

APPLYING NURSING SAFETY MEASURE TO PREVENT COMPLICATIONS FOR LIVER CIRRHOTIC PATIENT UNDERGOING PARACENTESIS

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Abstract

Background: Paracentesis is an essential life measure for ascites complications management. **The aim:** of this study was to apply nursing safety measure to prevent complication for liver cirrhotic patient undergoing paracentesis. **Methodology:** Quasi-experimental design was utilized. **Study subjects:** All available nurses were included (55) nurses. **Two tools:** Nursing interviewing questionnaire and observational checklist for nurse's practices for cirrhotic patients undergoing paracentesis. **Results:** The present study revealed that nurses had highly statistically significant improvement in total level of knowledge and practice post implementing nursing education. **The study concluded:** There was a statistically significant positive effect on nurses' knowledge and practice for patients undergoing paracentesis after education. **The study recommended:** Providing specific courses and periodical follow up for enhancing nurses' knowledge and practice.

Key words: Liver cirrhosis, Complications, Nursing safety measures, Paracentesis

Introduction:

Chronic liver disease is considered one of the worldwide public health problems which is ongoing growing. Cirrhosis is one of long-term liver disease complications which affect the lives of patient and their caregivers. It is a silent killer that appears after many years with risk complications that may lead to death as portal hypertension, ascites, malnutrition, hepatic encephalopathy and Jaundice (Asrani et al., 2013 & Pinzani et al., 2011).

In United States, the prevalence of cirrhosis was approximately 0.27%, corresponding to 633,323 adults. It was higher in non-Hispanic blacks and Mexican Americans. Diabetes, alcohol abuse, hepatitis C and B and older age were all independently associated with cirrhosis, with a population fraction of 53.5% from viral hepatitis (mostly

hepatitis C), diabetes, and alcohol abuse (Scaglione et al., 2015).

Ascites is one of the most common complications of liver cirrhosis, which considered an important landmark in the natural history of chronic liver disease that occurs in more than half of all patients with cirrhosis (Vuppalanchi et al., 2013). It is considered an excessive accumulation of fluid within the peritoneal cavity due to the increased plasma volume into the abdominal cavity (Mayo foundation for Medical Education and Research, 2014).

Abdominal paracentesis is used for clarifying the ascites cause, evaluating for infection and identifying unexpected diagnoses, such as chylous, hemorrhagic, eosinophilic ascites, and tuberculosis peritonitis. It is very serious to be used in some cases as uncorrected bleeding,

surgery, intra-abdominal adhesions, bowel obstruction, and pregnancy (Sanchez et al., 2014).

On the other hand, paracentesis have many potential complications as hypovolemic shock, bleeding, infection and potential bowel injury. It also may lead to persistent leak from the puncture site, abdominal wall haematoma, post paracentesis hypotension, and hepatorenal syndrome (Wiese et al., 2011).

Nurses play a very important role at different levels, where the nurses carry out diagnostic examinations and risk assessments; psychological level where the nurse informs, acts as a health counselor and helps in the patient self-care process. So, nurses are responsible for providing patient safety and minimizing complication of the procedure (Altman, 2010).

Aim of the study

Evaluate the effectiveness of applying nursing safety measure to prevent complication for liver cirrhotic patient undergoing paracentesis.

Research Question

- What are complications of paracentesis?
- What are precautions of paracentesis?
- What is the nurse role in preventing paracentesis complication?
- What are the safety measures to cirrhotic patients?

Methodology

Research Design: Quasi experimental.

The study setting:

This study was carried out in the Hepatic Unit of Mansoura Specialized Medical Hospital, Dakahlia Governorate, Egypt.

Subject of the study:

All available nurses of both sexes who are working in Hepatic Unit at Mansoura Specialized Medical Hospital.

The calculated sample size of the study was 55 nurses.

Data collection instruments:

Socio-demographic Characteristics of Studied Nurses

It included the personal characteristics questions such as sex, age, marital status, education level, experience years, paracentesis training course and years of experience at medical unit.

Nurse's Knowledge Questionnaire Sheet:

The researcher developed it after extensive literature review to evaluate nurse's knowledge toward liver cirrhosis and paracentesis procedure. Scoring system answers were either Yes or No, one score was given when the response to correct and zero score to incorrect response. These scores were converted into percentage into three categories including the low level (<50%), moderate (50- 75%) and, high level ($\geq 75\%$) of total knowledge.

