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# Factors Affecting Compliance of Patients with Esophageal Varices Regarding Therapeutic Regimen

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**Abstract**

***Background:*** *Esophageal* varices, especially if they bleed, are a leading cause of cirrhosis mortality. Compliance with treatment is crucial to controlling esophageal varices and associated consequences. ***Aim*****:** Assess factors affecting compliance of patients with esophageal varices regarding therapeutic regimen. ***Design*****:** Descriptive exploratory research design was used in this study. ***Setting*****:** This study was conducted at the gastrointestinal tract endoscopy unit and internal medicine unit at El Karnak International hospital in Luxor Government. ***Sample*****:** A purposive sample was used in this study of 145 adult patients with esophageal varices of both genders. ***Tools*****:** Three tools were used in the study: 1st Tool: Structured Interview Questionnaire, 2nd Tool: Therapeutic Regimen Patients Compliance Questionnaire. And the 3rd Tool: Factors Affecting Esophageal Varices Patients' Compliance to Therapeutic Regimen Assessment Questionnaire. **Results:** More than half of the studied patients had a low level of compliance regarding the therapeutic regimen, about two-thirds of the studied patients had a high contributing factor that affects compliance to the therapeutic regimen, and there was a highly significant statistical relationship between compliance of the studied patients and factors affecting compliance to the therapeutic regimen.**Conclusion:** This study finds that more than half of the patients studied had a low level of compliance regarding the therapeutic regimen. About two thirds of the studied patients had a high contributing factor that affects compliance to the therapeutic regimen and there was a significant statistical relationship between compliance of the studied patients and factors affecting compliance to the therapeutic regimen. **Recommendations:** Regular educational and training programs to enhance and address factors affecting therapeutic regimen compliance for patients with esophageal varices.

***Keywords*****:** *Patient compliance, Therapeutic regimen, Esophageal Varices*

## INTRODUCTION

Esophageal varices (EV) are dilated submucosal distal esophageal veins; it appears due to a blockage in blood flow through the portal vein. Anastomoses develop as a response to increased venous pressure in the body resulting in formation of varicose veins. ***(Kubtan and Dbiss., 2022).***

Esophageal varices are one of the major causes of death in patients with cirrhosis especially if bleed. It is present in 50% of patients with portal hypertension (PH). It occurs more frequently in patients with severe cirrhosis **(Lesmana, et al., 2020).**

A therapeutic regimen consisting of nonpharmacological (lifestyle changes), pharmacological intervention, and patient education is effective in treating EV and reducing its complications. For EV patients, a healthy diet, physical activity, stress management, smoking cessation, regular monitoring, and taking medications can help reduce the risk of complications and improve overall health outcomes. ***(Pluta et al., 2020).***

Compliance with EV therapeutic regimen appears essential for controlling the disease and preventing complications Examinations of hypertensive. Patients' compliance with both pharmacological and non-pharmacological (lifestyle modifications) have revealed that compliance with non-pharmacological treatment appears as important as compliance

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with pharmacological treatment. ***(Nevens et al., 2020).***

The factors associated with compliance can be divided into internal and external factors. The internal factors include patient characteristics such as age, social background, values, attitudes, and emotions caused by the disease. External factors include, for example, the impact of health education, the relationship between the patient and the healthcare personnel, and the support from the family, healthcare personnel, and friends **(Marahatta et al., 2020).**

The nursing care plan developed for patients with esophageal varices underscores the critical role of nursing in the early detection, management, and prevention of this high-risk condition. Esophageal varices represent a challenging medical condition, often arising from underlying liver disease, and pose a significant risk of gastrointestinal bleeding. The care plan is designed to address the multifaceted aspects of care, from risk assessment to interventions and patient education ***(Weheida et al., 2020)***

Nursing care is very important during initial period to achieve best outcome and have good prognosis for the patients. The overall nursing assessment includes monitoring the patient's physical condition, evaluating emotional responses and cognitive status. ***(Hussien et al., 2020).***

**Significance of the study:**

Globally, the prevalence of esophageal varices varies according to the severity of liver disease in cirrhotic patients, ranging from 24% to 69%. The rate of EV development is 5% per year in persons with cirrhosis, and progression from small to big varices occurs in 10% to 20% of cases after one year ***(Hagström et al., 2023).***

In Egypt, acute upper gastrointestinal bleeding is commonly caused by variceal hemorrhage in the esophagus. It incorporates the disastrous outcome of portal hypertension It represents 75% of all upper gastrointestinal bleeding and accounts for 20% of deaths among Egyptian patients between the ages of 35 and 75 years, while in western countries, it represents 30% of all upper gastrointestinal bleeding. Egypt has approximately 100 patients per 100.000 populations per year. ***(Shahin, et al., 2020).***

**AIM OF THE STUDY**

This study aimed to assess factors affecting compliance of patients with esophageal varices regarding therapeutic regimen through the following objectives:

1. Assess the level of compliance of patients with esophageal varices regarding therapeutic regimen.
2. Assess the factors affecting patients with esophageal varices regarding therapeutic regimen.
3. Assess the effects of those factors on the level of compliance among patients with esophageal varices.

