

Nurses' Performance Regarding Care of Patients with Bleeding Esophageal Varices

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Abstract

Background: Esophageal varices are enlarged or swollen veins that occur on the lining of the esophagus. Varices can be life-threatening if they break open and bleed. **Aim:** This study was conducted to assess nurses' performance (knowledge, practice and attitude) while caring of patients with bleeding esophageal varices. **Design:** An exploratory descriptive design was utilized to achieve the aim of the study. **Setting:** The study was conducted at medical ICU and hematemsis unit at Zagazig University Hospitals. **Study subject:** A convenient sample of (30) nurses working in the previously mentioned units within 6 months. **Tools:** three tools were used including: **I-** Nurses' self-administered questionnaire used to assess nurses' knowledge and demographic characteristics of the study nurses. **II-** Likert scale used to assess nurses' attitude in caring of patients with bleeding esophageal varices. **III-** Nurses' observational checklist used to assess nurses' practice in caring of patients with bleeding esophageal varices. **Results:** 65.7% and 53.33% of nurses had unsatisfactory level of knowledge and practice, while 60% of them had a positive attitude regarding caring of patients with bleeding esophageal varices. **Conclusion:** there was a highly statistically significant relation between total nurses' knowledge and practice. **Recommendations:** Further research are recommended to study new approaches in the area of care and management of patients with bleeding esophageal varices and evaluate its reflection on patient's outcomes.

Keywords: Bleeding esophageal varices – Nurses' Performance.

Introduction

Bleeding esophageal varices is a life-threatening complication of portal hypertension affecting up to 30% of patients with chronic liver disease such as cirrhosis. Those patients who bleed, nearly half of patients will die and approximately one third with each subsequent bleed. Nearly all patients who have a variceal bleed will have bleeds again in the future (*Graham & Smith, 2017*).

Esophageal varices are enlarged and abnormal veins located in the lower part of the esophagus. This condition is usually seen in patients with liver disease. When normal blood flow to the liver is blocked by scar tissue or even a clot, blood pressure in portal veins becomes greater than 10mmHg. Varices begin to develop as blood start to bypass the larger vessels and flow with too much amounts to the

small vessels in the esophagus which are not made to carry such a large volume (*Sutton, 2018*).

Esophageal Varices do not cause symptoms until they leak or rupture, leading to massive bleeding. Signs of bleeding from varices can include vomiting blood, dark-colored or black stools, lightheadedness, Low blood pressure, Rapid heart rate and Shock in severe cases (*Dave, Romeu and Messer, 2018*).

Bleeding esophageal varices should be managed in an intensive care setting by an experienced medical team including well-trained nurses, clinical hepatologists, endoscopists, inter-ventional radiologists, and surgeons. A lack of these facilities demands an immediate referral. Initial resuscitation should

follow the classic airway, breathing, and circulation scheme with the goal of maintaining or restoring appropriate tissue oxygenation (*Tripathi et al., 2015*).

She should begin fluid resuscitation with rapid infusion of crystalloid and colloid solution, Give blood (ideally cross-matched) as soon as possible - if a delay is likely then group O rhesus negative blood may need to be given. The initial aim is to correct hypovolaemia - this may require several litres. Patients should be monitored with a cardiac monitor, blood pressure, pulse rate and urine output (catheterise until the patient is stabilised) (*Henderson, 2013 and Carale, 2015*).

Significance of the study

Bleeding esophageal varices is a life – threatening emergency that result in a high morbidity and mortality and it accounts for 75% of all upper gastrointestinal bleeding and responsible for 20% of deaths among Egyptian patients between ages of 35 to 75 years, while in the western countries it accounts for 30% of all upper gastrointestinal bleeding. Patients with bleeding esophageal varices are considered critically ill patients and required urgent admission to the intensive care unit. So, the role of the nurse requires specific attention to prevent or minimize complications and decrease length of hospital stay. It is important to apply specific nursing interventions that can entails knowledge and skills required by nurses in order to carry out care effectively (*Semltzer, Hinkle, Bare and Cheever, 2018*).