Observational checklist for practices:

It was performed by the researcher after extensive literature review. It was used to evaluate nurse's practice for patients undergoing paracentesis which consisted of 3 parts (before, during and after) covering all the paracentesis procedure. Scoring system answers were either Done or Not done, one score was given when the response to correct and zero score to incorrect response. These scores were converted into percentage into three categories including poor level (<50%), fair (50- 75%) and, good level ($\geq 75\%$) of total knowledge.

Administrative Design:

An official permission was obtained from Nursing Faculty, Mansoura University to Mansoura Specialized Medical Hospital director at which the study was conducted. Before collecting the data from the nurses participated in the study, and took oral consent from them.

Operational Design:

This part of the study included validity, reliability, pilot study and filed work.

Validity:

The developed tools by the investigator were tested for content validity by five experts, two of them from Medicine Faculty who are working at Specialized Medical Hospital at Hepatic unit and the others in the field of medical surgical nursing at Nursing Faculty; Mansoura University reviewed the tools for clarity, relevance, comprehensiveness, applicability, and simplicity for implementation. Accordingly, their recommended modifications had been done and the final form was used for data collection.

Reliability:

The tools were tested and demonstrated good internal reliability using test-retest methods and Crombachs Alpha.

Pilot study:

It was carried on 10% (five nurses) who were selected randomly from all available nurses (55) of Hepatic Unit for the ascertain of the clarity, feasibility, applicability and time of the tools. Depended on the pilot study findings, the necessary modifications were done. Selected nurses for the pilot study were excluded from the study subject.

Fieldwork:

The study framework was carried out according to 4 phases as the following:

Phase I: Preparatory Phase (Assessment):

The investigator provided them brief explanation about the aim of the study after introduced herself to the nurses to obtain cooperation as well as their verbal consent. Each nurse was interviewed to assess nurse's knowledge and practice about abdominal paracentesis.

Phase II: Developing nursing management

guidelines:

The investigator assessed the educational needs of the nurses regarding paracentesis to contrast the educational program under the guidance of the supervisors. The main aim of educational program was to improve knowledge and practices of nurses regarding cirrhotic patients undergoing paracentesis and it was discussed in three separated sessions.

Phase III: Implementation Phase:

The educational program was implemented within the schedule of the nurse working hours in nurse's room at hepatology department. Nurses were divided into (5 groups), each group consist of 10 nurses according to the total number of members (50). The program was conducted through three sessions, each group obtained the three sessions through 2 weeks, and each session took 20-30 minutes.

Phase IV: Evaluation Phase:

It focused on determining the effect of the program on knowledge and practices of the nurses through the comparison between pretest and post test results. The period of data collection take place nearly from the begging of July to the begging of December 2015 about six months.

Ethical consideration:

All relevant ethical issues were taken into consideration as the following research approval was performed before starting with this program, the study aim was explained to each nurse and then an oral consent for participation in the study was obtained from each one of them, and keeping confidential data collected in addition to leaving them free to refuse or accept the participation.

Statistical analysis:

Data will be collected, then entered, processed, and analyzed using IBM-SPSS software (version 21.0).

Qualitative data will be expressed as count & percent. It will be initially tested for normality using Shapiro-Wilk test and data will be considered as normally distributed if p value >0.05 then data will be expressed as Mean ± SD if normally distributed or Median if not normally distributed. It will be compared using Chi-square (or Fisher's Exact) test while, paired qualitative data will be compared using McNemar's test.

On the other hand, quantitative data will be compared between two groups using Independent-Samples t-test if data are normally distributed or the non-parametric Mann-Whitney-U test if not. Also, paired quantitative data will be compared using paired samples t-test if data are normally distributed or the non-parametric Wilcoxon signed ranks test if not. Pearson's correlation test was used to

study the linear relationship between two quantitative variables. The result was considered as significant if p value < 0.05.