**Research question:**

1- What is the level of compliance of patients with esophageal varices regarding therapeutic regimen?

2- What are the factors affecting patients with esophageal varices regarding therapeutic regimen?

3- What are the effects of those factors on the level of compliance among patients with esophageal varices?

**SUBJECT AND METHODS**

The subject and methods for the current study were portrayed under the four main items as the following:

I. Technical item.
II. Operational item.
III. Administrative item.
IV. Statistical item.

**I) Technical item:**

The technical item included research item, setting, subjects and tools of data collection used in this study.

**Research design:**

A descriptive exploratory research design was utilized in this study.

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**Setting:** This study was conducted at the gastrointestinal tract endoscopy unit and internal medicine unit at El Karnak International Health Insurance Hospital in Luxor Governorate.

**Subjects:**

A purposive sample was used in this study of 145 adult patients from the total admission of five hundred adult patients in 2022/2023 from both genders with esophageal varices were involved in this study from the above-mentioned setting who accept to participate in this study.

**Tools of data collection:**

Three tools were used to collect data for this study, as follows:

**Tool I: Structured Interviewing Questionnaire:**

This tool was developed by the investigator based on related and recent literature (**Mohamed et al., 2021).** It was designed in Arabic and was divided into two parts as follows:

**Part A: Personal Characteristics of the Studied Patients:** It was including 12 items (age, gender, educational, level marital status, type of occupation, place of residence, income/month/E.P., treatment covered by, History smoking, previous hospitalization, the reason for admission, endoscopic procedure for esophageal varices before).

**Part B: Patients Medical History:** It was used to assess present and past medical history which include 8 items (onset of disease, disease degree, times for hospital admission, how esophageal varices diagnosed, symptoms that diagnosed disease, bleeding occurrence, bleeding severity and presence of melena).

**2nd Tool: Therapeutic Regimen Patients Compliance Questionnaire:** This tool was divided into two parts:

**Part A: Morisky Medication Adherence Scale:**

This tool was adopted from **Morisky et al. (1986)**. The Morisky Green Levine Medication Adherence Scale was used to assess adherence to medical therapy. The scale consists of eight items, with the scoring system at zero for yes and one for no answer. categories as non-adherence for score (0-3) and adherence for (3-8) compliance of esophageal varices patients to therapeutic regimen**.**

**Part B: Compliance Assessment Questionnaire:** This tool was adapted from **Abou El-Fadl et al. (2015)**. It was used to assess compliance of patients with esophageal varices. Which includes (Follow up compliance assessment (4 questions), Exercise compliance assessment (7 questions) and Nutritional compliance assessment (9 questions))

**Scoring system:**

- High level of compliance: >80%.
- Moderate level of compliance: 60-80%.
- Low level of compliance: <60%.

**3rd Tool: Factors Affecting Esophageal Varices Patients' Compliance to Therapeutic Regimen Assessment Questionnaire:** This tool was adapted from *Taha., 2017*. It was used to assess factors affecting Esophageal Varices Patients' Compliance to Therapeutic Regimen which include 40 closed questions (Patient related factors like Knowledge related factors, Motivation related factors, Factors related to patient beliefs…...etc.), Disease related factors, Social and economic related factors, Health system related factors).

**Scoring system:** For total factors score was calculated consisting of.

- High contributing factors: ≥50%.
- Low contributing factors: <50%.1

**Validity and reliability**

**Content validity:** Face and content validity was ascertained by a panel of five experts (2 Assistant professors and 3 lecturer of medical surgical nursing department) from Faculty of Nursing, Helwan
University. The expertise reviewed the tools for clarity, relevance, comprehensiveness, simplicity, and applicability, minor modifications were done, and the final forms were developed.

**Testing reliability:** In the present study, the tools were measured by the Alpha-Cronbach

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test. Reliability of therapeutic regimen compliance among the studied patients was 0.89; reliability of factors affecting esophageal varices patients' compliance to therapeutic regimen was 0.82.

