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# Effect of Emergency Nursing measures on the Clinical Outcomes of Patients with Esophageal Varices Undergoing Endoscopy

Soheir Mohamed Weheida[1]. Amany Lotfy Abdalaziz Ismail[1] Mahmoud Farouk Selem [2] Rasha ELsayed Ahmed Salem[3] Abeer Farouk Elfar[4] ,

Prof of medical surgical Nursing, Faculty of Nursing, Alexandria University[1].Assis.Prof of medical surgical Nursing, Faculty of Nursing, Tanta university[1], prof of Endoscopy and General Medicine, Faculty of Medicine, Tanta University[2], Assis. Prof of medical surgical Nursing, Faculty of Nursing, Tanta University[3], .Assistant lecture of critical care nursing, Faculty of Nursing, Tanta University[4], *Egypt*[5]

Corresponding Author:Amany lotfy Abdalaziz Ismail

Amanylotfy92@yahoo.com

***Abstract:*** **Acute esophageal variceal bleeding is a frequent complication of cirrhosis, occurs in up to 70% of patients, early resuscitation and supportive management, is critical and essential for better outcomes. Aim: evaluate the effect of emergency nursing measures on the clinical outcomes of patients with esophageal varices undergoing endoscopy. Design: quasi-experimental study. Setting: this study was conducted at Hematemesis Unit in Medical Intensive Care Unit at Tanta Main University Hospital. Subjects: convenience sample of 80 adult patients with acute esophageal varices (AEV) divided into two equal groups, study group: managed by protocol nursing care was implemented by the researcher and control group: that received routine nursing hospital care. Tools: five tools were used, tool I Structure interview schedule and Patient's Biosocio-demographic characteristic , tool II Esophageal varices nutritional problems tool III Pain assessment tool, tool IV Esophageal varices (EV) complications monitoring schedule & tool V Esophageal varices patient's clinical outcomes monitoring. Results: there was statically significant difference between both control and study groups regarding the consciousness level, vital signs, hemodynamic status and the complications rate, while there was difference but not significant in relation to anthropometrics measurements and A.B.G findings. Conclusions: emergency nursing care measures for patients with acute esophageal varices had a positive effect on their clinical outcomes. Recommendations: emergency protocol of nursing care should be carried out as a routine care for patients with esophageal varices.**

***Keywords:*** **protocol of esophageal varices, clinical outcomes.**

## 1. INTRODUCTION

Acute upper gastrointestinal bleeding is a life-threatening emergency condition that remains a common medical emergency worldwide [(1)]. Esophageal varices is considered the main cause of upper gastrointestinal bleeding (UGIB) in Egypt followed by duodenal ulcer, gastritis, esophagitis, hiatus hernia, and neoplasm. Ruptured esophageal varices cause approximately 70% of all upper gastrointestinal hemorrhages in cirrhotic patients [(2)].

The incidence of upper gastrointestinal bleeding in Egypt is approximately 100 patients per 100.000 populations per year [(2)]. According to the Tanta Statistical Records of the Hematemesis Unit at the emergency hospital of Tanta University hospital at 2016, reported that about more than 1200 patients admitted to the Hematemesis Unit and about one third of these patients admitted to the Hematemesis unit due to esophageal varices bleeding [(3)].

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Esophageal varices are thin-walled veins that are prone to rupture, causing massive and life-threatening hemorrhage [2, 4]. It is associated with the severity of portal hypertension, resulting from an increase in intrahepatic resistance, and is more likely to occur when the hepatic venous pressure gradient is >12mmHg and this is occurring when blood flow to the liver is blocked, most often by scar tissue caused by liver disease. Each bleeding event carries a 20% to 30% risk of death up to 70% of patients who aren't treated die within one year of the initial attack [4].

Esophageal varices usually don't cause signs and symptoms unless they bleed, when the varices rupture, there is hemorrhage and vomiting of large volumes of dark-red blood However, the bleeding varices can be slow and chronic leading to anemia and melena, the black tarry or maroon, sticky, foul-smelling feces resulting from the digestion of blood black, Light headedness, loss of consciousness in severe case, jaundice and ascites in the liver cirrhotic patients [5].

A care bundle for intensive care unit (ICU) management for patients with variceal bleeding combines, appropriate resuscitation and assessment, with timely endoscopy, antibiotic prophylaxis, pharmacological vasoactive therapy, as well as diagnostic and therapeutic endoscopy[ 6]. All indicated tasks should be performed as soon as possible after admission and preferably within 6–12 hours .Critical care nurse (CCN) has a key role in caring for the patients with UGIB, patients need special nursing care to decrease patient's problems and complications as well as improve patient's clinical outcome [6,7].

Nursing intervention was aimed to give the patient immediate intervention and assist the physician in controlling bleeding and preventing the complications [8] .In the first instance, the CCN have an essential role in the resuscitation and hemodynamic stability. Initial resuscitation involves basic measures including assessing the patient's ABC airway, Breathing and circulation; put the patient on low fowler's position with the head flexed and on one side, obtaining peripheral venous access. Blood volume resuscitation should be undertaken promptly and IV fluids, with the goals of maintaining hemodynamic stability and a hemoglobin of approximately 8 g/dL [9].

These recommendations was based on experimental studies that show that resuscitations of all lost blood leads to increases in portal vein pressure to levels higher, increase the risk of re-bleeding and mortality was increased [10].Additionally the critical care nurse CCN should have adequate monitoring to the mental status to prevent hepatic encephalopathy from the ingested blood [11]. On other hand gastric lavage with cooled saline to the patient for decompression of the stomach, also prevent absorption of blood. Furthermore CCN should monitoring laboratory studies and pain level post endoscopy [11,12].

Despite new therapeutic tools as endoscopic interventions, therapeutic measurements and surgical advances as transoesophageal intra-hepatic portosystemic shunt (TIPS), the clinical outcome has not been changed significantly and mortality rate remains around 10 % of UGITH [13]. So esophageal varices are one of the most common emergency problems, which often need urgent intervention to improve patient survival and prevent complications [14]. The aim is to decrease the time interval from admission to achievement of hemodynamic stability and improvement in hemoglobin level [15].

There were minority of researches used to evaluate nursing measures toward emergent care of patients with esophageal varices undergoing endoscopy at Tanta University; there is a lack of studies to improve nursing measures about patient have esophageal varices bleeding & its effects on their clinical outcomes. Therefore, the objective of this study was to evaluate the effect of emergency nursing measures on the clinical outcomes of patients with esophageal varices undergoing endoscopy.

**AIM OF THE STUDY WAS TO:** Evaluate the effect of emergency nursing measures on the clinical outcomes of patients with esophageal varices undergoing endoscopy.