Result:

Table (1): This table revealed that, the majority of studied nurses were females (92%), most of them were married (68%) and in relation to the age almost of them were in their second decade (70%). As regard of level of education of the studied nurses it was found that, above one-third of them had secondary school nurse degree (38%) and nearly one-third of the studied nurse's bachelor of nursing (34%). Almost half of the studied nurses (46%) was considered to have more than five years of overall experience and, more than half of them (56%) had more than three years of experience in hepatology units. The whole studied nurses didn't attend any training courses

Table (1): Distribution of socio-demographic Characteristics of studied nurses.

Demographic	Frequency	Percent %
Sex:		
• Female	46	92.0
• Male	4	8.0
Age:		
• <30 years	35	70.0
• 30-40 years and more	14	30.0
Marital status:		
• Single	16	32.0
• Married	34	68.0
Education level:		
• Secondary school nurse	19	38.0
• Institute nurse	14	28.0
• Bachelor of nursing	17	34.0
Overall experience:		
• <3 years	18	36.0
• 3-5 years	9	18.0
• >5 years	23	46.0
Experience in Hepatology Units:		
• <2 years	17	34.0
• 2-3 years	5	10.0
• >3 years	28	56.0
Training course:		
• Yes	0	00.0
• No	50	100

Figure (1): This figure showed that, nurses in the study before education was at low level about (50%) which divided into 4% still at low level, 76% at moderate level and about 20% was high level, while 50% was moderate level before education which divided into 24% at moderate level and about 76% was high level after education.

Figure (1): Distribution of nurses according to their total knowledge

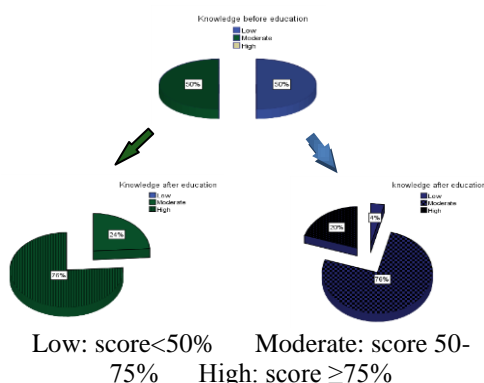


Figure (2): This figure revealed that a highly statistically significant in the practice score after the education course in the steps before and after but not during the procedure.

Figure (2): Distribution of nurses according to their total Practice.

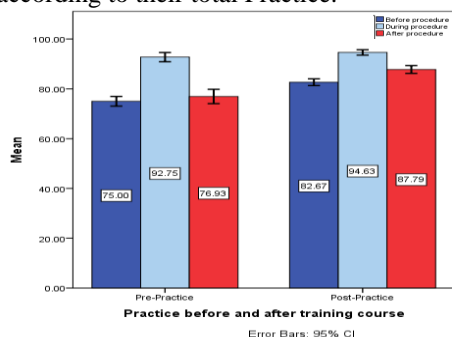
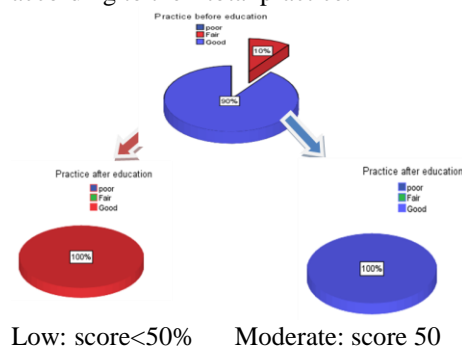


Figure (3): This figure showed that there was an improvement of nurses' practice in the study from fair level about 10% to be 100% after education.

Figure (3): Distribution of nurses according to their total practice.



Discussion:

Abdominal paracentesis is one of the most important treatment methods of cirrhotic ascites. It is very safe, but serious complications may be present if it is performed in an improper technique such as abdominal wall hematoma, hemoperitoneum, bowel perforation and infection (Cervini & Sharzehi, 2010).

Nurses have very important role in managing paracentesis procedure before, during and after it so, they should have adequate knowledge regarding paracentesis preparation, observing fluid drainage and be alert for any possible complications unfortunately, and nursing management of patients undergoing paracentesis has received little attention (Bakken et al., 2011 & Amer, 2012).

