

Effect of an educational program about acute pancreatitis patients outcomes

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Abstract

Background: Acute Pancreatitis is defined as a reversible inflammation of pancreatic parenchyma which is characterized by the presence of interstitial edema, acute inflammatory cell infiltrates and varies degree of cellular apoptosis, necrosis and hemorrhage. Nursing care for patients with acute pancreatitis must be directed at preventing complications, and optimizing patients' outcomes.

Aim: The aim of this study was to evaluate effect of an educational program about acute pancreatitis on patients' outcomes.

Design: A quasi-experimental research design was used to conduct this research.

Setting: The study was conducted in the intensive care unit at Assiut University, Rajhy Hospital for Liver.

Subjects: A convenience sample of 60 adult patients diagnosed with acute pancreatitis.

Tools: Data were collected using: tool I patients' assessment sheet, Tool II patients' outcomes sheet.

Results revealed that the majority patients of pre and post program ranged between 18-77 years with mean of (42.37±18.4), most of them female, there was statistically significant difference regarding ascites ($p < 0.001^{**}$) between patients' group pre and post program.

Conclusion: The incidence of acute pancreatitis complications for patients cared by nurses who received education program was decreased.

Recommendation: Replication of this research on a larger probability sample acquired from different geographic area in Arab republic of Egypt for generalization.

Keywords: Acute pancreatitis, education program, patients' outcomes

Introduction

Acute pancreatitis (AP) is one of the most common gastrointestinal cause of death with mortality around 5% while 47% in patients with multiple organ failure. It can be divided into the following categories: edematous and interstitial or mild acute pancreatitis; necrotizing or severe acute pancreatitis. Severe acute pancreatitis (SAP) is a multi-system disease which is characterized by two phases the first phase comprises multiple organ system failure due to a systemic inflammatory response and second phase associated with complications such as necrosis, pseudocysts, pleural effusion or ascites (Akhter *et al.* 2017)^[1].

The incidence of acute pancreatitis had been increasing over the past several decades and is as high as 73.4 cases per 100,000 populations worldwide, and 75% of patients who present to the emergency department (ED) will require admission, Women are two times more commonly affected, likely related to the increased prevalence of cholelithiasis in females. The peak incidence occurs between the ages of 55 and 65 years in women and 45 and 55 years in men (Tesoriero & Diaz, 2016)^[13].

The two most common causes of acute pancreatitis are gallstone migration and alcoholism. Together, they account

for approximately 80% of cases (Urden *et al.* 2016)^[14]. If pancreatitis progresses to the severe form the mortality rate significantly increase from one percent to upwards of thirty percent. Pancreatitis is associated with high rates of morbidity, mortality, and prolonged hospital admissions (Mossad *et al.* 2017)^[8].

Acute pancreatitis is an acute inflammatory disease of the pancreas. The intensity of the disease ranges from mild, in which the patient has abdominal pain and elevated blood amylase and lipase levels, to extremely severe, which results in multiple organ failure. In 85% to 90% of patients, the disease is self limited (Mild acute pancreatitis), and patients recover rapidly. However, the disease can run a fulminate course and is associated with high mortality rates. Severe acute pancreatitis develops in 25% of patients with acute pancreatitis. Management of this severe form of the disease requires intensive nursing care and medical care (Sole *et al.* 2017)^[12].

Acute pancreatitis patients need special nursing care, and to assure quality of this care, it is important to apply specific nursing intervention that can entails knowledge and skills required by nurses in order to carry out care effectively, and ameliorate patient care, improve cost effectiveness, decrease

patients' problems and complications as well as improve patients' clinical outcomes. (Shebl *et al.* 2013)^[11].

Critical nursing care is playing an important role in the health care system. Changes in the health care brought about by scientific developments will continue to greatly influence the education, theory and practice of nursing as in other health profession. Nursing, therefore, must continue to examine its practice in the face of these developments in order to ensure that its practice is in accordance with global nursing standards and the satisfaction of its patients in order to maintain its relevance in the health care industry and society (Sayed, 2014)^[10].

Nursing care with patients' of acute pancreatitis must be directed at preventing complications, and optimizing patient outcomes. This can be done by careful monitoring of the patients' condition. Nursing care must also providing preventive interventions to avoid complications (Hofmeyr *et al.* 2014)^[7].