**Research hypothesis:** Patients who exposed to emergency nursing measures maintain normal vital signs, oxygen saturation, and fluid and electrolyte balance and laboratory findings than patients who did not.

- Patients who exposed to emergency nursing care exhibited no complications as; hepatic coma, altered level of consciousness, malnutrition, dehydration, sunken eye, rapid week pulse hypotension, cold skin ,urine output<30 ml/24hrs, delirium, confusion, ascites and ineffective breathing pattern than patients who did not exposed.

-Patients who exposed to emergency nursing measures post endoscopy exhibit no pain than patients who do not exposed.

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## 2. SUBJECTS AND MATERIALS

**1. Research design:** Quasi-experimental design was utilized.

**2. Setting:** This study conducted at Hematemesis Unit in the Emergency Medical Intensive Care Unit at Tanta Main University Hospital.

**3. Subjects:** the study sample was compromised of 80 adult patients with diagnosis of acute esophageal varices and undergoing endoscopy, selected based on Epi-info program to estimate the sample size by applying the following parameters:-

-Population size =300 per year

-Expected frequency =50%

-Accepted error =5%

-Confidence coefficient=95%

-Minimal sample size =80 %

The accepted sample size is 80 patients, was divided into two equal group 40 patients in each group as follow:

**Group 1: Study group:** that include 40 adult patients had been exposed to emergency nursing protocol as developed and implemented by the researcher.

**Group 2: Control group**: that includes 40 adult patients and had been exposed routine hospital care.

- The subjects of this study were selected according to the following inclusion criteria: adult patients, (21-55) years old. Diagnosed with esophageal varices and hematemesis need emergent endoscopy and free from any other associated disease e.g. hepatic coma and renal disease.

**4. Tools:** Five tools were used in this study:

**Tool (I) Structure interview schedule and Patient's Biosocio-demographic characteristic**, was developed by the researcher and included patient's sociodemographic characteristics, and patient's clinical data [14, 16] it was included two parts:

**Part (1): Patient's sociodemographic data: which** includes patient's code, age, sex, marital status, educational level, occupation and residence.

**Part (2): patient's Clinical data:** was included information about past medical and surgical history, patient's present health history, date of admission, present diagnosis, episode of bleeding (recent and previous), previous hospitalization, evidence of dehydration, sign and symptoms of shock ,vital signs $O_2$ saturation and presence of co-morbidities.

**Tool (II): Esophageal varices nutritional problems:** This tool was developed by the researcher based on relevant literature review to assess patients' nutritional status [17]. It will be consisted of four parameters of nutritional assessment that comprised of the following:

It comprised of four parts:

**Part (**1): **Patient dietary history**: was included information about number of meals per day, eating habit, feeling of discomfort before and after meal, changes in body weight and restriction of food intake prior to hospital admission.

**Part (2): Daily Dietary lifestyle intake 24 hours recall method.** Which require the patients and/or his family to recall about the specific foods and beverage they consumed in the past 24 hours in household measurement.

**Part (3)**: **Physical Assessment** [16]: Complete physical assessment of body parts that may indicate or suggest malnutrition e.g. condition of hair, face, skin, tongue, subcutaneous tissue & physiological measurement of vital signs.

**Part (4): abdominal circumference:** This part was used to assess the degree of ascites. Normal values are 89.54 ± 7.53 cm [17].

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**Tool (III): Pain assessment intensity tool**:

Numerical rating scale developed by **Cline, et al (2006)** [18] it was adopted to assess pain intensity post endoscopy. The alpha reliability coefficient of this scale indicated an acceptable internal consistency (Cronbach alpha) of 95.It is a horizontal scale consist of 10 points numerical scale with "0" representing no pain "1-3" representing mild pain "4-6" representing moderate pain "7-9" representing sever pain, and "10" representing worst pain.

**Tool (IV):- Esophageal varices' complications monitoring schedule".**

This tool was developed by the researcher after reviewing the related literature [19], to assess the risk of complications and it is includes three parts.

**Part (1) :Glasgow-Blatchford Bleeding scale** .This tool was developed by **Malinchoc et al (2000)** [20] and adopted in Unites State in 2002 to assess acuity and severity of bleeding and a useful scale for assessing the severity , the risk of mortality and rebreeding of patients' with upper GIT bleeding. It was consisted of four parameters. Blood Urea (mmol/L), hemoglobin (g/L) for men and women, Systolic blood pressure (mm Hg) and other markers as (pulse, presence as melena, syncope, Hepatic disease and cardiac failure).

**Scoring system:-**The scale ranges from 6 to more, with higher numbers indicating more severe disease. In the validation group, scores of 6 or more were associated with a greater than 50% risk of needing an emergent intervention.

| **Glasgow-Blatchford Bleeding Score** | |
|---|---|
| Admission risk marker | Score component value |
| Blood Urea (mmol/L) | |
| 6.5-8.0 | 2 |
| 8.0-10.0 | 3 |
| 10.0-25 | 4 |
| >25 | 6 |
| Haemoglobin (g/L) for men | |
| 12.0-12.9 | 1 |
| 10.0-11.9 | 3 |
| <10.0 | 6 |
| Haemoglobin (g/L) for women | |
| 10.0-11.9 | 1 |
| <10.0 | 6 |
| Systolic blood pressure (mm Hg) | |
| 100–109 | 1 |
| 90–99 | 2 |
| <90 | 3 |
| Other markers | |
| Pulse ≥100 (per min) | 1 |
| Presentation with melena | 1 |
| Presentation with syncope | 2 |
| Hepatic disease | 2 |
| Cardiac failure | 2 |

**Part (2): Hepatic coma related complications: Conn Score –West Haven Criteria Score.** This part was developed by **Conn et al (1977)** [14, 21] and was used to assess patients' behavior, intellectual function, alteration of consciousness and neuromuscular function. Was comprised of four grades**,** ranging from **grade 1** (which includes symptoms such as a trivial lack of awareness) to **grade 4** (which implies an unresponsive patient in a coma). The reliability of the West Haven scale was improved by combining it with the Mini-Mental State Examination (MMSE) [21].

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**Conn Score –West Haven Criteria Score.**

| | |
|---|---|
| **Conn score 0** | No personality or behavioral abnormality detected |
| **Conn score 1** | Trivial lack of awareness, euphoria or anxiety; shortened attention span; impairment of addition or subtraction (minimal hepatic encephalopathy). |
| **Conn score 2** | Lethargy; disorientation for time; obvious personality change; inappropriate behavior. |
| **Conn score 3** | Somnolence to semi-stupor, responsive to stimuli;<br>Confused; gross disorientation; bizarre behavior. |
| **Conn score 4** | Coma; unable to test mental state |

**Part (3): Hepatorenal syndrome related complications assessment:** This part was developed by the researcher after reviewing the related literature [22], to assess the incidence degree of hepatorenal syndrome that has been assessed through physical sign and symptoms of hepatorenal (urine output<30 ml/24hrs, hypotension, nausea, vomiting, delirium, confusion, ascites, ineffective breathing pattern and laboratory findings as urea & creatinine, blood urea nitrogen, Na, K and blood urea).

