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Effect of Nursing Guidelines Protocol on Paracentesis Complications

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Abstract:

Background: Paracentesis complications, include infection, bowel perforation, and hypotension due to rapid fluid removal. There is also a risk of persistent leakage from the puncture site and, in some cases, electrolyte imbalances and bleeding. **Aim of the study:** To evaluate the effect of nursing guidelines protocol paracentesis complications. **Research design**: A quasi-experimental research design was adopted to conduct this study. **Setting:** This study was carried out in medical department at Aswan University Hospitals. **Sample:** The study sample were 60 adult patients who admitted to the previously mentioned settings and selected by convenience to two equal groups control and interventional group. **Tools**: Two tools were utilized in this study; Tool I: A structured interview questionnaire; Tool II: Observational check list about patients' complications. **Results:** It was found that the most common early complications among studied patients were pain at puncture site, Leakage of ascetic fluid from puncture site, Hypotension after large volume fluid removal in control group while in study group were Re-punctures, Pain at puncture site and Hypotension. there was a statistically significant difference in early complications of Paracentesis for control and study groups post nursing guideline. **Conclusion:** There was a statistically significant difference in early complications of Paracentesis for control and study groups post nursing guideline.

Keywords: Complications, Effect, Nursing Guidelines, Paracentesis Protocol

Introduction:

Paracentesis complications in some cases followed by immediate or late complication when health team didn't apply determined guidelines. immediate complication may include bleeding, fluid leakage and late complication also involved infection, abdominal scarring, abdominal hernia, low blood pressure and death (**Cooper et al., 2021).**

Post procedure intervention include; applying a sterile dressing and a pressure bandage at the puncture site to prevent leakage of fluid, continuing to monitor vital signs, assessing for hypovolemia, electrolyte shifts, and changes in mental status, giving prescribed albumin intravenously after large volume paracentesis and documenting the procedure **(Cooper et al., 2021).**

Several national and international studies showed that nursing adherence rate to paracentesis guideline is correlated with positive patient's outcomes, patient's safety, and reducing the risks for either local or systemic complications**.** Hence the successful paracentesis procedure mainly depends on skillful practitioner, highly strict aseptic technique, good preparation and carefully monitoring for the patients throughout the procedure. **(Nha et al., 2021)**

The important role of nurses in the care of patients who are undergoing paracentesis at pre, during and post procedure. Pre-procedure care is beginning with (assessment for patient condition, vital signs, taking consent, providing explanation about procedure, gathering needed supplies, preparing patient as emptying bladder, and positioning), while during procedure actions include (maintaining aseptic technique and closely monitoring for the patient throughout the procedure for any abnormalities) **(Fahmy et al., 2020).**

Significance of the study:

Liver cirrhosis is widely prevalent worldwide, causing nearly one million deaths per year and can be developed with different etiologies such as hepatitis B or C infection, harmful alcohol consumption, obesity and autoimmune diseases. With the progression of the disease, cirrhosis can evolve from the compensated, asymptomatic phase to the decompensated phase that characterizes the presence of clinical manifestations, which often results in hospitalization and worse prognosis **(Anwar et al., 2023).**

Around 480 cases of paracentesis occur each year at the medical department at Aswan University Hospital was experiencing liver cirrhosis due to

various aging demographics. **(Aswan University Hospital Record, 2024).**

Aim of the study

This study aims to assess the effect of nursing guidelines protocol on paracentesis complications.

Research hypothesis

- Paracentesis complications were decreased after Appling nursing guidelines protocol.

Subjects and Methods:

Research Design: A quasi-experimental research design was adopted to conduct this study.

Setting:

This study was carried out in medical department at Aswan University Hospitals.

Subjects: The purposive sample of this study was comprised of both sex males and females 60 adult patients (30 patient receive routine hospital care, 30 patients receive nursing protocol guideline), admitted to the previously mentioned settings. during the time of data collection. They were selected by convenience to two equal groups control and study group.