**Pilot study: -**

It was conducted on 10% of the total number of patients after developing the tools and before starting the data collection to evaluate the clarity, applicability, relevance, and feasibility of the tools and to estimate the needed time to fill the study tools. minor modifications were made.

**Field work**:

- An exploratory visit was done to the gastrointestinal tract endoscopy unit and internal medicine units at El Karnak International Health Insurance Hospital to estimate the rate of admission and suitable time for collecting data. In addition, personal communication was done with the nurses and physicians to explain the purpose of the study and gain their cooperation.
- Filed work of this study was executed in three months, from the beginning of March 2024 to the end of May 2024. After obtaining all official permissions.
- Permissions for data collection were generated from the hospital director and head manager of the gastrointestinal tract endoscopy and internal medicine units at El Karnak International Health Insurance Hospital in Luxor Government.
- The investigator visited the study setting through 3 days/week during morning and afternoon shifts and met the nurse supervisor of the setting and patients, introduced himself, explained the aim of the study, and gave them a complete background about the study and the sheet format used to collect the required data.
- During this stage, all data were collected from the studied patients.
- Interviews were conducted with the patients who agreed to participate in the study.

**III-Administrative item:**

An official permission was issued from the Dean of the Faculty of Nursing at Helwan University to the general director of the medical department, of the gastrointestinal tract endoscopy and internal medicine units at El Karnak International Health Insurance Hospital in Luxor government., and Scientific Research Ethical Committee in the Faculty of Nursing as approval to conduct this study.

**Ethical Considerations:**

-The research approval was issued from the Scientific Research Ethical Committee in the Faculty of Nursing at Helwan University before starting the study.

-The investigator clarified the study's importance and aim to all the patients included in the study.

-Oral consent was obtained from all the studied

-The questionnaire didn't include any immoral statements that touch the patient's beliefs, dignity, culture, tradition, and religious issues.

-All patients were informed that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time without giving any reason and confidentiality of the information was assured.

-All patients were informed that the collected data would be used only for the present study

**IV-Statistical item:**

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 16, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category. Chisquare (X2) test of significance was used to compare proportions between qualitative parameters. Probability (P-value) is the degree of significance, less than 0.05 was considered significant (*), less than 0.001 was considered. highly significant (**) and the correlation coefficient was done by using the Pearson correlation test (r).

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## RESULTS

**Table (1):** frequency and percentage distribution of the studied patients according to their personal characteristics (n=145).

| Personal characteristics | N | % |
|---|---|---|
| **Age ( in years)** | | |
| 18 ≥30 years | 0 | 0.0 |
| 30 ≥40 years | 12 | 8.3 |
| 40 ≥50 years | 45 | 31.0 |
| 50 ≥60 years | **88** | **60.7** |
| ***Mean ±SD*** | **50.04±7.62** | |
| **Gender** | | |
| Male | 105 | **72.4** |
| Female | 40 | 27.6 |
| **Educational level** | | |
| Can't write &read | 4 | 2.7 |
| Write &read | **80** | **55.2** |
| Primary education | 0 | 0.0 |
| preparatory education | 14 | 9.7 |
| Secondary education | 38 | 26.2 |
| undergraduate education | 9 | 6.2 |
| Post graduate education | 0 | 0.0 |
| **Marital status** | | |
| Single | 3 | 2.1 |
| Married | **7** | **94.5** |
| Widow | 5 | 3.4 |
| Divorced | 0 | 0.0 |
| **Occupation** | | |
| Employee | 28 | 19.3 |
| Worker | **70** | **48.3** |
| Housewife | 45 | 31.0 |
| Retired | 2 | 1.4 |
| **Residence** | | |
| Rural | **107** | **73.8** |
| Urban | 38 | 26.2 |
| **Monthly income** | | |
| Enough | 30 | 20.7 |
| Not enough | **115** | **79.3** |
| **Treatment covered by health insurance** | | |
| Yes | 145 | **100.0** |
| No | 0 | 0.0 |

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**Table (2):** Frequency and percentage distribution of the studied patients according to their medical history (n=145).

