrees with Mahmoud et al.,<sup>(27)</sup>who mentioned in study titled "Impact of Educational Program for Hepatic Encephalopathy on Nurses Performance and Patients Outcomes" that majority of nurses under study were having diploma degree and about two thirds of nurses were female.

Also, **Ahmed**<sup>(28)</sup> study entitled "Nurses' Performance regarding Management of Patients with Hepatic Encephalopathy"; his results concerning the level of education show that most of nurses were nursing Institute graduate. While these findings were disagreed with **Abd Elhaq**<sup>(29)</sup> who mentioned in her master thesis entitled "Nurses' performance regarding management of patients with hepatic encephalopathy"at Ain Shams University, that more than half of studied nurses were male.

Regarding to the social status and experience years of studied nurses, the present study found that two thirds of studied nurses were married and had  $\geq 10$  experience years in nursing field. This finding is agree with **Mohamed**<sup>(30)</sup> who mentioned in study entitled "Effect of critical nursing management on hepatic encephalopathy patients' outcomes", that more than three quarters of studied nurses were married and had  $\geq 10$  experience years. While this finding was disagreed with **Mahmoud**

**et al.** <sup>(27)</sup> who revealed that more than half of studied nurses were single.

Concerning experience years of studied nurses at endemic and medicine ICU, the current study revealed that more than half of nurses had < 5 experience years at endemic and medicine ICU. This finding is consistent with **Mahmoud et al.**, <sup>(27)</sup> who mentioned that about two thirds of studied nurses had less than 5yrs experience in Intensive Care Units at Benha University Hospital.

As regard to attendance of training courses about nursing management of patients with HE, this study reported that than three fifths of studied nurses had attended training courses about management of patients with hepatic encephalopathy. This finding agreed with **Ahmed**, <sup>(31)</sup> who revealed that training courses and programs are two components of nurses' development. Thus her study recommended that continuous education in nursing is needed to promote development of knowledge and practice and improve quality of care for patients. The training courses played important role in enhancing and updating nurses' knowledge and performance.

#### **Part II: Studied Nurses' Total knowledge regarding management of patients with hepatic encephalopathy:**

With respect to **total nurses' knowledge**, the current study demonstrate that the majority of the studied nurses had unsatisfactory total level of knowledge, this might be due to that the wide base of nurses' education were either nursing diploma or technical institute, lack of motivation, ICU nurses had not enough time to frequent attend conferences and workshops to enrich and update knowledge, ICU work load with shortage of the staff number and insufficient courses.

This finding in the same line with **Mahmoud et al.** <sup>(27)</sup> who revealed that more than three quarters of the studied nurses have unsatisfactory level of total knowledge on pre-implementation of the designed program. As well, **Morton and Fontaine** <sup>(32)</sup> confirmed that nurses must have knowledge and experience and that improve patient outcome . Moreover, **Linton** <sup>(33)</sup> assured that, the nurse should have much knowledge and skills in the clinical aspects of nursing. Nurses should continue learning to enrich their knowledge because health care system and knowledge about health care is continually changing and growing.

Moreover, **Chaney et al.** <sup>(34)</sup> emphasized that the nurse practitioner should enrich knowledge about prevention and management of hepatic encephalopathy that play a vital role in improving health care outcomes. Also, **Skår** <sup>(35)</sup> confirmed that understanding knowledge which used in everyday nursing practice is required to improve of educational preparation and quality in health care. Likewise, **Ann** <sup>(36)</sup> emphasizes that inadequate nurses' knowledge and performance indicate poor quality of the care given.

While this result is in contrast to **Alradi** <sup>(37)</sup> who found in her study about "Nurses' Knowledge and practice regarding Care of Patient with Hepatic Encephalopathy in Ibsina Hospital" that the total nurses knowledge regarding care of patient with hepatic encephalopathy was about 75.7% this is good result. This acceptable good knowledge because most of nurses with higher degree of qualification and have a long experience.

#### **Part III. Studied Nurses' Total practice regarding management of patients with hepatic encephalopathy:**

With respect to **total nurses' practice**, this study revealed that less

than one quarter of the studied nurses had satisfactory total practice level, while more than three quarters of studied nurses had unsatisfactory practice level regarding management of patients with HE. From the point of the researcher's view, this could be due to the unsatisfactory knowledge of the studied nurses which affect negatively on their practices as well as the highest percentage of studied nurses had diploma degree, they were newly graduated, their experience years at medicine and endemic ICU less than five years, additionally bachelor degree nurses usually worked as a head nurses not bedside when they worked in governmental hospital.