**Tool (V): Esophageal varices patient's clinical outcomes monitoring:** This tool was developed and had been used by the researcher after reviewing of the related literature [14, 21,22] to assess the clinical outcomes and it was consisted of three parts:

**Part (1) Bleeding attack assessment monitoring :-** This part was developed and had been used by the researcher after reviewing of the related literature [23,24] to assess the amount of bleeding, duration, color of blood, consistency, presence of melena, and hematemesis. Assess of significant blood loss more than 50 %.

**Part (2) Hemodynamic status assessment:**-it was used to assess hemodynamic stability of the patient which included measuring of the vital signs; heart rate, respiratory rate, blood pressure, body temperature, conducting a physical examination, pulse oximetry and urine output. Assessment of physiologic instability which includes physical examination of pupil size, reactivity and chest auscultation associated with volume overload.

**Part (3) laboratory studies assessment:** it had been used to assess the risk of further complications as; complete blood picture (CBC), WBC'S, INR, PT, platelets count and ABG findings (P H, $Sao_2$,Pa02, Paco2, HCo3,Na ,K and Ca.in clinical pathology and according to hospital's record )

**Method:**

**1-Administrative process:**

-Official permission was carried out the study that obtained from the responsible authorities at the study setting.

**2-Ethical considerations**:

Written informed consent was obtained from patients and/or their families included in the study after explanation of the aim of the study and assuring them of confidentiality and privacy of collected data. Anonymity was maintained by the use of code number instead of name and the patient right of withdrawal was assured.

**3**-Tools I,II part (1,2,3) and tool III were developed by the researcher and had been used pre and post endoscopy to assess the effect of emergency nursing intervention, while tool II part (4) and tool IV developed by other authors as mentioned before and was used post endoscopy to assess the risk of complications.

**4- Tools validity:**

-All tools were tested for content validity by nine experts in the field medical surgical and critical care nursing. They were tested for comprehensive appropriateness and modification was done.

**5- Reliability:**

-All tools of the study was tested using Cronbach Alfa for reliability using appropriate statistical references.

6-**A pilot study** was carried out on nine patients to test the feasibility and applicability of the developed tools and to was determined any obstacles that may encountered during the period of data collection and needed modification was done and was excluded from the sample.

7-Eighity adult patients with esophageal varices was selected according to inclusion criteria and was divided into two equally groups 40 patients in each group.

8-The researcher was started with control group first then study group to prevent data contamination.

9-The present study was conducted on four phases.

1- **Assessment phase**: both control and study groups were assessed to collect base line data by using all tools immediately of patient's admission for collection of pertinent data for later comparison, which was collected from the patient's and/or his family, heath team and from his medical record.

**2-planning phase**: was formulated based on data from the assessment phase, and literature review priorities, goals and expected outcome criteria was taking into consideration when planning of patients care.

**3-Implementation phase:** Explain the purpose of the study for both groups (study and control group) and take consent from the patient's family.

**(A)Study group:** In the researcher as agreed by the treating physician in the Intensive Care Unit to patients of group (I) based on the previous phase and consist of five parts implemented this phase, a protocol of immediate nursing measures. This phase includes

**Part 1- immediately on admission:**

**(a)**-Resuscitation**:** The initial management of patient with an acute was directed at fluid resuscitation to reverse the effects of blood loss. Ensure adequate volume replacement (systolic BP > 100 mm Hg, **(b)** Monitoring vital signs, Supplemental oxygen was provided and closes monitoring for oxygen saturation. **(c)** Assessing the patient's airway and obtaining peripheral venous access. Blood volume resuscitation was undertaken promptly [16, 25]. **(d**) The patient was been positioned in low fowler's position with the head flexed on one side. Nasogastric intubation **(e)** Insertion of foley catheter.

**Part 2- Pre Endoscopy:**

-Pre endoscopy assessment of the vital signs laboratory studies and level of conscious.

-Fasting from 6-8 hours & administer enema for patient prior to the procedure with (20ml\kg 30%lauctulose and 70% warm water) and every 8hrs until discharge.

**Part 3 –During endoscopy:**

**-** the patient was assessed for breathing; blood pressure, heart rate and oxygen saturation, Positioning on low-fowler's position on the left side

**Part 4- Immediate post endoscopy nursing care**.

-assume low fowler's position on one side post endoscopy until patient recovery

- Nursing measures about diet. Assist the patient to drink plenty of fluids then when the pts resuming normal activity, eating soft diet in the end of the day. Assist the patient to take cold drinks to alleviate the nausea and vomiting.

**Part 5- before discharge, Health educational programme**:

Each patient was received colored booklet, which includes instruction about diet, medication, life style modifications and their unhealthy practices should be avoided.

-Foods, which should be taken as soft foods, fruits such as bananas and cantaloupe, make good choices, yogurt, as well as canned fruit and cooked fruits without the skin. Encourage cold drinks as Apple juice banana juice, and white cranberry juice.

-Foods to be avoided as foods with hard or sharp edges like potato chips. Also should limit spicy foods, limiting sodium. Additionally it is important to avoid any foods caused constipation. Also, avoid hot drinks.

**(B) Control group**: had been received the routine nursing measures only that implemented by the nurses of the previous setting.

**10-Evaluation:** was done for both groups by using Tool II, III, and IV to assess clinical outcomes of patient's three times on admission, pre, immediately and post endoscopy until discharge and follow up after 2weaks for monitor recurrence of the bleeding.

**11**-The data collection was completed during the period of 11 months (from August 2018 to June 2019). Comparison was done between both groups & data was analyzed to evaluate effect of emergency nursing measures on the clinical outcomes of patients with esophageal varices undergoing endoscopy.

**12-Statistical analysis:-**

The collected data was organized, tabulated and statistically analyzed using SPSS software statistical computer package version 25. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test ($\chi^2$). For comparison between means for non-parametric variables pre and post program, Wilcoxon signed Ranks test was used. For comparison between means for more than two variables, the F-value of analysis of variance (ANOVA) was calculated. Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r. A significance was adopted at $P<0.05$ for interpretation of results of tests of significance (*). Also, a highly significance was adopted at $P<0.01$ for interpretation of results of tests of significance (**) [26].