Aim of the study

This study aimed to assess nurses' performance regarding care of patients with bleeding esophageal varices through the following:

1. Assessing the nurses' level of knowledge regarding care of patients with bleeding esophageal varices.

2. Assessing the nurses' level of practice regarding care of patients with bleeding esophageal varices.
3. Assessing the nurses' level of attitude regarding care of patients with bleeding esophageal varices.

Research questions:

What are the nurses' level of performance regarding care of patients with bleeding esophageal varices?

Subject and Methods

Research design: A descriptive research design was utilized to meet the aim of the study.

Setting: The study was conducted in medical ICU and hematemesis unit at Zagazig University Hospitals / El Sharkia governate / Egypt. Medical ICU contain one big room equipped by eleven beds, emergency kit, crash cart, DC shock machine, center station, monitor and mechanical ventilator. Hematemesis unit contain three rooms equipped by emergency kit, center station, infusion pump, anasesthesia machine, monitor, crash cart and recovery room.

Subjects: A convenient sample of all available nurses (No= 30 nurses) from medical ICU and hematemesis units at Zagazig University Hospitals / El Sharkia/ Egypt. All nurses who accepted to participate in the study from both genders, with different educational level and working in the previous mentioned setting were recruited to participate in this study.

Tools for data collection: Three tools were used to collect data of the study as following:

Tool I: Nurse's self- administered questionnaire: it was developed by the researcher based on the related literature (*Sørensen, et al., 2015; Friedman, 2018; Greaves, et al., 2018; Kim, et al., 2018*) and it was consisted of two parts:

Part (1): It was concerned with assessment of **demographic characteristic** of

the nurses under study that included: age, professional qualifications, years of experience and previous training courses.

Part (2): It was used to assess nurses' level of knowledge regarding care of patients with bleeding esophageal varices. It includes: 29 items. Each question was given 0 for incorrect answer and 1 for correct answer, and total mark 29 degree. The total level of nurses' knowledge was categorized into unsatisfactory or satisfactory knowledge level as follows:

- <90% was considered unsatisfactory (< 26 grades).
- ≥90% was considered satisfactory (≥ 26 grades).

Tool II: Attitude: It was developed by the researcher after reviewing the relevant literature (*Bulger et al., 2014; Jones & Fix, 2015; Purves & Dale, 2016; Zuidema, 2016; Colledge et al., 2018*). It was used to assess nurses' attitude regarding patients with bleeding esophageal varices. It included 17 statements that reflect the nurses' feelings and reactions toward patient with bleeding esophageal varicease. This part included positive and negative statements. Three likert scale was used with 3 responses which are agree, to some extent and disagree. Agree response was scored 3, to some extent was scored 2, and disagree was scored 1. The score was reversed with the negative statements. Total mark was 51 degree and the total was categorized into two categories as following:

- < 75% had a ppositive attitude (< 38 degree).
- ≥ 75% had a negative attitude (≥ 38 degree).

Tool III: Nurses' performance observational checklists: It was used to assess nurses' practice in the management of patients with esophageal varices; it was developed by the researcher based on the related literature (*Garcia-Tsao, Sanyal & Grace, 2015; Garcia & et al., 2015; Merkel, Bolognesi & Sacerdoti, 2016; Sundaram & Shaikh, 2017; Moore & Aithal, 2018*).

This tool consisted of 156 steps, each step was scored by zero if not done correctly or not done and was scored by one if done correctly with total mark 156 degrees. A subtotal for nurses practice was categorized into satisfactory or unsatisfactory practice as following:

- ≥ 90% were considering satisfactory (≥ 140degree).
- <90% was considered unsatisfactory (< 140 degree).