| Medical history | N | % |
|---|---|---|
| **Onset of disease** | | |
| 1≥5 years | 16 | 11.0 |
| 5≥10years | 4 | 2.8 |
| ≥10 years | 116 | **80.0** |
| **Disease degree** | | |
| Grade I | 6 | 4.1 |
| Grade II | 118 | 81.4 |
| Grade III | 21 | 14.5 |
| **Times for hospital admission** | | |
| Frist time | 3 | 2.1 |
| Second time | 20 | 13.8 |
| More than that | 122 | 84.1 |
| **How were esophageal varices diagnosed** | | |
| Occurrence of symptoms | 132 | **91.0** |
| Ct scan | 0 | 0.0 |
| Endoscopy | 4 | 2.8 |
| **If the disease is diagnosed by symptoms, what is it (n=132)** | | |
| Weight loss | 3 | 2.1 |
| Bleeding | 129 | **97.7** |
| Weakness and fatigue | 0 | 0.0 |
| Jaundice | 0 | 0.0 |
| All the above | 0 | 0.0 |
| **Bleeding occurrence** | | |
| Yes | 127 | **87.6** |
| No | 18 | 12.4 |
| **Bleeding severity (n=127)** | | |
| Mild | 23 | 15.9 |
| Moderate | 45 | 31.0 |
| Sever | 59 | **40.7** |
| **Presence of melena** | | |
| Yes | 58 | 40.0 |
| No | 87 | 60.0 |

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**Table (3):** Frequency and percentage distribution of the studied patients according to medication Adherence (n=145).

| Morisky medication Adherence scale | Yes | | No | |
|---|---|---|---|---|
| | N | % | N | % |
| Do you sometimes forget to take your treatment? | 83 | **57.2** | 62 | 42.8 |
| People sometimes miss taking their medicines for reasons other than forgetting. Over the past 2 weeks, were there any days when you did not take your treatment? | 56 | 38.6 | 89 | 61.4 |
| Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it? | 62 | 42.8 | 83 | 57.2 |
| When you travel or leave home, do you sometimes forget to bring your Medication? | 83 | **57.2** | 62 | 42.8 |
| Did you take all your medicine yesterday? | 106 | 73.1 | 39 | 26.9 |
| When you feel like your symptoms are under control. Do you sometimes stop taking your medicine? | 62 | 42.8 | 83 | 57.2 |
| Taking medication every day is a real inconvenience for some people, do you ever feel hassled about sticking to your treatment plan? | 87 | **60.0** | 58 | 40.0 |
| Do you have difficulty remembering to take all your treatment? | 60 | 41.4 | 85 | 58.6 |

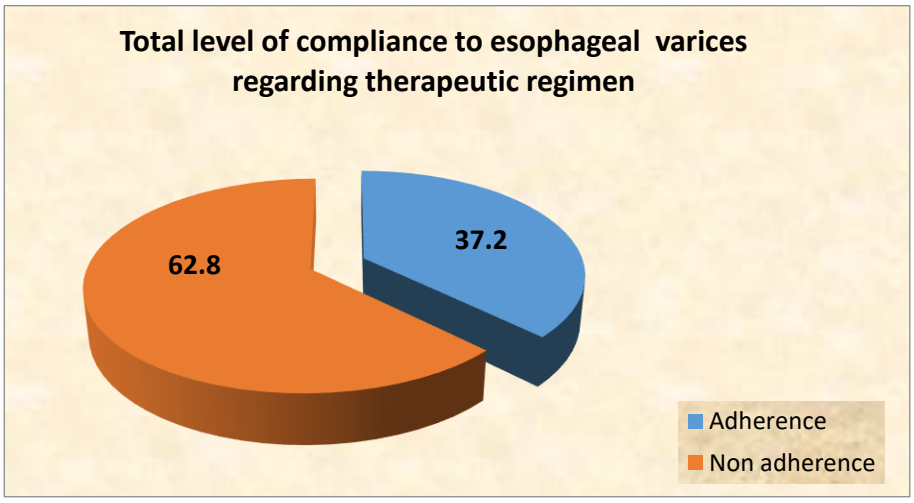


**Figure (1):** Percentage of the studied patients according to their total level of medication Adherence (n=145).

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**Table (4):** Frequency and percentage distribution of the studied patients according to their total level of compliance domains (n=145).

| | Low | | Moderate | | High | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Follow up compliance | 72 | **49.7** | 38 | 26.2 | 35 | 24.1 |
| Exercise compliance assessment | 112 | **77.2** | 23 | 15.9 | 10 | 6.9 |
| Nutritional compliance assessment | 58 | **40.0** | 57 | 39.3 | 30 | 20.7 |