## 3. RESULTS

**Table (1)** shows Percentage distribution of the patients of the both study groups according to sociodemographic characteristics**.** This table reveals that most of the patients in both control and study groups (67.5% and 52.5%) were above 51years old respectively, with a mean age of them ( 53.63±6.789) years in control group and (52.15±6.670 ) years in study group. In addition to more than half of the patients in control and study groups were male (67.5 %, 60%) respectively, the majority of the patients in control and study groups were married (80.0% and 82.5%) and from rural areas (70%, 62.5%) respectively .Nearly half of the patients in the control group and more than half of the patients in the study group were read and write (42.5% and 65.0) respectively. Also about one third 35.0% of the patients in control group were manual worker and more than one-third 37.5% of the patient in the study groups were technical worker.

**Table (2)** clarify the percent distribution of the studied patients according to their bleeding attack assessment monitoring among the studied groups. **Concerning to Consistency of the bleeding,** it was found that the majority of patients in both control and study group (70%, 85%) were intermittent hematemesis. **Regarding stool color**, more than half (60%) of patients in the control group have presented with bright red stool comparing to( 45% ) of patients in the study group, more over all 100% the patient in the study group presented with hematemesis while the majority (80%) of patients in the control group presented with of hematemesis and melena.

**Figure (1)** shows the percentage distribution of patients of both studied groups according to level of consciousness pre /post intervention. The results show that on admission more than half (57.5% 60%) of the patients in the control and study group were disoriented. **While on discharge** more than two third and vast majority (85% 92.5%) were alert in both control and study group. and there was statistically significant difference between control and study group $p<0.001$.

**Figure (2):** Percentage distribution of patients of both studied groups according to pain intensity pre / post intervention.

From this figure it was found that nearly half (42.5%) of the patients in the study group have mild pain post intervention corresponding to only (5.0%) in the control group and this difference was statistically significant (p=0.000).

**Table (3):** illustrates the Mean scores of vital signs among both studied groups pre /post intervention & pre endoscopy**.** It was observed that the mean and stander deviation of the study group on admission was (99.35±22.01) and was decline during the period of the study to (89.80±10.71) on discharge .**Regarding systolic blood pressure:** it was observed that the mean and stander deviation of systolic blood pressure of the study group was higher than in the control group on

discharge (110.50±11.08) .( 94.25±15.17) respectively .**Regarding diastolic blood pressure**: it was observed that the mean and stander deviation of the diastolic blood pressure in the study group was higher than in the control group on discharge (71.50±7.70),(62.25±10.98) respectively and there was statistically significant difference in the mean and stander deviation between control and study group in relations to pulse and blood pressure p<0.001.**Regarding the respiratory rate & the temperature:** it was noticed that the mean and stander deviation of the both studied groups on admission were decline on discharge and there was statistically difference in the mean and stander deviation between both groups but not significant P= .275

**Table (4):** Percentage distribution of patients of both studied groups according to hemodynamic assessment pre / post intervention. The results illustrates that the majority (87.5%, 92.5%) of patients in both control and study groups were hypovolemic on admission respectively. While on discharge more nearly two third (65.0%) of the patients in the study group have normal CVP on discharge, corresponding to nearly half (47.5%) of patients in the control group. There was statistically significant difference in the mean and stander deviation between control and study group in relations to pulse and blood pressure p<0.025.

**Table** (5): shows Percentage distribution of patients of both groups according to Blatchford Bleeding pre / post intervention .The results of current study revealed that the mean and stander deviation of Glasgow-Blatchford Bleeding scale for predicting the risk of bleeding of both control and study group on admission were (14.73±2.63), (16.48±1.89) and the risk was decline during the period of study to (10.28±2.15) (8.15±1.78). There was statistically significant difference in the mean and stander deviation between control and study group p<0.001.

**Figure (3):** illustrate Percentage distribution of patients of both groups according to hepatorenal syndrome related complications pre/post intervention. the result showed that the overall rate of complications was decreased in the study group than in the control group during the study period and there was statistically significant difference between both studied group p=0.030 .

**Figure (4):** Showed the percentage distribution of patients of both groups according to their recurrence of bleeding throughout period of the study .This figure revealed that the overall rate of bleeding after two weeks in the study group was decreased than in the control group.

**Table (1): Percentage distribution of the patients of the both studied groups according to sociodemographic characteristics.**

| Characteristics | The studied patients (n=80) | | | | $\chi^2$ P |
|---|---|---|---|---|---|
| | Control group (n=40) | | Study group (n=40) | | |
| | N | % | N | % | |
| **Age (in years)** | | | | | |
| ▪ (31-<41) | 1 | 2.5 | 2 | 5.0 | 1.945 |
| ▪ (41-<51) | 12 | 30.0 | 17 | 42.5 | 0.378 |
| ▪ ≥51 | 27 | 67.5 | 21 | 52.5 | |
| **Range** | **(39-68)** | | **(35-67)** | | t=0.980 |
| **Mean ± SD** | **53.63±6.789** | | **52.15±6.670** | | P=0.330 |
| **Gender** | | | | | |
| ▪ Male | 27 | 67.5 | 27 | 67.5 | FE |
| ▪ Female | 13 | 32.5 | 13 | 32.5 | 1.00 |
| **Marital status** | | | | | |
| ▪ Married | 32 | 80.0 | 33 | 82.5 | |
| ▪ Divorced | 1 | 2.5c | 1 | 2.5 | 1.015 |
| ▪ Single | 1 | 2.5 | 0 | 0.0 | 0.798 |
| ▪ Widow | 6 | 15.0 | 6 | 15.0 | |

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| | | | | | |
|---|---|---|---|---|---|
| **Residence** | | | | | |
| ▪ Rural | 28 | 70.0 | 28 | 70.0 | **,503** |
| ▪ Urban | 12 | 30.0 | 12 | 30.0 | **0.478** |
| **Educational level** | | | | | |
| ▪ Illiterate | 11 | 27.5 | 9 | 22.5 | 7.417 |
| ▪ Read and write | 17 | 42.5 | 26 | 65.0 | 0.115 |
| ▪ Basic education | 2 | 5.0 | 0 | 0.0 | |
| ▪ Diploma | 7 | 17.5 | 5 | 12.5 | |
| ▪ University | 3 | 7.5 | 0 | 0.0 | |
| **Occupation** | | | | | |
| ▪ Manual work | 14 | 35.0 | 12 | 30.0 | 7.082 |
| ▪ Technical work | 8 | 20.0 | 15 | 37.5 | 0.132 |
| ▪ Employee | 6 | 15.0 | 9 | 22.5 | |
| ▪ House wife | 11 | 27.5 | 4 | 10.0 | |
| ▪ Others | 1 | 2.5 | 0 | 0.0 | |

FE: Fisher' s Exact test

* Significance at level P < 0.05.