II-Operational design:

- The operational design includes preparatory phase, validity &reliability, pilot study, ethical consideration and field work.
- **Preparatory phase:** It included reviews of current and more recent national & international literature reviews concerning nurses' performance regarding patients with with esophageal variceaseof various aspects of this issue in order to develop the data collection tools.
- **Tools validity & reliability:-**
- **Testing the validity** of the proposed tools by using face and content validity, Validity aimed to inspecting the items to determine whether the tools measure what supposed to measure and conducted to determine whether the tool covers the aim. Validity was tested through a jury of 7 experts from Medical Surgical Nursing Department, Ain Shams University, 2 professors, 4 assistant professors and one lecturer. The jury members reviewed the tools for clarity, relevance, comprehensiveness, simplicity and applicability, minor modifications were done.
- **Testing reliability:** was done by a cronbach's alpha test which used to examine whether the tools had internal consistency. The knowledge practice & likert sckle tools had a good internal consistency & tests reached 0.78, 0.85,0.90 respectively.
- **Pilot study:** was conducted on these nurses who represented 10% of nurses under the study in order to test the applicability of the developed study tools, the clarity of included questions as well as the average time needed

to complete tools. The results obtained were studied and analyzed accordingly. Modifications were made for the final development of the tools, the study nurses who shared in the pilot study were excluded from the study sample.

- **Field work:** Field work was included: Interviewing with (30) nurses caring for patients with bleeding esophageal varicease in the previously mentioned setting to explain the aim of the study. What is the effect of this study on their performance as well as quality of patient care? & take their approval to participate in the study prior to any data collection.
- Firstly, the researcher filled the observational ckecklist in the morning and afternoon shifts in clinical work areas. Nurses were observed while working, it took about 35- 40 minutes for every nurse and fulfilled by the researcher.
- Then self-administered questionnaire tool was filled by the nurses, it took about 30- 40 minutes.
- The nurse's attitude Likert scale was filled by the nurses, it took about 15 minutes.

Data collection was done 4 days per week (Sunday, Monday, Tuesday& Wednesday). Started in December 2017, it takes 8 hours from (9am to 1pm and from 3pm to 7pm) for 3 months in the previously mentioned setting in morning & afternoon shifts.

III-Administrative design:

The study started with a letter indicating the aim of the study sent from the Faculty of Nursing Ain Shams University to the hospital director, and also to nursing director to obtain the permission and help to conduct the study in their facilities. The nurses included in the study were informed about the aim of the study, an oral permission was obtained from them, and confidentiality was assured.

IV-Ethical consideration:

Ethical approval was obtained from the scientific, ethical committee of Faculty of Nursing, Ain Shams University. The purpose of the study was explained to the nurses before

conducting the study & oral consent was obtained from them to participate in the study. They were given an opportunity to withdraw from the study without giving a reason and they were assured that anonymity and confidentiality of information were protected. Ethics, values, culture & belief were respected.

V- Statistical design:

Data entry & analysis were organized, categorized & analyzed using SPSS (Statistical Program for Social Science). Data were presented using descriptive statistics in the form of frequencies and percentages; description of qualitative variables as mean, SD and range, statistically significant was considered as $P < 0.05$, insignificant at $P > 0.05$ and highly significant at $P < 0.01$.

Results

Table (1): shows that, 53.33% of nurses under study were aged less than 30 years old, while the mean \pm SD was 35.25 ± 4.63 , and 73.33% of them were female .Regarding level of education and training courses, it was found that, 76.67% of nurses were have deploma and 80% of them didn't take traning courses. Also, 50% of them have experience less than 5 years in medical ICU and hematemsis unit.

Figure(1): revealed that 56.7% of nurses under study have unsatisfactory knowledge regarding care of patients with bleeding esophageal varices.

Figure (2): revealed that 53.33% of nurses under the study have unsatisfactory level of practice.

Table (2): indicates that, there is a highly statistically significant relation between nurses practice and nurses Knowledge when ($X^2 = 13.274$ at $p < 0.001^{**}$).

Table (3): indicates that, there is a statistically significant relation between Likrt scale and nurses Knowledge when ($X^2 = 9.977$ at $p < 0.002^*$).

Table (4): indicates that, there is a statistically significant relation between nurses' practice and attitude when ($X^2 = 7.232$ at $p < 0.007^*$).

Table (5): indicate that there is a highly statistically significant relation between nurses' knowledge level and Experience in medical ICU and hematemsis unit (18.563 at $p < 0.001$), and also, their qualifications (11.940 at $p < 0.001$) respectively. Also, there is statically significant relation between nurses' knowledge level and their age and training courses ($X^2 = 8.733$ at $p = 0.013^*$) and (9.808 at $p = 0.002$) respectively.