Moreover, this could be due to shortage of staff nurses which leads to work overload in these units, poor management of nurses time and lack of job description which lead to overlapping of the basic nurses activities by non-nursing activities, in addition to insufficient financial reward to the nurses, unavailability of guideline books about the nursing care, and lack of frequent in-service training.

The current study in the same context with **Abd Elhaq** <sup>(29)</sup> who revealed that all nurses got unsatisfactory level of practice regarding management of patients with HE without intervention program. In addition **Nasr et al.** <sup>(38)</sup> found that there was a statistical significant difference and improvement between the critical care nurses' level of practice before and immediately after application of teaching program regarding end of life care for hepatic patients. Moreover, **Alradi** <sup>(37)</sup> highlighted nurses' practice deficiency without educational program. This poor result practices regarding HE lead to poor patient' outcome and this deficiency may related to lack of training courses and some facilities. Good supervision is recommended to increase the quality of patient care.

#### **Part IV: Factors affecting nurses' performance regarding management of patients with hepatic encephalopathy:**

Nurses' performance level is cornerstone for better productivity of health care organizations. Less performing nurses reduces hospital productivity and a reason for poor hospitalized patient health outcomes, so it is very important to identify the factors that affecting their performance. Concerning to **factors affecting nurse' performance**, the results of the present study revealed that most of the studied nurses their performance was affected as 46% was affected by nurse related factors, 30% was affected by patient related factors, and 94% was affected by work related factors with mean  $\pm$  SD 58.6  $\pm$  6.5 and range from 32 to 71.

This finding agreed with **Mohamed** <sup>(30)</sup> who revealed in study at Zagazig University about "Nurses' performance regarding thrombolytic therapy among patients with acute myocardial infarction" that the majority of the studied nurses their performance regarding to thrombolytic therapy administration was affected by nurses, patients and work related factors.

Also, **Said et al.**, <sup>(39)</sup> clarified in study entitled "Factors Affecting Nurses' Performance toward Central Line Associated Blood Stream Infection in Critical Care Units" at Ain Shams University Hospitals, that the majority of the studied nurses reported that nurse-patient work related factors had affected their performance.

Additionally, **Mohamed et al.** <sup>(40)</sup> represented in a study entitled "Nurses Performance Regarding Orthopedic Patients with External Fixation at Zagazig University Hospitals" that the most of the studied nurses were affected by environmental factors, and 14.5 % of the nurses were affected by occupational factors.

Likewise, this result is in agreement with **Gouda et al.** <sup>(41)</sup> who mentioned in a study entitled "Factors Affecting Postoperative Nursing Performance in the Surgical Units" at Benha University Hospitals, that the majority of the studied nurses their performance were affected by environmental factors, organizational factors, psychological factors, personal factors, and factors related to the patient.

Too, this result coincides with study by **Adatara et al.** <sup>(42)</sup> who found that optimal nursing performance was influenced by ability, mutualism, motivation, professionalism, clear assignment and target, availability of equipment, and functional feedback systems. Also, **Yaghoubi et al.** <sup>(43)</sup> was found that the nurse performance correlated significantly with work environment, legality of work, continuous work evaluation, incentives, and assistance from management to achieve work goals, clarity of main tasks and functions, and individual capability.

Moreover, this finding agreed with **Maarouf** <sup>(44)</sup> who reported in a study titled "nurses performance for patients with traumatic head injury during golden hour" that the factors that affecting nurses' performance were the dissatisfaction with their work, frequent nurses absenteeism in addition to communication with patient supervisors and colleagues.

#### **Part V: Relations and correlation between the study variables:**

Concerning the **relation between studied nurses' total knowledge and their demographic** characteristics, the finding of the present study revealed that there was no statistically significant relation between nurses' total knowledge level regarding nursing management of patient with hepatic encephalopathy and their demographic characteristics.

This result is congruent with **Ahmed et al.** <sup>(45)</sup> who revealed that there was no statistically significant association between nurses' characteristics and their knowledge level as  $p > 0.05$ . Also, **Hamed** <sup>(46)</sup> stated that no statistical significance relation between nurses demographic data and their total knowledge about minimal HE. While this finding inconsistent with **Khalifa et al.** <sup>(47)</sup> who clarified that there was a statistically significant relation between satisfactory nurses' knowledge level with nurses' experience years and education. In addition, **Bae and Roh** <sup>(48)</sup> showed in the study entitled "Training needs analysis of Korean nurses' neurological assessment competency" that educational level improves nurses' knowledge level.