Sample size calculation:

$$n = \frac{np\,(1-P)}{n-1(d^2 \div z^2) + p\,(1-p)}$$

n= sample size
P= proportion of population that meet the characteristics (when unknown=0.5)
z= level of confidence according to the standard normal distribution
d= tolerated margin of error

Inclusion criteria:

- Patients age from 18-60 years
- Stable coagulation profile
- Patients with written consent

Exclusion criteria:

- Patients with severe bleeding tendency
- Patients with hepatic coma
- Patients had refuses to share research

Tools of Data Collection:

Three tools were utilized to fulfill this study based on the related literatures

(Anwar et al., 2023 and Elsayed et al., 2023)

Tool I: A structured interview questionnaire

This tool was designed by the researcher consists of two parts: -

Part (1): Demographic data about the patient which includes 7 items such as the patient's age, sex, level of education, occupation, and residence.

Part (2): Patient medical history which was used to assess past and present

patient medical history such as (hypertension, diabetes, kidney disease

Tool II: Nursing Guideline protocol: Adopted from (National Clinical Paracentesis Guideline, 2015) were used through pre paracentesis procedure as (Check doctor order for performing Paracentesis& Taking signed a consent form), during paracentesis procedure as (Withdrawing the fluid slowly& help the patient maintain position throughout the procedure) and post paracentesis phase procedure as (Avoid patient to stand suddenly& check the puncture site for leakage or bleeding).

Scoring system

The steps of care were categorized into (0= Not done and 1= done). If the nurses were done more than 70% from practices it considered "high performance", if they had less than 70% it considered "low performance"

Tool III: Paracentesis complication: it had adopted by **(Sudulagunta, S. R.,et al .2015) it was consist of two sections:**

a- Early complications such us (Incomplete drainage, Pain at puncture site , Local bleeding , Hypotension , Increased short of breathing , Re-punctures done Slipping of catheter used for tapping , Leakage of ascitic fluid from puncture site

b- Late complications such us (Fever, Abdominal hematoma, Hepatic encephalopathy, Spontaneous bacterial peritonitis, Hepatopulmonary syndrome, Hepatorenal syndrome, drained ascitic fluid

Scoring system

The steps of care will be categorized into (1= Present and 0= No Present).

II. Operational design:

Preparatory phase:

It was included reviewing the related literature and theoretical knowledge of various aspect of the study using books, articles and periodical. This part of the study included validity, reliability, ethical consideration, administrative design, pilot study and filed work.

Validity:

Face and Content validity were conducted to determine whether the tools covers the aim of the study or not.it was ascertained by a jury of 5 expertise's: (3 professor of medical surgical nursing department from faculty of nursing Aswan university, 2 from staff medical department) who review the tool for clarity, relevance, accuracy and comprehensiveness.

Reliability: The tools were tested for internal reliability using Cronbach's Alpha test to assure that the tools were reliable before data collection. Cronbach's Alpha test tool one =0.89, tool two = 0.91.

Ethical considerations:

The investigator was informed that:

- All subjects have their rights secured.
- Ethical approval was obtained from ethics committee of Specialized Medical Hospital at Aswan University (**Asw.Uni./919/5/24**)
- All data was confidential and informed that it was used only for the research purpose.
- The results were used as component of the necessary research. As well as for further publications and education.

III: Administrative Design:

An official permission will be obtained from the director of Aswan University Hospitals and the head of medical department to collect the necessary data.

A pilot study: It was carried out for 10% of the study subjects to evaluate the clarity and applicability and for further required modification and also, to estimate time needed for answering it and identify obstacles and problems that may be encounter in data collection. The necessary modifications were done.

-**Data collection**:

- Started from February 2024 to October 2024 on four phases assessment phase, development phase, implementing phase and evaluation phase.
- The data were collected from the first day of admission after stabilization of the patient's condition and for two consequent days, every day and every shift then the data were recorded in the developed tools. Data were collected on three phases.

Assessment Phase for the control and study group:

- The researcher introduced herself for the patients, patient's family and nursing staff and explained the purpose of the study.
- During this phase the researcher assess patient's profile data, part (1) in tool I, then patients' medical history using part (2) in tool I.
- Then assessment of nursing guideline protocol of paracentesis checklist by using part (2) in tool II.