Table (6): indicates that there is statistically significant relation between nurse's practice and age groups, nurse's practice and qualification, nurse's practice and experience in medical ICU and hematemsis unit, also nurse's

practice and training courses whenever there is highly statistically significant relation between nurse's practice and effect of training courses on work ($p < 0.001$).

Table (7): indicates that there is statistically significant relation between nurses' attitude and their age groups, , qualifications, experience in medical ICU and hematemsis unit, and training courses. Whenever there is highly statistically significant between nurses' attitude and effect of training courses on work ($p < 0.001$).

Table (8): indicates that there is a positive corelation between nurses' total level of knowledge and their practice ($r = 0.384$ at $P < 0.001^{**}$) and attitude ($R = 0.433$ at $P < 0.001^{**}$) respectively. Also, there is a positive corelation between nurses' total practice and their attitude ($R = 0.375$ at $P = 0.002^*$).

Table (1): Percentage distribution of demographic characteristics of studied nurses (n=30).

Items	N	%
Gender		
Male	8	26.67
Female	22	73.33
Age		
18<30	16	53.33
30<40	9	30.00
40 to up	5	16.67
Mean±SD		35.25±4.63
Qualifications		
Diploma in Nursing	23	76.67
Bachelor of Nursing	7	23.33
Experience in medical ICU and hematemsis unit		
<5	15	50.00
5>10	8	26.67
>10	7	23.33
Mean±SD		8.42±3.67
Training about caring of patients with bleeding esophageal varices		
Yes	6	20.00
No	24	80.00
Does this affect your work		
Yes	4	66.7
No	2	33.3

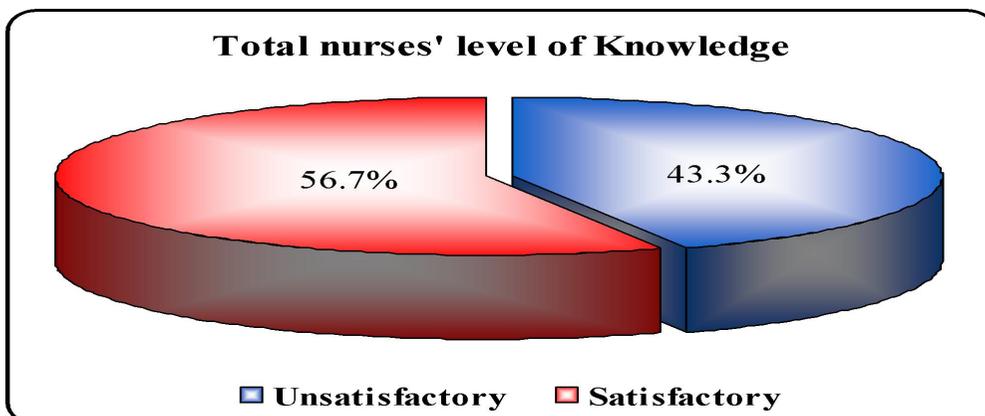


Figure (1): Percentage distribution of total nurses' level of Knowledge regarding care of patients with bleeding esophageal varices (n=30).

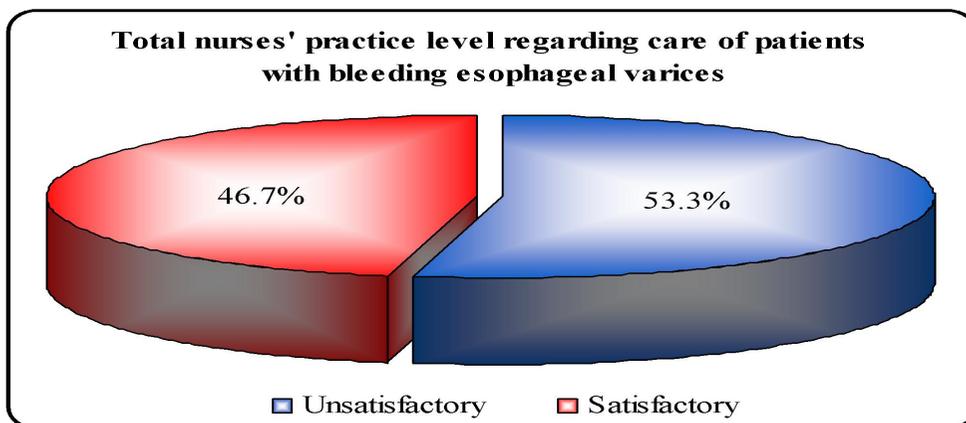


Figure (2): Percentage distribution of total nurses' practice level regarding care of patients with bleeding esophageal varices (n=30).