**Table (2): Percentage distribution of patients of both studied groups according to assessment of bleeding attack.**

| **Bleeding attack assessment monitoring** | **The studied patients (n=80)** | | | | **$\chi^2$ P** |
|---|---|---|---|---|---|
| | **Control group (n=40)** | | **Study group (n=40)** | | |
| | **N** | **%** | **N** | **%** | |
| **Amount of bleeding** | | | | | |
| **Range** | **(50-500)** | | **(20-500)** | | t=1.203 |
| **Mean ± SD** | **222.50±129.57** | | **190.50±107.27** | | P=0.233 |
| **Duration (in hrs)** | | | | | |
| **Range** | **(2.0-8.0)** | | **(2.0-12.0)** | | **t=2.551** |
| **Mean ± SD** | **6.013±1.88** | | **7.125±2.02** | | **P=0.013*** |
| **Color of blood** | | | | | |
| Bright red blood | 7 | 17.5 | 5 | 12.5 | 1.275 |
| dark red | 19 | 47.5 | 24 | 60.0 | 0.529 |
| coffee ground | 14 | 35.0 | 11 | 27.5 | |
| **Consistency** | | | | | |
| contentious | 12 | 30.0 | 6 | 15.0 | FE |
| intermittent | 28 | 70.0 | 34 | 85.0 | 0.180 |
| **Stool color** | | | | | |
| blood tarry stool | 16 | 40.0 | 22 | 55.0 | FE |
| bright red stool | 24 | 60.0 | 18 | 45.0 | 0.263 |
| Presence of hematemesis | 32 | 80.0 | 40 | 100.0 | 1.485 |
| Presence of melena | 32 | 80.0 | 27 | 67.5 | 0.542 |
| Presence of Haematochezia | 21 | 52.5 | 32 | 80.0 | |

FE: Fisher's exact test

* Significance at level P < 0.05.

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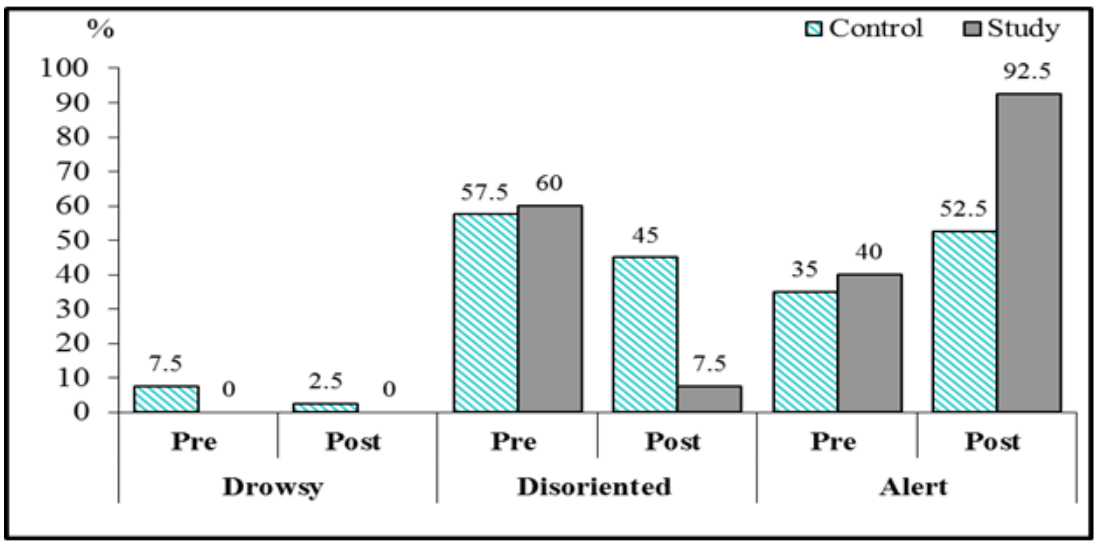
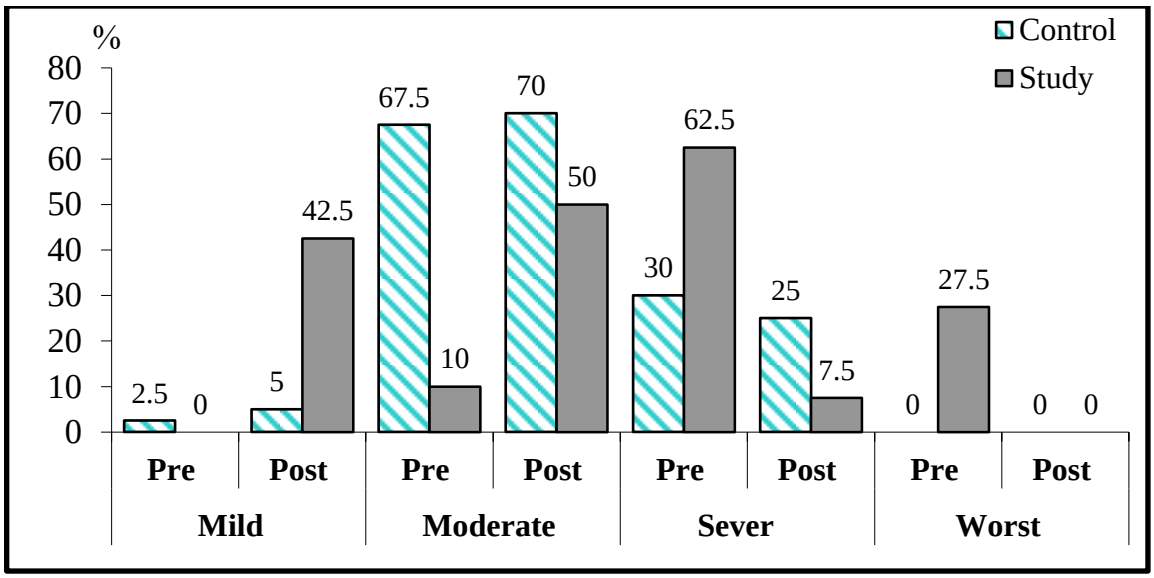



**Figure (1): Percentage distribution of patients of both studied groups according to level of consciousness pre /post intervention.**




* Significance at level P < 0.05.