- Finally, the researcher assessment of paracentesis complications by using tool III.
- Evaluation of clinical outcomes for patients in the control group: Data for this group were collected from 30 patients who met the predetermine criteria in the control group who received the routine unit care.

For study group paracentesis nursing guidelines implementation phase:

During this phase, the developed nursing guidelines for paracentesis were implemented for the study group which consisted of 30 patients who met the predetermined criteria, the following steps were followed during its implementation:

Evaluation phase:

This phase was done to evaluate the effect of the nursing guidelines of paracentesis, this was done by comparing the results of outcomes of the both groups by using tool II and tool III.

IV: Statistical design:

Statistical analysis:

- The collected data were coded, analyzed using Statistical Package for Social Sciences (SPSS/ version 25) software, and tabulated. Descriptive statistics as number and percent, mean and standard deviation, were used.
- Chi-square was used in order to find a comparison between the both groups and association between two qualitative variables. Statistically significant was considered at P-value < 0.05.

Results:

Table (1): Showed that half of studied patients in control group (50 %) were in the age group ≤ 40 years, and more than half in study group (53.3%) were in the age group (30 – 39 years)., also more than half (53.3 % and 63.3 %) of the studied patients in both groups were males respectively with no significant difference. Also, the table revealed (66.7 % and 76.7 %) and (63.3 % and 76.7%) were married and employee respectively. in addition, total sample in both groups have not enough income (100%), Regarding number of family member (56.7 % and 66.7%) respectively has more than 4 family members with no significant difference.

Table (2): Demonstrate no statistically significant deference between both groups in relation to liver severity p value (0.790), also (43.3%) of studied patient in both groups have moderate severity level of disease.

Table (3): illustrates percentage distribution of the studied patients in both groups according to past and present

medical history. It was noted that the highest percentage of patient in control group has past history of hypertension (36.7 %) while in study group highest percentage has past history of diabetes (36.7 %). in relation to Present patient medical history (30.0 %) in both groups have kidney disease no significant deference.

Table (4): Showed comparison between total mean score practice about Paracentesis for study and control groups before nursing guideline, it was stated that there were no significant statistically differences regarding Total preparation, Total during procedure, Total after procedure and Total practice among the studied patients in both groups.

Table (5): illustrated comparison between distribution practice about Paracentesis for study and control groups before nursing guideline, it noted that the most of studied patient in control and study group has inadequate practice about Paracentesis before nursing guideline (90.0% & 93.3 %) respectively with no significant difference p value (1.000).

Table (6): Shows that there was a highly statistically significant difference between control and study group post implementing nursing guideline regard Pre- procedure, during- procedure, after-procedure and total practice, p value was (.000*,.000*, .002* &.000*) respectively.

Table (7): Demonstrate a highly statistical difference between control and study group regarding total nursing practice regarding Paracentesis procedure p value (.000**), and (70.0%) of patient in study group have adequate level of practice, while in control group (96.7%) have inadequate level.

Table (8): Revealed that there was a statistically significant difference in early complications of Paracentesis for control and study groups post nursing guideline as Persistent leakage of ascetic fluid at the needle insertion site, Pain at puncture site, Local bleeding, Leakage of ascetic fluid from puncture site & Hypotension after large volume fluid removal p value was (.035*, .034*, .035*, .035* & .007*) respectively.

Table (9): Regard late complication of Paracentesis for control and study groups post nursing guideline the table showed significant difference between both groups in relation to abdominal wall hematoma or bleeding, Perforation of surrounding vessels or viscera & Subcutaneous effusion due to ascetic fluid leakage with p value (.002*, .039* & .025*) respectively.

Table (10): Revealed that there is no statistically relation between the practice level and all items of demographic data among study group.

Figure (1): illustrates that there is a highly statistically significant positive correlation between the practice and demographic data among study group at P (.000).