Table (2): Relation between nurses' Knowledge and practice (n=30).

Total practice	Total knowledge			
	Satisfactory		Unsatisfactory	
	%	N	%	N
Satisfactory	17.6	3	84.6	11
Unsatisfactory	82.4	14	15.4	2
Chi-square	X ²	13.274		
	P-value	<0.001**		

Table (3): Relation between nurses' Knowledge and Attitude (n=30).

Attitude	Total knowledge			
	Satisfactory		Unsatisfactory	
	N	%	N	%
Positive	12	92.3	6	35.3
Negative	1	7.7	11	64.7
Chi-square	X^2		9.977	
	P-value		0.002*	

Table (4): Relation between nurses' Practice and Attitude (n=30).

Attitude	Total practice			
	Satisfactory		Unsatisfactory	
	N	%	N	%
Positive	12	85.7	6	37.5
Negative	2	14.3	10	62.5
Chi-square	X^2		7.232	
	P-value		0.007*	

Table (5): Relations between nurses' demographic characteristics and their total level of knowledge regarding care of patients with bleeding esophageal varices (n=30).

	Total knowledge				Chi-square	
	Satisfactory		Unsatisfactory		X^2	P-value
	N	%	N	%		
Gender						
Male	5	38.5	3	17.6	1.632	0.201
Female	8	61.5	14	82.4		
Age						
18<30	4	30.8	12	70.6	8.733	0.013*
30<40	4	30.8	5	29.4		
40 to up	5	38.5	0	0.0		
Qualifications						
Diploma in Nursing	6	46.2	17	100.0	11.940	<0.001**
Bachelor of Nursing	7	53.8	0	0.0		
Experience in medical ICU and hematemsis unit						
<5	1	7.7	14	82.4	18.563	<0.001**
5>10	5	38.5	3	17.6		
>10	7	53.8	0	0.0		
Training about caring of patients with bleeding esophageal varices						
Yes	6	46.2	0	0.0	9.808	0.002*
No	7	53.8	17	100.0		
Does this affect your work						
Yes	3	23.1	1	5.9	0.375	0.540
No	1	7.7	1	5.9		

Table (6): Relations between nurses' demographic characteristics and their practice regarding care of patients with bleeding esophageal varices (n=30).

	Total practice				Chi-square	
	Satisfactory		Unsatisfactory		X ²	P-value
	N	%	N	%		
Gender						
Male	4	28.6	4	25.0	0.049	0.825
Female	10	71.4	12	75.0		
Age					7.260	0.027*
18<30	5	35.7	11	68.8		
30<40	4	28.6	5	31.3		
40 to up	5	35.7	0	0.0		
Qualifications					5.593	0.018*
Diploma in Nursing	8	57.1	15	93.8		
Bachelor of Nursing	6	42.9	1	6.3		
Experience in medical ICU and hematemsis unit					6.735	0.034*
<5	4	28.6	11	68.8		
5>10	4	28.6	4	25.0		
>10	6	42.9	1	6.3		
Training about caring of patients with bleeding esophageal varices					8.571	0.003*
Yes	6	42.9	0	0.0		
No	8	57.1	16	100.0		
Does this affect your work					6.000	0.014*
Yes	4	30.8	0	0.0		
No	0	0.0	2	11.8		

Table (7): Relations between nurses' demographic characteristics and Attitude regarding care of patients with bleeding esophageal varices (n=30).