**Figure (2): Percentage distribution of patients of both studied groups according to pain intensity pre /post intervention.**

**Table (3): Mean scores of vital signs among both studied groups pre /post intervention & pre endoscopy.**

| Vital signs | | The studied patients (n=80) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Control group (n=40) | | Study group (n=40) | | T-test | |
| | | Range | Mean± SD | Range | Mean± SD | t | P-value |
| A. Heart rate | pre intervention | 68-130 | 95.10±15.72 | 56-144 | 99.35±22.01 | 0.994 | 0.323 |
| | Pre Endoscopy | 54-120 | 86.95±18.49 | 68-90 | 81.75±4.84 | 1.721 | 0.089 |
| | Post intervention | 54-92 | 76.95±9.83 | 68-130 | 89.80±10.71 | 5.590 | <0.001** |
| Paired t-test | | t | P-value | t | P-value | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **t1** | | 2.124 | 0.036* | 4.939 | <0.001** | | |
| **t2** | | 3.020 | 0.003* | 4.332 | <0.001** | | |
| **B. Respiratory rate** | pre intervention | 18-38 | 24.40±5.07 | 16-38 | 24.15±5.52 | 0.211 | 0.834 |
| | Pre endoscopy | 14-30 | 20.65±3.31 | 14-28 | 20.50±3.26 | 0.204 | 0.839 |
| | Post intervention | 16-42 | 20.73±4.67 | 16-38 | 21.85±4.45 | 1.098 | 0.275 |
| **Paired t-test** | | t | P-value | t | P-value | | |
| **t1** | | 3.917 | <0.001** | 3.601 | <0.001** | | |
| **t2** | | 0.088 | 0.929 | 1.548 | 0.126 | | |
| **C. Blood pressure C1. Systolic** | pre intervention | 70-150 | 94.50±18.25 | 70-140 | 94.75±15.85 | 0.065 | 0.948 |
| | Pre endoscopy | 80-130 | 104.75±15.52 | 80-120 | 101.25±12.85 | 1.099 | 0.275 |
| | Post intervention | 70-120 | 94.25±15.17 | 90-120 | 110.50±11.08 | 5.471 | <0.001** |
| **Paired t-test** | | t | P-value | t | P-value | | |
| **t1** | | 2.706 | 0.008* | 2.015 | 0.047* | | |
| **t2** | | 3.060 | 0.003* | 3.448 | <0.001** | | |
| **C2. Diastolic** | pre intervention | 40-100 | 63.00±13.05 | 50-90 | 62.00±8.23 | 0.410 | 0.683 |
| | Pre endoscopy | 50-100 | 70.00±11.77 | 50-80 | 65.50±8.15 | 1.988 | 0.050* |
| | Post intervention | 50-90 | 62.25±10.98 | 60-80 | 71.50±7.70 | 4.362 | <0.001** |
| **Paired t-test** | | t | P-value | t | P-value | | |
| **t1** | | 2.519 | 0.014* | 1.911 | 0.060 | | |
| **t2** | | 3.045 | 0.003* | 3.384 | <0.001** | | |
| **D-Body temperature** | pre intervention | 36.5-39 | 37.39±0.58 | 36-39 | 37.41±0.66 | 0.144 | 0.885 |
| | Pre endoscopy | 36-39 | 37.44±0.52 | 36-38 | 37.20±0.45 | 2.207 | 0.030* |
| | Post intervention | 36.5-38.2 | 37.31±0.45 | 36.5-38 | 37.39±0.36 | 0.878 | 0.383 |
| **Paired t-test** | | t | P-value | t | P-value | | |
| **t1** | | 0.406 | 0.686 | 1.663 | 0.100 | | |
| **t2** | | 1.196 | 0.236 | 2.085 | 0.040* | | |

**t1= on admission & Endoscopy**

**t2= Endoscopy & Post intervention**

*** Significance at level P < 0.05.**

**Table (4): Percentage distribution of patients of both studied groups according to Hemodynamic assessment pre / post intervention.**

| Hemodynamic Status assessment | The studied patients (n=80) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Control group (n=40) | | | | Study group (n=40) | | | | Pre | Post |
| | pre intervention | | post intervention | | pre intervention | | post intervention | | $\chi^2$ (P-value) | $\chi^2$ (P-value) |
| | N | % | N | % | N | % | N | % | | |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **CVC measurement ($cmH_2O$)** | | | | | | | | | **2.341** (0.310) | **7.413** (0.025*) |
| ▪ Normal | 5 | 12.5 | 15 | 37.5 | 2 | 5.0 | 26 | 65.0 | | |
| ▪ Hypovolemia | 35 | 87.5 | 17 | 42.5 | 37 | 92.5 | 12 | 30.0 | | |
| ▪ Hypervolemia | 0 | 0.0 | 8 | 20 | 1 | 2.5 | 2 | 5.0 | | |
| $\chi^2$ | 19.231 | | | | 33.660 | | | | | |
| **P-value** | <0.001** | | | | <0.001** | | | | | |

* Significance at level P < 0.05.

**Table (5): Percentage distribution of patients of both groups according to Blatchford Bleeding pre / post intervention.**