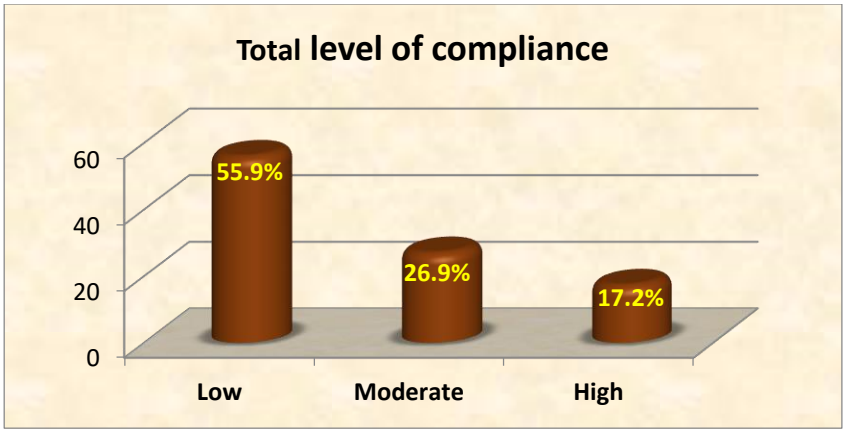


**Figure (2):** Frequency and percentage distribution of the studied patients according to their total level of therapeutic regimen compliance (n=145).

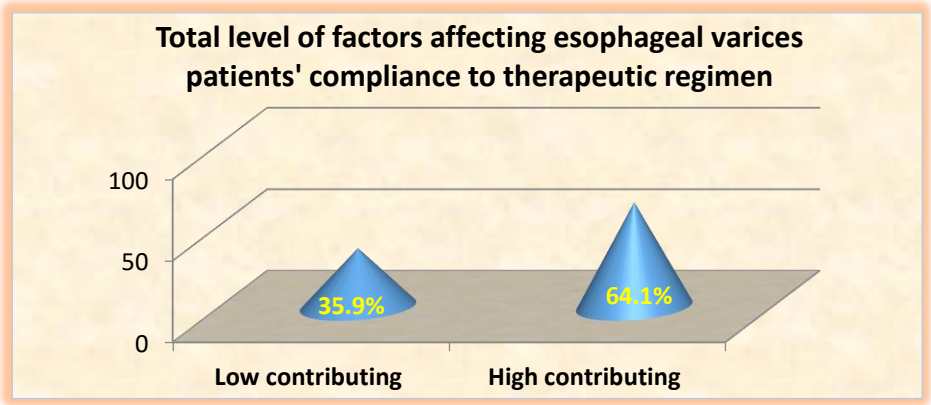


**Figure (3):** frequency and percentage distribution of the studied patients according to their total level of factors effect (n=145).

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**Table (5):** Relation between personal characteristics and their total level of compliance (n=145).

| Personal characteristics | | Total level of adherence | | | | $X^2$ | P-value |
|---|---|---|---|---|---|---|---|
| | | compliance | | Not compliance | | | |
| | | N | % | N | % | | |
| **Age (in years)** | 30 ≥40 years | 3 | 2.1 | 9 | 6.2 | 4.073 | 0.130 (NS) |
| | 40 ≥50 years | 22 | 15.2 | 23 | 15.9 | | |
| | 50 ≥60 years | 29 | 20.0 | 59 | 40.7 | | |
| **Gender** | Male | 37 | 25.5 | 68 | 46.9 | 0.654 | 0.419 (NS) |
| | Female | 17 | 11.7 | 23 | 15.9 | | |
| **Educational level** | Can't write &read | 1 | 0.7 | 3 | 2.1 | 7.520 | **0.009* (S)** |
| | Write &read | 28 | 19.3 | 52 | 35.9 | | |
| | Primary education | 0 | 0.0 | 0 | 0.0 | | |
| | preparatory education | 9 | 6.2 | 5 | 3.4 | | |
| | Secondary education | 15 | 10.3 | 23 | 15.9 | | |
| | University | 1 | 0.7 | 8 | 5.5 | | |
| **Marital status** | Single | 3 | 2.1 | 0 | 0.0 | 9.472 | 0.111 (NS) |
| | Married | 47 | 32.4 | 90 | 62.1 | | |
| | Widow | 4 | 2.8 | 1 | 0.7 | | |
| **Occupation** | Employee | 11 | 7.6 | 17 | 11.7 | 1.976 | 0.577 (NS) |
| | Worker | 24 | 16.6 | 46 | 31.7 | | |
| | Housewife | 19 | 13.1 | 26 | 17.9 | | |
| | Retired | 0 | 0.0 | 2 | 1.4 | | |
| **Residence** | Rural | 46 | 31.7 | 61 | 42.1 | 5.774 | **0.016* (S)** |
| | Urban | 8 | 5.5 | 30 | 20.7 | | |
| **Monthly income** | Enough | 11 | 7.6 | 19 | 13.1 | 0.942 | **0.005* (S)** |
| | Not enough | 43 | 29.7 | 72 | 49.7 | | |