The study findings revealed that the majority of the studied nurses were females. This is in agreement with Ali, (2016) and Elfekry (2013) who stated that all the nurses of his study were females. This result may be due to the old belief that nursing is private profession for female so the majority of nurses in Egypt are females. On the contrary of both

Orantes et al., (2011) and **Ghonemy, (2016)** reported that most of the study were male.

In relation to the age, almost of all studied nurses were in their second and third decade. Similarity to **Ezat, (2016)** and also **Elfekry, (2013)** who reported that most of them were in the age group of 20- 29 years old. In contrast of **Rageb, et al., (2013)** as about half of their studied subject age were >30 years old. This may be due to the majority of nurses' work power providing direct care for the patient in nursing field in our study are young females while higher age category "senior nurses" perform administrative role.

As regard to the level of education, it was found that, above one third of them had secondary school nurse degree while nearly two-thirds of the studied nurses had institute nurse and bachelor of nursing as similarity to **Abdullah, (2017)** who agree with this result. This might be because collage graduated nurses in Mansoura Specialized Medical Hospital are responsible for critical tasks. This in contrary with a study performed in teaching hospitals of Khorramabad **Hatamirad and Abedi, (2015)** who reported that all of the nurses in their study had a Bachelor's degree.

In relation to the experience, half of the studied nurses were considered to have more than five years of overall experience. This in agreement with **Maggie, et al., (2010)** **Giljare, (2012)** who reported that more than of her study sample has at least 5 years' medical experience. This in contrast with **Mohamed (2011)** who mentioned that two- third of studied subject had less than five years' experience.

In this study, the whole of studied subject didn't attend any training courses of abdominal paracentesis. This in harmony with **Elfekry, (2013)** and **Mohamed, et al., (2011)** found that that the majority of her studied nurses didn't attend any

training courses. On contrary with, **Ezat, (2016)** who reported that the minority studied nurses attended training courses. This may be due to lacking of nurses number, inability of some nurses to attend training courses and lacking motivation.

The current study showed that, there is lack of knowledge may due to large number in our study sample had secondary nursing school education nearly half of them and the whole of studied nurses didn't attend any training courses about cirrhotic paracentesis so, majority of the studied nurses gave incorrect answer before the education regarding knowledge about cirrhotic paracentesis. The findings are in harmony with **shaker, (2012)** who supported these results and reported that there was poor knowledge level pre-education. This study is consistent with **Abdullah, (2017)** who revealed that there is a poor level of knowledge among nurses in their study.

There is a significant improvement at the post education as half of nurses had high knowledge level about liver cirrhosis and paracentesis. Our findings also are in agreement with **Abdulla and Abdulla, (2013)** who found that educational intervention had a positive impact on knowledge level. In addition, a study carried out in Mansoura university by **Ali, (2016)** who reported that there was an improvement on total scores of knowledge after education. This shows that nurses were able to learn and get correct information about paracentesis procedure as this is a practice of their daily work.

The study revealed that, more than half of the study sample had high score level in practice before education of the nurses. The result is in harmony with **Mohamed, et al., (2014)** who reported that the total level of nurses practice was high score. In contrast with, **shaker, (2012)** and **Abdullah, (2017)** who mentioned that, total nurses practice regarding patient management was low level score as they

were unsatisfactory.

There is a highly statistical significant improvement in nurses' practice level after implementing the education in comparison with their practice level before the implementing of education. In the same point, this study showed that there was not marked statistical significant during paracentesis and this may due to the presence of the physician during the procedure and nurses' role in this phase was passive as the most role depended on the physician as the nurse just be a physician assistant.

Conclusions:

The study concluded that there was a statistically significant positive effect on nurses' knowledge and practice for patients undergoing paracentesis after education.

Recommendation:

1. A simplified and comprehensive booklet including the education should be introduced to the educated nurses and should be clearly explained.
2. Administrators should create polices and plans for providing continuous education to the nursing staff.
3. Evaluating nurses' knowledge and practice periodically to determine the effect of the training programs.
4. A simplified developed booklet about cirrhotic complications undergoing paracentesis should be introduced to the educated patients and should be clearly explained by photos for illiterate patients.
5. Further researches are recommended to evaluate the impact of implementing educational booklet for paracentesis on their outcomes on a large geographical region.
6. Hepatology department should be supplied by checklists about all paracentesis
7. procedures.

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