Concerning the **relation between studied nurses' total practice and their demographic characteristics**, the finding of the revealed that there was statistically significant relation between nurses' total practice level regarding management of patient with HE and their age, sex, qualification, experience years in nursing field, and experience in medicine and endemic ICU. It is obvious that nurses' practice level better among female nurses whose age  $\geq 35$  years old and diploma graduated. In addition nurses who spend long experience years in nursing field especially at medicine and endemic ICU units and who's attained training courses regarding management of patient with hepatic encephalopathy had better practice.

This finding agrees with **Mohamed** <sup>(30)</sup> who expressed that there was a statistically significant relation between satisfactory nurses' practice level and their age and years of experience at pre and post program application and indicated that nurses whose age  $\geq 30$  years with experience years  $\geq 10$  years had satisfactory practice level regard critical nursing management for HE throughout study phases more than

other nurses. Too, the current results are consistent with **Ahmed et al.** <sup>(49)</sup> who clarified in the study about "Assessment of Nurses' Knowledge and Practice Regarding Care for Patients with Spinal Cord Injury in the Critical Care Unit" that there was statistically significant relation between total competent practice level of studied nurses and their educational level.

**Concerning the correlation between studied nurses' total knowledge, practice, and factors affecting nurses' performance**, the finding of the present study revealed that there was statistically significant positive correlation between nurses' knowledge score and practice score. As well as, there was statistically significant negative correlation between factors affecting nurses' performance and their practice score. Furthermore, there was a statistically significant positive correlation between nurses' practice score and age of nurses, experience years in nursing field and experience in medicine and endemic ICU units.

Regarding to the **correlation between the knowledge score and practice score**, the present study revealed that there was statistically significant positive correlation between nurses' knowledge score and practice score. The result of the current study in the same context with **Salem et al.** <sup>(50)</sup> who mentioned that there was a strong positive relationship between the total knowledge score and the total practice score with highly statistically significant p value (0.0001). Also, these results come to an agreement with **Khalifa et al.** <sup>(47)</sup> who clarified that a statistically significant relation between satisfactory nurses' knowledge and nurses' practice.

Regarding to the **correlation between factors affecting nurses' performance and practice score**, the present study revealed that there was statistically significant negative correlation between factors affecting

nurses' performance and their practice score. The current finding is in agreement with **Gouda et al.** <sup>(41)</sup> who showed that most of the studied nurses their performance was affected by factors related to the patient as well as more than three quarters of nurses their performance was affected by personal factors and psychological factors.

Likewise, this result is in agreement with **Atashi et al.**, <sup>(51)</sup> who clarified in a study in Iran that many work-related factors were underlying nurses' deficient practice of ventilator associated pneumonia prevention.

Regarding to the **correlation between nurses' practice score and age of nurses, experience years in nursing field and endemic ICU units**, the present study revealed that there was statistically significant positive correlation between nurses' practice score and age of nurses, experience years in nursing field and experience in medicine and endemic ICU units. The current finding is consistent with **Summers & McLeod**, <sup>(52)</sup> who found that nurses' knowledge and experience are the most significant factors influencing nurses' performance of GCS. As well, **Eskander et al.** <sup>(52)</sup> illustrated that there is a positive correlation between mean practice scores and age and years of experience. Also, **Delucia et al.** <sup>(53)</sup> demonstrate that nurses' performance is influenced by work experience.

In summary, the finding of this study revealed that there is a need to focus on development of nursing staff knowledge and practice regarding hepatic encephalopathy management, so effort should be directed towards enhancing level of knowledge and skills among critical care nurses. Also, the administrative department should focus on addressing the factors affecting the nurses' performance. Furthermore, the nurses must seek better ways to update information, learning resources, and continuous

education opportunities to ensure good quality of care.

### Conclusion:

In light of the present study, it can be concluded that the majority of the studied nurses had an unsatisfactory total knowledge level regarding the management of patients with hepatic encephalopathy as well as more than three-quarters of nurses had an unsatisfactory total practice level. While the current study concluded that two-thirds of studied nurses had positive attitudes regarding the management of patients with hepatic encephalopathy. Also, most of the studied nurses' performance regarding the management of patients with hepatic encephalopathy was affected by nurse, patient, and work-related factors. Furthermore, there was a positive correlation between nurses' knowledge and practice and a negative correlation between studied nurses' attitudes and factors affecting their performance.

### Recommendations:

Based on the current study results, the study recommends the following:

- The nurses working in the study settings need more training to improve their knowledge and practice regarding management of patients with hepatic encephalopathy.
- The factors affecting nurses' performance should be addressed by the nursing management and the hospital administration as well as the qualified nurses should have regular rewards, motivation, and encouragement from the nursing management and the hospital administration.
- Further research is proposed to assess the value of specialized training interventions on nurses' performance in the care of patients with hepatic diseases, and on the incidence of hepatic encephalopathy among these patients.