$X^2$=Chi-square of independency test **P-value > 0.05** Non-significant

*** P-value ≤ 0.05 Significant**

**Table (6):** Relationship between personal characteristics and their total level of compliance regarding therapeutic regimen (n=145).

| Personal characteristics | | Total level of compliance | | | | | | $X^2$ | P-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Low | | Moderate | | High | | | |
| | | N | % | N | % | N | % | | |
| **Age (in years)** | 30 ≥40 years | 6 | 4.1 | 6 | 4.1 | 0 | 0.0 | 9.368 | **0.053* (S)** |
| | 40 ≥50 years | 23 | 15.9 | 16 | 11.0 | 6 | 4.1 | | |
| | 50 ≥60 years | 52 | 35.9 | 17 | 11.7 | 19 | 13.1 | | |
| **Gender** | Male | 62 | 42.8 | 30 | 20.7 | 13 | 9.0 | 6.304 | **0.013* (S)** |
| | Female | 19 | 13.1 | 9 | 6.2 | 12 | 8.3 | | |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Educational level** | Can't write &read | 2 | 1.4 | 2 | 1.4 | 0 | 0.0 | 6.940 | 0.543 (NS) |
| | Write &read | 43 | 29.7 | 23 | 15.9 | 14 | 9.7 | | |
| | Primary education | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | | |
| | preparatory education | 9 | 6.2 | 4 | 2.8 | 1 | 0.7 | | |
| | Secondary education | 23 | 15.9 | 6 | 4.1 | 9 | 6.2 | | |
| | University | 4 | 2.8 | 4 | 2.8 | 1 | 0.7 | | |
| **Marital status** | Single | 1 | 0.7 | 2 | 1.4 | 0 | 0.0 | 4.130 | 0.389 (NS) |
| | Married | 76 | 52.4 | 36 | 24.8 | 25 | 17.2 | | |
| | Widow | 4 | 2.8 | 1 | 0.7 | 0 | 0.0 | | |
| **Occupation** | Employee | 16 | 11.0 | 3 | 2.1 | 9 | 6.2 | 24.650 | **0.001* (S)** |
| | Worker | 42 | 29.0 | 26 | 17.9 | 2 | 1.4 | | |
| | Housewife | 22 | 15.2 | 9 | 6.2 | 14 | 9.7 | | |
| | Retired | 1 | 0.7 | 1 | 0.7 | 0 | 0.0 | | |
| **Residence** | Rural | 59 | 40.7 | 28 | 19.3 | 20 | 13.8 | 0.617 | 0.735 (NS) |
| | Urban | 22 | 15.2 | 11 | 7.6 | 5 | 3.4 | | |
| **Monthly income** | Enough | 13 | 9.0 | 9 | 6.2 | 8 | 5.5 | 3.147 | 0.207 (NS) |
| | Not enough | 68 | 46.9 | 30 | 20.7 | 17 | 11.7 | | |

**Table (7):** Relationship between personal characteristics and their total level of factors (n=145).

| **Personal characteristics** | | **Total level of factors** | | | | **$X^2$** | **P-value** |
|---|---|---|---|---|---|---|---|
| | | **Low contributing** | | **High contributing** | | | |
| | | **N** | **%** | **N** | **%** | | |
| **Age (in years)** | 30 ≥40 years | 4 | 2.8 | 8 | 5.5 | 11.240 | **0.004* (S)** |
| | 40 ≥50 years | 25 | 17.2 | 20 | 13.8 | | |
| | 50 ≥60 years | 23 | 15.9 | 65 | 44.8 | | |
| **Gender** | Male | 39 | 26.9 | 66 | 45.5 | 0.271 | 0.604 (NS) |
| | Female | 13 | 9.0 | 27 | 18.6 | | |
| **Educational level** | Can't write &read | 1 | 0.7 | 3 | 2.1 | 9.461 | **0.051* (S)** |
| | Write &read | 28 | 19.3 | 52 | 35.9 | | |
| | Primary education | 0 | 0.0 | 0 | 0.0 | | |
| | Preparatory education | 10 | 6.9 | 4 | 2.8 | | |
| | Secondary education | 10 | 6.9 | 28 | 19.3 | | |
| | University | 3 | 2.1 | 6 | 4.1 | | |
| **Marital status** | Single | 1 | 0.7 | 2 | 1.4 | 1.315 | 0.518 (NS) |
| | Married | 48 | 33.1 | 89 | 61.4 | | |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Widow | 3 | 2.1 | 2 | 1.4 | | |
| **Occupation** | Employee | 5 | 3.4 | 23 | 15.9 | 8.144 | **0.043* (S)** |
| | Worker | 32 | 22.1 | 38 | 26.2 | | |
| | Housewife | 15 | 10.3 | 30 | 20.7 | | |
| | Retired | 0 | 0.0 | 2 | 1.4 | | |
| **Residence** | Rural | 34 | 23.4 | 73 | 50.3 | 2.964 | 0.085 (NS) |
| | Urban | 18 | 12.4 | 20 | 13.8 | | |
| **Monthly income** | Enough | 15 | 10.3 | 15 | 10.3 | 3.278 | 0.070 (NS) |
| | Not enough | 37 | 25.5 | 78 | 53.8 | | |