	Attitude				Chi-square	
	Positive		Negative		X ²	P-value
	N	%	N	%		
Gender						
Male	6	33.3	2	16.7	1.023	0.312
Female	12	66.7	10	83.3		
Age					7.894	0.019*
18<30	6	33.3	10	83.3		
30<40	7	38.9	2	16.7		
40 to up	5	27.8	0	0.0		
Qualifications					6.087	0.014*
Diploma in Nursing	11	61.1	12	100.0		
Bachelor of Nursing	7	38.9	0	0.0		
Experience in medical ICU and hematemsis unit					9.861	0.007*
<5	5	27.8	10	83.3		
5>10	6	33.3	2	16.7		
>10	7	38.9	0	0.0		
Training about caring of patients with bleeding esophageal varices					5.000	0.025*
Yes	6	33.3	0	0.0		
No	12	66.7	12	100.0		
Does this affect your work					2.400	0.121
Yes	4	30.8	0	0.0		
No	1	7.7	1	5.9		

Table (8): Correlations between nurses' total level of knowledge, practice and attitude regarding care of patients with bleeding esophageal varices:

	Knowledge		Practice	
	R	P-value	R	P-value
Practice	0.384	<0.001**		
Attitude	0.433	<0.001**	0.375	0.002*

Discussion

Regarding demographic characteristics of the studied nurses the current study showed that, more than half of nurses' their ages were less than 30 years and had an experience less than 5 years in medical ICU and hematensis unit. This may explain that young nurses are occupied in medical ICU and hematensis unit to tolerate the nature of the work and to acquire more experience; the study is consistent with **Bloom, Kemp, and Lubel, (2015)** in a research entitled for "Portal hypertension: pathophysiology, diagnosis and management" whose has revealed that about half of his studied subjects were less than 30 years old with years of experience less than 5 years.

Concerning the nurse's qualifications, the present study indicates that, more than three quarters of the studied nurses were diploma nurses, this might elaborate the current condition of nursing qualification on medical ICU and hematensis unit as highly educated nurses are occupied in more critical departments. This finding is inconsistent with what was reported by **Al-Nakshabandi, (2018)** in a research entitled for "The role of ultrasonography in portal hypertension" who stated that the largest numbers of nurses were recruited as staff nurses in the majority clinical nursing position in the hospital.

As regard to attending training courses, the result of the present study showed that, more than three quarters of nurses didn't receive training course about caring of patient with bleeding esophageal varices, this may be due to lack of in-service training programs, the staff nurses did not aware about the severe complications that may occur if an error

occurred during and after caring of patient with bleeding esophageal varices process and there is no time for attending any extra training program as a result of work overload.

This result agrees with **Iranpour, Pooya, Chandana, and Roozbeh (2016)** in a study entitled for "Altered Doppler flow patterns in cirrhosis patients: an overview" who found that more than two thirds of nurses didn't receive training courses about caring of patient with bleeding esophageal varices.

Concerning the total level of nurses' knowledge regarding care of patients with bleeding esophageal varices, the study revealed that more than half of nurses under study had unsatisfactory knowledge level regarding care of patients with bleeding esophageal varices. From the researcher point of view the lack of nurses knowledge may be due to few training courses in ICU and emergency units, the wide base for nurses' education in **Egypt** is diploma , lack of awareness about the importance of esophageal varices care, high turnover of nurses and annual leaves for child care that affect on number of nurses and this was supported by **Herrera, (2018)** in a research entitled "Management of acute variceal bleeding" who reported that insufficient knowledge has been attributed to deficiency in orientation or training and high turnover of nurses.

Concerning the total of nurses' practice level regarding all aspect of caring of patients with bleeding esophageal varices more than half of nurses had unsatisfactory level of practice. The unsatisfactory level of nurse's practice may be due to few training courses were conducted in medical ICU and hematensis units, high turnover of nurses and annual leaves that affect

on number of nurses and this was supported by **Huang, (2016)** in a research entitled "Guideline: the role of endoscopy in acute non-variceal upper GI bleeding" whose study reported that insufficient practice has been attributed to deficiency in orientation or training and high turnover of nurses.

Similar results were reported by **Vlachogiannakos, Goulis, Patch, and Burroughs, (2016)** in a research entitled "primary prophylaxis for portal hypertensive bleeding in cirrhosis" who reported that about two third of nurses had an unsatisfactory practice about all phases of caring of bleeding esophageal varices. While, the study was incongruent with **Smith & Graham, (2016)** entitled "Variceal hemorrhage: a critical evaluation of survival analysis" in a study who reported that about three fifth of nurses have satisfactory practice about caring of bleeding esophageal varices.