**Table 1: Frequency and percentage distribution of demographic characteristics of studied nurses (n=50):**

Demographic characteristics	Frequency	Percent
<b>Age per years:</b>	27	54.0
- <35	23	46.0
- ≥35		
<b>Mean ±SD</b>	31.6±7.6	
<b>Range</b>	19-43	
<b>Sex:</b>	12	24.0
- Male	38	76.0
- Female		

<b>Social status:</b>	17	34.0
- Single	33	66.0
- Married		
<b>Residence:</b>	24	48.0
- Rural	26	52.0
- Urban		
<b>Qualification:</b>	23	46.0
- Diploma	20	40.0
- Technical institute	7	14.0
- Bachelors		
<b>Experience years in nursing field:</b>	17	34.0
- <10	33	66.0
- ≥10		
<b>Mean ±SD</b>	12.5±7.2	
<b>Range</b>	6 months-25	
<b>Experience years at intensive care unit (ICU):</b>	26	52.0
- <5	24	48.0
- ≥5		
<b>Mean ±SD</b>	4.8±3.2	
<b>Range</b>	2 months -13	
<b>Attendance of training courses about management of patients with HE:</b>	32	64.0
- Yes	18	36.0
- No		



Figure (1): Total Studied Nurses' Knowledge regarding Nursing Management of Patients with Hepatic Encephalopathy (n= 50)

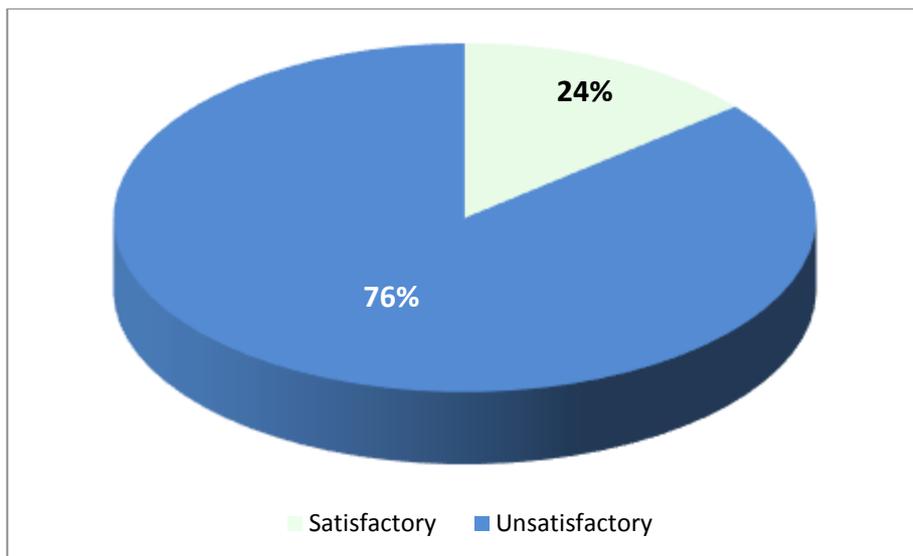


Figure (2): Total Studied Nurses' Practice regarding Nursing Management of Patients with Hepatic Encephalopathy (n= 50)

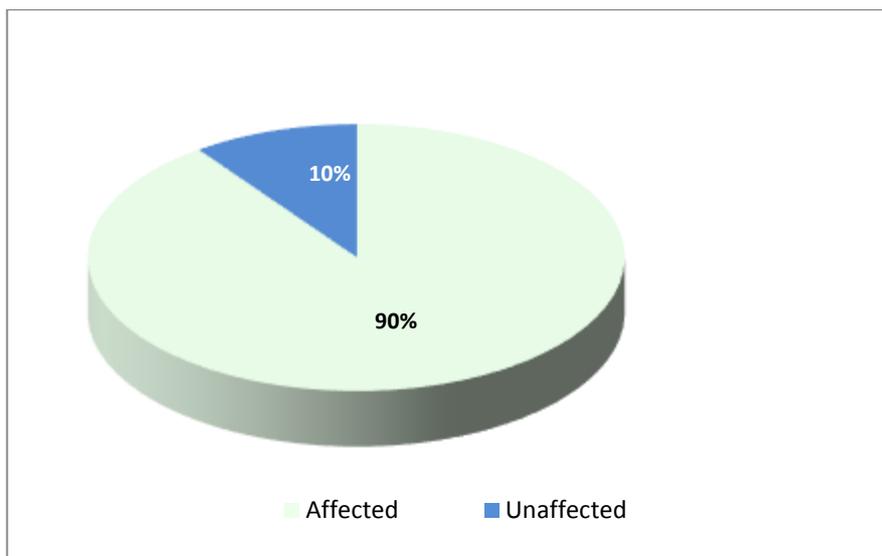


Figure (3): Total Percentage of factors affecting studied nurses' performance regarding management of patients with hepatic encephalopathy (n= 50)