Table (1): Distribution of the studied patients in both groups according to Socio-demographic data (N=60)

Variables	Control (30)		Study (30)		X2	p.v
	N	%	N	%		
Age (years)						
20 – 29 yrs.	2	6.7	4	13.3	1.977	.372
30 – 39 yrs.	13	43.3	16	53.3		
More than 40yrs	15	50.0	10	33.3		
Sex						
Male	16	53.3	19	63.3	.601	.300
Female	14	46.7	11	36.7		
Level of education						
Illiterate	0	0.0	2	6.7	2.302	.512
Primary education	5	16.7	4	13.3		
Secondary education	15	50.0	13	43.3		
University education	10	33.3	11	36.7		
Residence						
Rural	16	53.3	16	53.3	1.000	.602
Urban	14	46.7	14	46.7		
Marital status						
Single	8	26.7	7	23.3	2.276	.320
Married	20	66.7	23	76.7		
Other	2	6.7	0	0.0		
Occupation						
House wife	7	23.3	4	13.3	1.342	.511
Employee	19	63.3	23	76.7		
Retired	4	13.3	3	10.0		
Income						
Not enough	30	100.0	30	100.0	---------	----------
Number of Family member						
3-4 member	13	43.3	10	33.3	.635	.596
More than 4 members	17	56.7	20	66.7		

Table (2): Distribution of the studied patients in both control and study groups according to liver severity (N=60)

Variables		Control	Study	X2	p. value
Mild	N	7	9	.472a	.790
	%	23.3%	30.0%		
Moderate	N	13	13		
	%	43.3%	43.3%		
Severe.	N	10	8		
	%	33.3%	26.7%		

Table (3): Percentage distribution of the studied patients in both groups according to past and present medical history (N=60)

Variables	Control (30)				Study (30)				X2	p.v
	Yes (N %)		No (N %)		Yes (N %)		No (N %)			
Past medical history										
liver disease	3	10.0	27	90.0	6	20.0	24	80.0	1.176	.236
Hypertension	11	36.7	19	63.3	7	23.3	23	76.7	1.270	.399
Diabetes	7	23.3	23	76.7	11	36.7	19	63.3	1.270	.399
kidney disease	4	13.3	26	86.7	5	16.7	25	83.3	.131	1.000
Others	5	16.7	25	83.3	1	3.3	29	96.7	2.963	.195
Present patient medical history										
Hypertension	6	20.0	24	80.0	7	23.3	23	76.7	.098	1.000
Diabetes	9	30.0	21	70.0	7	23.3	23	76.7	.341	.771
Kidney disease.	9	30.0	21	70.0	9	30.0	21	70.0	.000	1.000
Others	6	20.0	24	80.0	7	23.3	23	76.7	.098	1.000

Chi-square test, * Statistically significant difference (p<0.05), ** Highly statistically significant difference (p<0.01).

Table (4): Distribution between total mean score practice about Paracentesis for study and control groups before nursing guideline (no=60)

Variables	Control No = 30	Study No = 30	T. test	P. Value
	Mean&St.D	Mean&St.D		
Total preparation	8.10 ± 02.48	8.93 ±1.172	-1.663	.102
Total during procedure	5.40 ±01.63	5.96 ± 1.32	-1.476	.145
Total after procedure	4.70 ±1.68	5.36 ±1.18	-1.771	.082
Total practice	18.20 ±3.32	19.43 ±1.38	-1.876	.066

T .test for quantitative data between the two groups **Significant level at P value < 0.01

Table (5): Distribution between distribution practice about Paracentesis for study and control groups before nursing guideline (no=60)

Variables		Control	Study	Pearson Chi-Square	Sig.
Inadequate	N	27	28	.218	1.000 N.S
	%	90.0	93.3		
Adequate	N	3	2		
	%	10.0	6.7		

Chi-square test, * Statistically significant difference (p<0.05), ** Highly statistically significant difference (p<0.01).