Pertaining to the relation between total nurses' performance (Knowledge and practice), the current study revealed that there was a highly statistically significant relation between nurses' knowledge and their practice. Where as, nurses who got an unsatisfactory knowledge had unsatisfactory practice, this means that the level of nurses' practice depending on the nurses' knowledge. This might be due to lack of in-service training program to provide nurses' with continuous professional development, knowledge also make nurses aware about how to deal with any reaction.

This study was in line with **D'Amico, Garcia-Pagan, Luca, and Bosch, (2018)** in a study entitled for " Hepatic vein pressure gradient reduction and prevention of variceal bleeding in cirrhosis: a systematic review " who mentioned that there was a statistical relation between nurses' knowledge and their practice. While this study was contradicted by **Chalasan, Kahi, and Francois, (2015)** in a research entitled for "Improved patient survival after acute variceal bleeding "who mentioned that,

there was no statistical relation between nurses' knowledge and their practice. Moreover, found that the nurses need for promoting their knowledge level about caring of patients with bleeding esophageal varices was positively related to their need for enhancement their performance.

Pertaining to the relation between total nurses' (Knowledge and Attitude), the current study revealed that there was a statistically significant relation between nurses' knowledge and their attitude. Where as, nurses who got an unsatisfactory knowledge had unsatisfactory attitude, this means that the level of nurses' attitude depending on the nurses' knowledge. This might be due to lack of in-service training program to provide nurses' with continuous professional development, knowledge also make nurses aware about how to deal with any reaction.

This study was in line with **El-Serag & Everhart, (2016)** in a research entitled for "Improved survival after variceal hemorrhage over an 11-year period in the Department of Veterans Affairs" who mentioned that there was a statistical relation between nurses' knowledge and their attitude. While this study was contradicted by **Beppu, Inokuchi, and Koyanagi, (2015)** in a study entitled for "Prediction of variceal hemorrhage by esophageal endoscopy" who mentioned that, there was no statistical relation between nurses' knowledge and their attitude. Moreover, found that the nurses need for promoting their knowledge level about caring of patients with bleeding esophageal varices was positively related to their need for enhancement their attitude.

Pertaining to the relation between total nurses' (Practice and Attitude), the current study revealed that there was a statistically significant relation between nurses' practice and their attitude. Where as, nurses who got an unsatisfactory practice had unsatisfactory attitude, this means that the level of nurses'

attitude depending on the nurses' practice. This might be due to lack of experience and nurses not aware about how to deal with any reaction. This study was in line with *Abd Elrazek, Mahfouz, and Afifi (2018)* in a research entitled for "Detection of risky esophageal varices by two-dimensional ultrasound: when to perform endoscopy" who mentioned that there was a statistical relation between nurses' practice and their attitude.

While this study was contradicted by *Berzigotti, Seijo, and Arena (2017)* in a study entitled for "Elastography, spleen size, and platelet count identify portal hypertension in patients with compensated cirrhosis" who mentioned that, there was no statistical relation between nurses' practice and their attitude. Moreover, found that the nurses need for promoting their performance level about caring of patients with bleeding esophageal varices was positively related to their need for enhancement their attitude.

Regarding the relation between nurses' demographic characteristic and their total level of knowledge. The study findings revealed that there were a highly statistically significant relation between nurses' demographic data (experience & qualifications) and their knowledge, and there was also statically significant difference between nurses' demographic data (age & training courses) and their knowledge, this results was inconsistent with *Triantos & Burroughs, (2015)* in a research entitled for "Prevention of the development of varices and first portal hypertensive bleeding episode" whose study revealed that there is no significant relation between nurses' experience in emergency and knowledge. The current study findings were supported by *Hernández-Gea, Aracil, and Colomo (2016)* in a research entitled for "Development of ascites in compensated cirrhosis with severe portal hypertension treated with β -blockers" who illustrated that when the years of experience increase, nurses have to

learn to improve their knowledge and skills for patients with bleeding esophageal varices.