| Admission risk marker | The studied patients (n=80) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Control group (n=40) | | | | Study group (n=40) | | | | Pre | Post |
| | Pre | | Post | | Pre | | Post | | | |
| | N | % | N | % | N | % | N | % | $\chi^2$ (P-value) | $\chi^2$ (P-value) |
| **1. Blood Urea (mmol/L)** | | | | | | | | | | |
| ▪ 6.5-<8.0 | 11 | 27.5 | 12 | 30.0 | 2 | 5.0 | 32 | 80.0 | | |
| ▪ 8.0-<10.0 | 12 | 30.0 | 23 | 57.5 | 23 | 57.5 | 6 | 15.0 | **11.855 (0.008*)** | **20.342** (<0.001**) |
| ▪ 10.0-<25 | 11 | 27.5 | 5 | 12.5 | 13 | 32.5 | 2 | 5.0 | | |
| ▪ ≥25 | 6 | 15.0 | 0 | 0.0 | 2 | 5.0 | 0 | 0.0 | | |
| **$\chi^2$ (P-value)** | **11.751(0.008*)** | | | | **46.503**(<0.001**) | | | | | |
| **Hemoglobin (g/L) .2** | | | | | | | | | | |
| **For men (n=27)** | | | | | | | | | **2.533** | **6.750** |
| ▪ 10.0-11.9 | 9 | 33.3 | 21 | 77.8 | 4 | 14.8 | 27 | 100.0 | **(0.111)** | **(0.009*)** |
| ▪ <10.0 | 18 | 66.7 | 6 | 22.2 | 23 | 85.2 | 0 | 0.0 | | |
| **$\chi^2$ (P-value)** | **10.800**(<0.001**) | | | | **40.065**(<0.001**) | | | | | |
| **For women (n=13)** | | | | | | | | | **0.000** | **6.190** |
| ▪ (10.0-11.9) | 0 | 0.0 | 8 | 61.5 | 0 | 0.0 | 13 | 100.0 | **(1.000)** | **(0.013*)** |
| ▪ <10.0 | 13 | 100.0 | 5 | 38.5 | 13 | 100.0 | 0 | 0.0 | | |
| **$\chi^2$ (P-value)** | **11.556**(<0.001**) | | | | **26.000**(<0.001**) | | | | | |
| **3. Systolic blood pressure (mm Hg)** | | | | | | | | | | |
| ▪ 100–109 | 5 | 12.5 | 7 | 17.5 | 1 | 2.5 | 31 | 77.5 | **3.532** | **31.282** |
| ▪ 90–99 | 10 | 25.0 | 23 | 57.5 | 8 | 20.0 | 9 | 22.5 | **(0.171)** | (<0.001**) |
| ▪ <90 | 25 | 62.5 | 10 | 25.0 | 31 | 77.5 | 0 | 0.0 | | |
| **$\chi^2$ (P-value)** | **11.883(0.003*)** | | | | **59.184**(<0.001**) | | | | | |
| **4. Other markers** | | | | | | | | | | |
| 4.1 Pulse ≥100 (per min) | 35 | 87.5 | 0 | 0.0 | 18 | 45.0 | 0 | 0.0 | | |
| 4.2 Presentation with melaena | 32 | 80.0 | 0 | 0.0 | 26 | 65.0 | 0 | 0.0 | **21.201** | **5.631** |
| 4.3 Presentation with syncope | 3 | 7.5 | 0 | 0.0 | 15 | 37.5 | 0 | 0.0 | (<0.001**) | (<0.001**) |
| 4.4 Hepatic disease | 36 | 90.0 | 36 | 90.0 | 37 | 92.5 | 37 | 92.5 | | |
| 4.5 Cardiac failure | 3 | 7.5 | 3 | 7.5 | 14 | 35.0 | 14 | 35.0 | | |
| **$\chi^2$ (P-value)** | 47.523(<0.001**) | | | | 43.177(<0.001**) | | | | | |
| **Range** | **(9-19)** | | **(7-15)** | | **(13-22)** | | **(4-14)** | | **3.417** | **4.826** |
| **Mean±SD** | **14.73±2.63** | | **10.28±2.15** | | **16.48±1.89** | | **8.15±1.78** | | (<0.001**) | (<0.001**) |
| **t (P-value)** | **8.286**(<0.001**) | | | | **20.270**(<0.001**) | | | | | |

FE: Fisher' s Exact test

* Significance at level P < 0.05.

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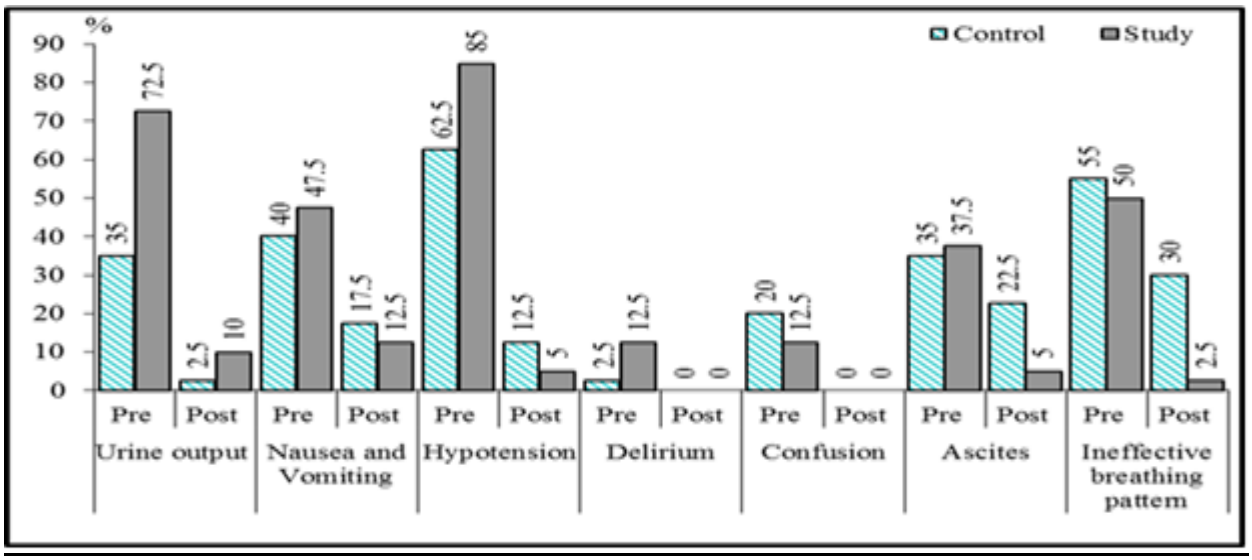
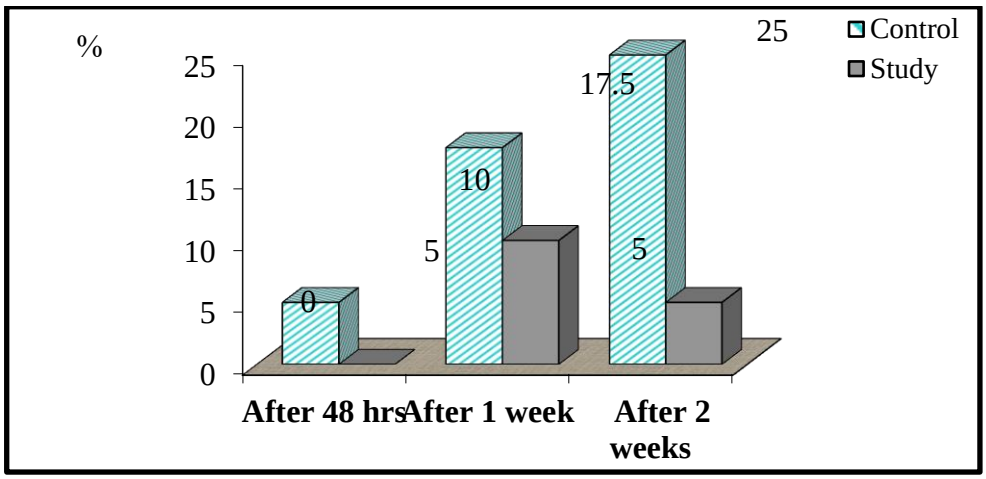



**Figure (3): Percentage distribution of patients of both groups according to hepatorenal syndrome related complications pre/post intervention.**




* Significance at level P < 0.05.