Table (6): Distribution between total mean score of nursing practice regarding Paracentesis procedure for study and control groups post nursing guideline (No=60)

Variables	Control No = 30 Mean&St.D	Study No = 30 Mean&St.D	T. test	P. Value
Total preparation	7.83±2.275	10.13±1.166	-4.926	**0.001***
Total during procedure	4.86±1.547	6.46±1.306	-4.327	**0.001**
Total after procedure	4.70±1.684	4.70±1.684	-3.171	**0.002***
Total practice	17.40±3.244	22.46±2.063	-7.218	**0.001***

T .test for quantitative data between the two groups **Significant level at P value < 0.01

Table (7): Distribution of total nursing practice regarding Paracentesis procedure for study and control groups post nursing guideline (No=60)

Variables		Control	Study	X2	Sig.
Inadequate	No	29	9	28.708	.000**
	%	96.7%	30.0%		
Adequate	No	1	21		
	%	3.3%	70.0%		

Chi-square test, * Statistically significant difference (p<0.05), ** Highly statistically significant difference (p<0.01).

Table (8): Distribution between early complication of Paracentesis for study and control groups post nursing guideline (No=60)

Variables		Control (30)		Study (30)		X2	p.v
		No	%	No	%		
1. Incomplete drainage	Absent	12	40.0	16	53.3	1.054	.219
	Present	18	60.0	14	46.7		
2. Persistent leakage of ascetic fluid at the needle	Absent	10	33.3	18	60.0	4.214	.035*
	Present	20	66.7	12	40.0		

insertion site.							
3. Pain at puncture site	Absent	9	30.0	17	56.7	4.344	.034*
	Present	21	70.0	13	43.3		
4. Local bleeding	Absent	10	33.3	18	60.0	4.214	.035*
	Present	20	66.7	12	40.0		
5. Re-punctures.	Absent	12	40.0	13	43.3	.069	1.000
	Present	18	60.0	17	56.7		
6. Leakage of ascetic fluid from puncture site	Absent	10	33.3	18	60.0	4.214	.035*
	Present	20	66.7	12	40.0		
7. Hypotension after large volume fluid removal (more than 5 L to 6 L).	Absent	6	20.0	16	53.3	7.057	.007*
	Present	24	80.0	14	46.7		

Chi-square test, * Statistically significant difference (p<0.05), ** Highly statistically significant difference (p<0.01).

Table (9): Distribution between late complication of Paracentesis for study and control groups post nursing guideline (No=60)

Variables		Control (30)		Study (30)		X2	p.v
		N	%	N	%		
Fever	**Present**	12	40.0	12	40.0	.000	1.000
	Absent	18	60.0	18	60.0		
Abdominal wall hematoma or bleeding	**Present**	24	80.0	12	12	9.833	.002*
	Absent	6	20.0	18	18		
Hepatic encephalopathy.	**Present**	10	33.3	14	46.7	1.111	.430
	Absent	20	66.7	16	53.3		
Spontaneous bacterial peritonitis	**Present**	9	30.0	16	53.3	3.360	.115
	Absent	21	70.0	14	46.7		
Hepato-pulmonary syndrome.	**Present**	12	40.0	7	23.3	1.926	.267
	Absent	18	60.0	23	76.7		
Hepato-renal syndrome.	**Present**	5	16.7	11	36.7	3.068	.143
	Absent	25	83.3	19	63.3		
Drained ascetic fluid.	**Present**	14	46.7	15	50.0	.067	1.000
	Absent	16	53.3	15	50.0		
Wound infection	**Present**	11	36.7	7	23.3	1.249	.264
	Absent	19	63.3	23	76.7		
Perforation of surrounding vessels or viscera	**Present**	9	30.0	17	56.7	4.271	.039*
	Absent	21	70.0	13	43.3		
spontaneous hemoperitoneum	**Present**	11	36.7	16	53.3	1.684	.299
	Absent	19	63.3	14	46.7		
Catheter laceration and loss in the abdominal cavity	**Present**	12	40.0	10	33.3	.287	.789
	Absent	18	60.0	20	66.7		
Subcutaneous effusion due to ascetic fluid leakage	**Present**	25	83.3	17	56.7	4.995	.025*
	Absent	5	16.7	13	43.3		
Ongoing fluid leakage at the wound site.	**Present**	12	40.0	16	53.3	1.071	.438
	Absent	18	60.0	14	46.7		

Chi-square test, * Statistically significant difference (p<0.05), ** Highly statistically significant difference (p<0.01).