$X^2$=Chi-square of independency test **P-value > 0.05** Non-significant

*** P-value ≤ 0.05 Significant**

## RESULTS

**Table (1) shows that,** 60.7% of the studied patients were in age group 50 ≥60 years with mean age 50.04±7.62 years and 72.4% of the studied patient were males. Also, 55.2% of the studied patients were read and write and 94.5% of the studied patients were married. Additionally, 48.3% of the studied patients were workers and 73.8% of the studied patients were from rural residence. Moreover, 79.3% of the patients studied reported that they didn't have enough income.

**Table (2) shows that,** 80.0% of the studied patients had been diagnosed since ≥10 years and 81.4% of them were grade II. Also, times for hospital admission was More than tow time among 84.1% of them. The disease diagnosed by occurrence of symptoms among 91.0% of the studied patients, 87.6% of the studied patients reported bleeding occurrence and 40.7% of them had severe bleeding.

**Table (3) reveals that,** 60.0% of the studied patients feel hassled about sticking to their treatment plan. Also, 57.2% of studied patients reported that sometimes forget to take their treatment. Additionally, 57.2% of studied patients reported that they sometimes forget to bring their medication when traveling or leave home.

**Figure (1)** illustrates that 62.8% of the studied patients had no medication adherence level of medication while, 37.2% of them had medication adherence.

**Table (4)** illustrates that, 49.7% of the studied patients had low compliance level regarding follow up. Also, 77.2% of the studied patients had low compliance level regarding exercise. Additionally, 40.0% of the studied patients had low compliance level regarding nutrition.

**Figure (2)** illustrates that, 55.9% of the studied patients had low compliance level while 26.9 % of them had moderate level of therapeutic regimen. Only, 17.2% of them had high level of therapeutic regimen.

**Figure (3)** illustrates that, 64.1% of the studied patients had a high contributing factor that affect therapeutic regimen with high contributing effect on compliance to therapeutic regimen regarding esophageal varices while, 35.9% of the studied patients had low contributing factors that affect esophageal varices compliance to therapeutic regimen.

**Table (5)** shows that, there was a significant statistical relation between medication adherence of the studied patients and their educational level, residence and income at (P-value 0.009, 0.016 and 0.005) respectively.

**Table (6)** shows that there was a significant statistical relationship between compliance of the studied patients and their age, gender and occupation at (P-value 0.053, 0.013 and 0.001) respectively.

**Table (7)** shows that, there was a significant statistical relation between factors affecting compliance of the studied patients and their educational level and occupation at (P-value 0.051 and 0.043) respectively.

## DISCUSSION

Esophageal variceal bleeding is a life-threatening condition that is characterized by acute, massive bleeding. The risk of variceal bleeding increases with severity and variceal

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size. When bleeding occurs, many complications happen to the patient that affect his health such as death and serious conditions. Understanding illness perceptions is critical for providing effective treatment. Patients with chronic conditions may actively construct their models of illness to deal with the impact of their condition ***(Ali et al. 2020).***

Therefore, the present study was carried out to assess factors affecting compliance of patients with esophageal varices regarding therapeutic regimen.