**Figure (4): Percentage distribution of patients of both groups according to their recurrence of bleeding throughout period of the study.**

## 4. DISCUSSION

Acute upper gastrointestinal (UGI) bleeding is a life-threatening emergency carrying risks of rebleed and mortality despite standard pharmacological and endoscopic management [(1).] It was observed, that more than half of the patients in both control and study groups were at the fifth decade of life, mal patients, married and nearly half of the patients were read, write from rural areas and have manual works. It may be contributed to the inclusive criteria of the selected subjects, only adult patients admitted to ICU were in this age and the references of the high-risk group for bleeding attack were adult patients. And also the result was go with incidence of hepatic disease patients, is mostly in adult male patients especially the ,alcoholic ,smoker patients and the majority of patients from rural areas so have manual work and read and write [(27).]

These findings were congruent with the study of **EL-Shafei et al., (2017)** [(28)] was revealed that more than two thirds of the patients were male and, the majority of patients in both control and study group were above 52 years old. This study findings were concurrent with **Atya M. et al (2019)** [(29)] **& Khalil et al., (2015)** [(17)] they noticed that nearly half of the patients were read and write from rural areas. On the other hand, this result was contradicted by **Chuah et al 2019**[(30)] **&**

**Jones et al (2019)** [31] who found that the majority of the studied sample were highly educated female patients, also **Molassiotis et al** (**2015**) **[32]** was reported that majority of the studied sample were from rural areas and retired.

**It was found** that nearly half of the patients in the control group have past medical history of liver disease followed by hypertension and diabetes mellitus, and more than half of the patients in the study group have past medical history of liver disease followed by hypertension and heart disease. These findings were in line with **.Arka (2019) [33], &Kamal et al., (2018) [34]** who stated that the majority of patients have past history of liver disease & hypertension. Followed by half of patients have diabetes mellitus.

**In addition, the result illustrate that** the majority of patients in both control and study group were have intermittent hematemesis. And the duration of bleeding were ranged from 2-12hrs with mean and stander deviation (6.013±1.88), (7.125±2.02).Probably because the erosive mucosal defects tend to heal spontaneously within 24 after bleeding and it may be due to the patient's family not keep the patient without go to emergency hospital to stop bleeding more than 24 hours especially if the patients were decreased in their level of consciousness, so patients' family seeking medical help. This result was in line with **Gupta A et al (2018) [35]** who noticed in similar study that the patients have intermittent bleeding within less than 16 hours.

**The results also showed** that the majority of patients in the both control and study group were presented with of hematemesis and melena. These findings were supported by **Abd Elkader et al., (2014) [36] & Garcia-Tsao et al., (2017) [37]** whom reported that nearly half of patients of esophageal varices presented with hematemesis & melena and sometimes with hematochezia.

**Moreover , the results illustrate** that the majority of patients in both control and study group were hypovolemic on admission, and improved during the period of hospitalization ,while on discharge more than two third of the patients in the study group have normal central venous pressure. This is due to owing to several attacks of hematemesis and melena before the patient's admission, delay to seek medical help and decrease the intake the patient was (NPO). This is in line with. **Ruxandra et al (2018)** [38] Acute anemia and hypovolemic are the most clinical presentation typically varies, according to the site of the bleeding lesion.

**Also the present study clarified that** more than half of the patients in the both control and study groups were disoriented on admission, this is due to the hypovolemic state of the patients on admission secondary to the long period of bleeding in addition the majority of patients have liver cirrhosis . While on discharge they an improvement in the consciousness level but higher in the study than control group, this is result was supported by **Conn (2014) [39]** & **Heba et al (2014**) [21] whom concluded that the lactulose retention enema had a significant effect role on the improvement of the level of consciousness in cirrhotic patients. Also**, Schouten et al (2018) [40 ]**found that an impressive improvement in the consciousness level at the end intervention of patients administered lactulose retention enema.

Results illustrated that the majority of patients in the control group had moderate pain post endoscopy and half of patients in the study group . This finding were in the same line of **Gelu et al (2017)** [41]. Who mentioned that the rate of complications post endoscopy ligation was (46.66%) presented epigastria pain post-ligation.

The present study also illustrated that the vital signs of patients on admission were significantly unstable, as the majority of patients were hypotensive, tachypnea, hypothermic and sometimes hyperthermia because of infection and more half of patients were bradycardia. This is due to the significant amount of blood loss before the patient's admission and so increased the hypovolemic state of patients on admission .This results was in line with **Takeuchi et al (2017)** who clarified that there was significant difference in the hypovolemic state of patients and enhancement in the central venous pressure on patient's discharge [42].

The results of current study revealed that the mean and stander deviation of Glasgow-Blatchford Bleeding scale for predicting the risk of bleeding of both control and study group on admission were decline during the period of study but there was still the risk of rebleeding for both studied group after discharge. Regardless the grade of esophageal varices and the number of rubber bands which inserted it was believed that the more rubber bands that were used to ligate , the greater the possibility of bleeding secondary to eating a rough hard foods post discharge and so increasing ulcers formation . This results in agreement with **Said et al (2018)** who clarified That post-endoscopy there a greater risk of rebleeding with Glasgow-Blatchford Bleeding score [43].

It was observed that the overall rate of rebleeding attack in the study group within two weeks post discharge, were decreased than in the control group. This may be due to the patients should take the vasoactive medications post discharge for at least 3 days as post ligation there was increase in the portal hypertension, further more patients should firmly adherence to balanced dietary regime and other medical instruction that explained to the study group and also followed up daily by the researcher through outpatient telephonic interviews for a period of 2 weeks post discharge.

In addition, the previous researches were found that cases of severe bleeding after EVL were all caused by early slippage of the rubber bands, leaving the unhealed ulcer.

Result emphasized that soft diet and avoiding strenuous exercise is helpful in preventing early slippage of the rubber bands, which may cause life-threatening bleeding**.** This finding was similarly to the previous study of **Hou et al (2019)** who reported that very early rebleeding with 48hrs rate was lower in the study group [(44)]. Moreover, **Sahar G et al** (**2018**) [**(45)**] also stated, "We found that post-EVL bleeding was most likely to occur between the 7th and 13th day following the procedure' 'eating, drinking, exercises and medications administration).

## 5. CONCLUSIONS

**Based on the results of this study, it could be concluded that** protocol of emergency nursing measures for the patients with acute esophageal varices has positive effect on clinical outcomes as hemodynamics stability, duration of stay on ICU, normal vital signs & complications of EV. Also, the present study concluded that nutritional intervention and modifications of life style behaviors helpful on decreasing risk of rebleeding , the risk of complications & the finding concluded the enema administration has an direct effect on improved the level of consciousness.

## 6. RECOMMENDATIONS

Based on the finding of the current study, the following recommendations are:

-Continuous schedule programs to improve patient's knowledge about esophageal varices & its prevention.

-Encourage patients to participate in-group of teaching program about modification of life style behaviors in (eating, drinking, exercises and medications administration)

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