Table (10): Relation between practice level and demographic data among study group (No=30)

Variables	Inadequate		Adequate		X2	p.v
	No	%	No	%		
Age by years						
20 – 29 yrs.	1	3.3	3	10.0	.952	.621
30 – 39 yrs.	6	20.0	10	33.3		
More than 40yrs	2	6.7	8	26.7		
Sex						
Male	6	20.0	13	43.3	.062	1.000
Female	3	10.0	8	26.7		
Level of education						
Illiterate	0	0.0	2	6.7	1.121	.772
Primary education	1	3.3	3	10.0		
Secondary education	4	13.3	9	30.0		
University education	4	13.3	7	23.3		
Occupation						
House wife	2	6.7	2	6.7	3.430	.180
Employee	5	16.7	18	60.0		
Retired	2	6.7	1	3.3		

Chi-square test, * Statistically significant difference ($p<0.05$), ** Highly statistically significant difference ($p<0.01$).

Discussion:

Liver cirrhosis has an overall mortality rate in Egypt and is becoming more common. The most frequent major cirrhosis complication is ascites, which marks a significant turning point in the progression of chronic liver disease. It kept track for ten years. Ascites that needs treatment develop in about sixty percent of cirrhotic patients **(Aly, et al, 2023).**

Nursing interventions throughout paracentesis procedure in professional manner is considered the main step to achieve a safe and successful procedure for ascetic patients. The highly experienced patient preparing, positioning, and monitoring before, during and after paracentesis is very important and vital to avoid expected complications **(Mohamed, et al, 2024).**

In term of demographic data of studied patients, results of current study revealed that half of studied patients in control group were in the age group ≤ 40 years., this in constant with **(Aly, et al, 2023)** who reported that mean age for patient in control group was (50.22±9.77) and for study group was (51.7± 8.44), Also in line with who reported that mean age in his studied patient was (52.5±11.6 & 53.7± 9.3) for control and study group respectively **(Mobed, et al, 2016).**

Regarding residence the current results demonstrated that more than half of studied patients in both control and study group live in rural area with no difference, also were male. From the researcher point of view this is related to nature of life in rural area in Egypt as most of men work as farmers in agriculture using channel water that may cause wide verity of co-morbidity as liver disease (viral disease and cirrhosis) which increase rate in men than female.

In the same line with **(Mohamed, et al 2015)** who reported that majority of the studied patients were males in middle age group, and that liver cirrhosis is as twice as common in men than in women. Also agree with **(Abdel Azeem, et al, 2023)** who found that about two thirds of both groups were males. In addition to **(Soliman, et al 2018)** who reported that fifty percent in study group & less than half in control group were farmers which support the researcher view.

In Relation to marital status, current results demonstrated that majority of studied patients in both groups were married, according to the researcher opinion this might be explained by the fact that the majority of people in this age range are married. it agrees with **(Atya et al. 2019 &Abdel Azeem, et al, 2023)** who founded that most of both groups in study were married.

Regard educational level, more than half patients in control group and near half in study group were secondary educated this may be related to preference of people in rural area to have secondary education certificate (Technical education), also was consistent with (**Thuy., 2019 & Abdel Azeem, et al, 2023**) who reported that more than one-third of studied groups were secondary education. but in contrast with **(Mahmoud et al., 2021)** who founded more than one third of both groups were illiterate, also **(Mohamed, et al, 2015)** who mention that about more than half of the study patients were illiterates.

Concerning the income, the all-current study sample in both groups mention that their income is insufficient which agree with **(Abdel Azeem, et al, 2023)** who mentioned that that majority of both study groups determined that the income is insufficient. also **(Alfauomy et al. 2020)**, found that more than half of study groups have insufficient income.

Regarding total practice about Paracentesis, the current results informed that the most of studied patient in control and study group has inadequate practice level about Paracentesis before implementation of nursing guideline with no significant difference, the research explain this results as there is a lack in training programs concerning paracentesis care for nurses, and

absence of standards for paracentesis patient care inside the units.