**Table 2: Total Factors Affecting Nurses' Performance regarding Nursing management of patient with Hepatic Encephalopathy as Nurse, Patient and Work related factors (n=50):**

Factors Affecting Nurses' Performance	Affected		Un affected	
	No.	%	No.	%
- Total Nurses' Related Factors	23	46.0	27	54.0
- Total Patients' Related Factors	15	30.0	35	70.0
-Total Work Related Factors	47	<b>94.0 %</b>	3	<b>6.0 %</b>
<b>Total Factors Affecting Nurses' Performance:</b>	45	<b>90.0 %</b>	5	<b>10.0 %</b>

**Table 3: Relation between studied Nurses' Total Knowledge score and their Demographic Characteristics (n=50):**

Demographic characteristics	Nurses' Total Knowledge Level				f p-value
	Satisfactory $\geq 70\%$		Un satisfactory $< 70\%$		
	n.	%	n.	%	
<b>Age per years:</b>					
- <35	4	14.8	23	85.2	0.99
- $\geq 35$	3	13.0	20	87.0	
<b>Sex:</b>					
- Males	1	8.3	11	91.7	0.99
- Females	6	15.8	32	84.2	
<b>Social status:</b>					
- Married	4	12.1	29	87.9	0.68
- Single	3	17.6	14	82.4	
<b>Residence:</b>					
- Rural	4	16.7	20	83.3	0.7
- Urban	3	11.5	23	88.5	
<b>Qualification:</b>					
- Diploma	2	8.7	21	91.3	$\chi^2 = 0.18$ P=0.41
- Technical institute	3	15.0	17	85.0	
- Bachelors	2	28.6	5	71.4	
<b>Experience years in nursing field:</b>					
- <10	3	17.6	14	82.4	0.68
- $\geq 10$	4	12.1	29	87.9	
<b>Experience years at endemic and medicine ICU:</b>					
- <5	3	11.5	23	88.5	0.7
- $\geq 5$	4	16.7	20	83.3	
<b>Attendance of training courses:</b>					
- Yes	6	18.8	26	81.3	0.4
- No	1	5.6	17	94.4	

$\chi^2$ :Chisquare test      f :Fisher Exact test      (s) p:<0.05 Significant      p:>0.05 Insignificant

**Table 4: Relation between Studied Nurses' Total Practice score and their Demographic Characteristics (n=50):**

Demographic characteristics	Nurses' Total Practice Level				$\chi^2$	p-value
	Satisfactory ≥70%		Unsatisfactory y <70%			
	n.	%	n.	%		
<b>Age per years:</b>						
- <35	3	11.1	24	88.9	5.4	0.02 (S)
- ≥35	9	39.1	14	60.9		
<b>Sex:</b>						
- Males	0	.0	12	100.0	f	0.047 (S)
- Females	12	31.6	26	68.4		
<b>Social status:</b>						
- Married	10	30.3	23	69.7	f	0.18
- Single	2	11.8	15	88.2		
<b>Residence:</b>						
- Rural	8	33.3	16	66.7	2.2	0.14
- Urban	4	15.4	22	84.6		
<b>Qualification:</b>						
- Diploma	9	39.1	14	60.9	6.9	0.03 (S)
- Technical institute	1	5.0	19	95.0		
- Bachelors	2	28.6	5	71.4		
<b>Experience years in nursing field:</b>						
- <10	1	5.9	16	94.1	f	0.039 (S)
- ≥10	11	33.3	22	66.7		
<b>Experience years at endemic and medicine ICU:</b>						
- <5	1	3.8	25	96.2	12.1	0.001 (S)
- ≥5	11	45.8	13	54.2		
<b>Attendance of training courses:</b>						
- Yes	11	34.4	21	65.6	f	0.036 (S)
- No	1	5.6	17	94.4		
$\chi^2$ :Chisquare test	f :Fisher Exact test		(s) p:<0.05 Significant		p:>0.05 Insignificant	

**Table 5: Relation between Total Factors Affecting Nurses' Performance Level Score and Their Demographic Characteristics (n=50):**

Demographic	Total Factors Affect Nurses'	n.	F p-
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