Pertaining to the relation between demographic characteristic and practice the study shows that there was statistically significant relation this may be related to nurses age between (30 to 40 years) more experience in medical ICU and hematensis unit and, high qualified more than those with younger age nurses between (18 to < 30 years) as they have been exposed to such practice several times and their mastering skills are increased and improved. This result was in agreement with *Senzolo, Cholongitas, and Burra, (2017)* in a research entitled for "beta-Blockers protect against spontaneous bacterial peritonitis in cirrhotic patients: a meta-analysis" who mentioned that, the nurses should be appropriate age to be able to meet the assuming responsibility and communicate openly with patient with bleeding esophageal varices to improve management and outcome and that senior nurses of a higher age category take administrative role and delegate the nursing activities to the junior nurses, so they are far away from the practical field and consequently their mastering skills are decreased or diminished.

While there was highly statistically significant between nurse's practice and effect of training courses in work, this study was consistent with *de Franchis, Baveno, (2018)* in a research entitled for "Revising consensus in portal hypertension: report of the Baveno V consensus workshop on methodology of diagnosis and therapy in portal hypertension" whose study revealed that there is highly significant relation between nurse's practice and effect of training courses in work.

Regarding the relation between nurses' demographic characteristic and their attitude regarding to care of patient with bleeding esophageal varices was investigated. The present study findings revealed that there were a statistically significant relation between nurses'

attitude & nurses' demographic data (age, qualification, experience, training courses) this result was consistent with *de-Madaria, Palazón, and Hernández (2018)* in a research entitled for "Acute and chronic hemodynamic changes after propranolol in patients with cirrhosis under primary and secondary prophylaxis of variceal bleeding: a pilot study" who mentioned that, the nurses should be appropriate age to be able to meet the assuming responsibility and communicate openly with patient with bleeding esophageal varices.

While there was highly statistically significant between nurse's attitude and effect of training courses in work, this study was inconsistent with *Villanueva, Aracil, and Colomo, (2017)* in a study entitled for "Acute hemodynamic response to beta-blockers and prediction of long-term outcome in primary prophylaxis of variceal bleeding" whose study revealed that there is no significant relation between nurse's attitude and effect of training courses in work.

The correlations between nurses' total level of knowledge, practice and attitude regarding care of patients with bleeding esophageal varices. The present study findings revealed that there were a positive correlation between nurses' total level of knowledge, their practice and attitude. Also, the current study revealed that there were a positive correlation between nurses' total level of their practice and attitude, this study was consistent with *Garcia-Tsao, Abraldes, Berzigotti, and Bosch, (2017)* in a study entitled for "Portal hypertensive bleeding in cirrhosis: Risk stratification, diagnosis, and management" whose study revealed that there is a positive correlation between nurses' total level of knowledge, their practice and attitude.

Conclusion

Based on the findings of the current study, this study concluded that more than half of the studied nurses had unsatisfactory level of knowledge and practice. While two thirds of

nurses under the study had a positive attitude regarding care of patients with bleeding esophageal varices. Additionally, results revealed that there was a highly statistical significant relation between total nurses' knowledge and practice

Recommendations

The important recommendations inferred from the study results were:

Educational:

1. Continuous evaluation of nurses' knowledge and practice is essential to identify nurses' educational needs regarding care of patients with bleeding esophageal varices.
2. Delivering on-going and regular in-service educational programs regarding care of patients with bleeding esophageal varices.
3. Close supervision and teaching on spot to ensure quality of care of patients with bleeding esophageal varices.
4. Developing a comprehensive and simplified booklet including basic information regarding care of patients with bleeding esophageal varices.
5. Learning resources such as articles, journals and internet should be accessible in nursing units.

Practice:

1. In-service training and up-date skill programs should be delivered continuously.
2. Nurses' supervisors should verify the checklists, used to care for patients with bleeding esophageal varices, are appropriately followed by all staff nurses.
3. Cover the shortage of nursing staff to ensure of care for patients with bleeding esophageal varices.

Research:

1. Replication of the study on large probability sample and different geographical areas for the purpose of generalizing the results.

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