It agrees with **(Abdullah. 2017)** who reported that total practice level regarding patient management was low level score as they were unsatisfactory. Also similar to **(Mohamed, et al, 2024)** who illustrates that more than two third of the studied nurses had incompetent level of practices during procedure to monitoring physician throughout procedure for cirrhotic patients undergoing paracentesis. But come in contrast with **(Elsayed, et al 2018)** who stated that more than half of the study sample had high score level in practice before education.

In term of stages of Paracentesis procedure, current study results demonstrated a highly statistically significant improvement of nursing practice in study group post implementing nursing guideline regard Pre- procedure, during-procedure, after- procedure and total practice compared to control group. From researcher point of view, it occurs due to appropriate and effective application of nursing guidelines that help improvement of patient practices. It agrees **(Fahmy, et al 2020)** with who mentioned that a major deficiency in practice before, during and after paracentesis procedure before implementation of the educational guideline.

This results in harmony with **(Elsayed, et al 2018)** who mentioned that there is a highly statistically significant improvement in practice level after implementing the education in comparison with their practice level before the implementing of education. In addition, the result was supported by (**Abd-Allah, 2000)** who mentioned that the training program had a beneficial effect in improving the nurse's knowledge and practice level. In addition, agree with **(Elmagraby and Mohammed, 2019)** who found a highly statistically significant improvement in nurses' practice immediately post implementation of the educational guideline compared with before its implementation.

In term of early Complications, results of current study illustrated that most common early complications among studied patients were Pain at puncture site, Leakage of ascetic fluid from puncture site, Hypotension after large volume fluid removal and Local bleeding in control group while in study group were Re-punctures, Pain at puncture site and Hypotension after large volume fluid removal were the commonest one. That come in line with the study done by **(Aly, et al 2023)** who founded that persistence Leakage of ascetic fluid, bleeding and Hypotension and hypovolemia were common complications among studied patients.

Mobed, et al 2016 also reported that the frequent complications of paracentesis after implementation of the nursing guidelines were lower than before implementation of the nursing guidelines, and the most common complications which reported in pre-implementation of the nursing guidelines were hypotension and hypovolemia, bleeding, abdominal bruises or localized infection at the puncture site and persistent leakage of ascetic fluid.

Regard late complication, the current results showed that subcutaneous effusion due to ascetic fluid leakage and abdominal wall hematoma or bleeding in control group, and subcutaneous effusion due to ascetic fluid leakage, Perforation of surrounding vessels or viscera and spontaneous hemoperitoneum in study group were the commonest late complications. This disagrees with **(Sudulaguntaa, et al 2015)** who reported that Late and serious complications associated with paracentesis were hepatic encephalopathy; spontaneous bacterial peritonitis and abdominal hematoma were highest percentage in the studied patient.

In addition, this results similar to **(Elsayed et al, 2023)** who showed that there was highly statistically significant relation between age, marital status, years of experience and nurses' knowledge and practice. But disagree with **(Koshy, 2016)** who reported that there was no significant relation between knowledge level and age of studied sample.

Current study results revealed that there is no statistically relation between the practice level and all demographic data among study group, these findings disagreed with **(Elsayed, et al 2018)** who reported a significant relation between gender and educational level of studied sample with practice level.

Conclusion:

Based on the result of the present study, it was observed that the half of studied patients in control group were in the age group ≤ 40 years. The most common early complications among studied patients were Pain at puncture site, Leakage of ascetic fluid from puncture site, Hypotension after large volume fluid removal and Local bleeding in control group while in study group were Re-punctures, Pain at puncture site and Hypotension after large volume fluid removal were the commonest one. there was statistically significant positive correlation between the total knowledge and age in addition to occupation. there is no statistically relation between the practice level and all demographic data among study group

Recommendations:

- Performing scientific research concentrated on nurse role in paracentesis among liver cirrhosis patients at Egypt and to give different findings.
- Developed strategies that increase readiness of the institutions to apply nurse management in paracentesis among liver cirrhosis patients through well trained.
- Preparing training programs for ICU nurses to inform them of the importance of nurse role in paracentesis among liver cirrhosis patients
- Preparing and distributing a brochure about the nurse role in paracentesis among liver cirrhosis patients
- Reapply this research on a large sample size acquired from different geographical area in Egypt for generalization.

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