**The discussion of the findings covered three main parts; Part I:** Personal characteristics and medical history of the studied patients, **part II:** Therapeutic regimen compliance among the studied patients, Part **III:** Factors affecting esophageal varices patients' compliance to therapeutic regimen and **Part IV:** Relations between the studied variables among the studied patients

Regarding the personal characteristics of the studied patients, this study shows that more than two-thirds of the studied patients were in the age group more than 50 to 60 years with a mean age of 50.04±7.62 years, and more than two-thirds of them were males. More than half read and write. Most of them were married. Additionally, about half of the patients studied were workers, and more than two-thirds of them were from rural residences. Moreover, the majority of the patients studied reported not having enough income.

This result is like ***Mohamed et al., (2021)***, in a study entitled "Knowledge and Concerns of Patients with Esophageal Varices, " which found that about two-thirds of the studied patients were in the age group 50≥60 years, and more than two-thirds were married. Additionally, this result goes in line with ***Elsayed et al., (2023)***, who studied the efficacy of educational bundles on patients' clinical outcomes post-esophageal varices treatment and found that more than half of the studied patients were male, and more than one-third of the studied patient was a worker. Also, this result is like ***Ali et al.'s (2020)*** study entitled "Assessment of Patients' Knowledge and Perception Regarding Factors Aggravating Esophageal Variceal Bleeding, "who found that more than two-thirds of the studied patients were male, all of the studied patients were married, and about two-thirds of the studied patient were from rural residence, and all of the studied patients reported not having enough income.

This result disagrees with ***Mohamed et al., (2021)*** who found that more than half were female, couldn't read and write and nearly half of the studied patients were housewives.

Regarding therapeutic regimen compliance among the studied patients, this study reveals that about two-thirds of the studied patients (feel hassled about sticking to their treatment plan. Also, more than half of studied patients reported that sometimes forget to take treatment. Additionally, more than half of studied patients reported that sometimes forget to bring medication when traveling or leave home.

From the researcher's point of view, which might have something to do with complicated medication schedules and changes to lifestyles. More than half of the patients who were studied say they sometimes forget to take their medication or bring it with them when they travel or leave home. Because of these problems and the fact that esophageal varices require long-term care to prevent major consequences, a lot of people do not take their medication as prescribed. these also may be due to their old age, and they find difficult to remember. This shows the need for extra help, like reminders or simpler schedules, to improve treatment consistency and patient outcomes.

These findings agreed with ***Hagström et al. (2023)*** who conducted a study entitled:" Secondary prevention of esophageal variceal bleeding is often imperfect" and found that factors of mortality rates were due to the lack of compliance with the patient's treatment regimen.

Regarding the studied patients' total level of medication compliance, this study illustrates that about two-thirds of the studied patients had no medication adherence, while more than one-third of the studied patients had an adherence level of medication. From the investigator's point of view that may be related to factors contributing to poor medication adherence among two-thirds of patients often include complex treatment regimens, frequent side effects, and limited awareness of the importance of consistent medication use

Regarding the distribution of the patients studied according to their total level of therapeutic regimen compliance, the current

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study illustrates that more than half of the patients studied had a low compliance level, while less than one-third had a moderate level of therapeutic regimen. Only a minority of the patients studied had a high level of therapeutic regimen. These findings disagreed with Watanabe et al. (2024) who conducted a study entitled:" Clinical factors to predict changes of esophagogastric varices after sustained viral response with direct-acting antiviral therapy" reported that more than two-thirds of the studied patients had adequate compliance related to medication, diet, exercises and follow up respectively while more than two-thirds of the studied patients were inadequate total compliance and nearly one third had adequate compliance.

## CONCLUSION

Based on the findings of the present study. More than half of the studied patients have a low level of compliance, and less than one-third of them have a moderate level of compliance. A minority of the studied patients have a high level of compliance. Additionally, it illustrates that about half of the studied patients had a fair knowledge level, and less than one quarter of the studied patients had a poor level of knowledge. While less than one third of them had a good level of knowledge.

Furthermore, about two-thirds of the studied patients had a high contributing factor that affected therapeutic regimen factors with a high contributing effect on compliance to the therapeutic regimen of esophageal varices, while more than one-third of the studied patients had low contributing factors that affect esophageal varices compliance to therapeutic regimen.

Moreover, there was a significant statistical relation between factors affecting compliance of the studied patients and their educational level and occupation at (P-value 0.051 and 0.043) respectively.

**The present study Recommended the following:**

1- Regular follow-up for all the patients studied to evaluate their health conditions and detect complications early: This ensures continuous patient care and early detection of issues, which is critical for patient outcomes.
2- Regular educational and training programs to study patients to improve their knowledge about bleeding esophageal varices
3- Enhance patient- physician relationship to improve compliance to therapeutic regimen.

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