The nursing staffs are in need for continuous training and for applying this training to improve the standard of patient care (Chaghar *et al.* 2017)^[2]. The evaluation of continuing nursing education is an integral part of improving the quality of educational activities. This evaluation determines if nurses meet the desired learning outcomes and provides feedback on ways to improve the educational experiences that ultimately improve patient care. (Wellings *et al.* 2017)^[15].

1. Significance of the study

Acute pancreatitis is a common diagnosis seen in intensive care unit at Assiut University Rajhy Hospital for Liver. Number of patients admitted to intensive care units at Assiut University Rajhy Hospital for Liver in the last two year (2016 & 2017) were 1925 patients of whom 320 were diagnosed as acute pancreatitis (Hospital records of Assiut University (2016 & 2017)). Due to this increase in incidence of acute pancreatitis, however, theoretical and practical nursing care bases are essential for effective in therapeutic patients' outcomes. So there is a basic need for a study to promote the nurses' knowledge that could help them to contribute a successful patients' care outcomes.

2. Aim of the study

This study aimed to evaluate effect of an educational program about acute pancreatitis patients' outcomes.

3. Hypothesis

Patients' outcomes complained from acute pancreatitis after implementation of the educational program were better than Patients' outcomes before implementation of the educational program.

4. Patients and Method

4.1 Research design

A quasi-experimental research design was used in the study.

4.2 Setting

The study was conducted in intensive care unit at Assiut University Rajhy Hospital for Liver.

4.3 Subjects

A convenient sample of 60 patients (male and female)

admitted in intensive care unit at Assiut University Rajhy Hospital for Liver was included in the study. The subjects were selected randomly and divided equally into study and control groups, 30 patients in each group.

5. Criteria of the sample

5.1 Inclusion criteria

Admitted are patients in the intensive care unit at Assiut University Rajhy Hospital for liver with diagnosis of acute pancreatitis.

5.2 Exclusion criteria

Excluded are patients with cholangitis, Cholecystitis, gastric volvulus, hepatitis, intestinal infarction, pancreatic cancer and perforated peptic ulcer. Whereas young patients of age younger than 12 years, were precluded from the analysis of this research study.

6. Study tools

Two tools were used to collect data in the study and developed by the researcher based on the review of the related literature.

Tool One: Patients' assessment sheet

This tool was developed by the researcher to assess the patients' condition and compromised two parts which includes

Part 1: Assessment of socio-demographic data

This part included patients related data such as patients' age, sex, occupation, level of education and marital status, to assess patients' profile.

Part 2: Assessment of the patient clinical data

This part included date of admission, date of discharge, history of present illness, and past medical diagnosis.

Tool two: Patients' outcomes sheet

This tool was developed by the researcher to evaluate the patients' outcomes. It was divided into three parts:

Part 1: Assessment of expected complication

This part is used with the critically ill patients' of acute pancreatitis (hypovolemic shock, acute respiratory distress syndrome (ARDS), acute kidney injury (AKI), and gastrointestinal hemorrhage, others).

Part 2: Days of intensive care unit staying.

Part 3: Mortality rate.

7. Study procedures

The overall objective is to evaluate effect of an educational program about acute pancreatitis on patients' outcomes. The study was conducted throughout three main phases, which are preparatory phase, implementing phase and evaluation phase.

7.1 Preparatory phase

- Permission to conduct the study was obtained from the hospital responsible authorities after explanation of the aim of the study.

- Tool one and two used in this study was developed by researcher based on reviewing the relevant literature.
- The tool was tested for content related validity by jury of five specialists in the field of critical care nursing and critical care medicine at Assiut University and the necessary modifications were done, the subjects included in the pilot study were included in the study sample.
- A Pilot study was conducted on a random sample of six patients to test the feasibility and applicability of the tool and the necessary modifications that were done.
- The reliability was tested using Cronbach’s alpha coefficient $r= 0.817$ respectively which is acceptable.

7.2 Ethical considerations

Approval was obtained from the local ethical committee and the study followed the common ethical principles in clinical research.

7.3 Implementing phase

- Record of socio-demographic data which include (Age, sex and level of education, occupation, marital status).
- Record of medical data which include (Date of admission, date of discharge, history of present illness, past medical diagnosis).
- Record of expected complication for critically ill patients’ of acute pancreatitis (hypovolemic shock, acute respiratory distress syndrome (ARDS), acute

kidney injury (AKI), and gastrointestinal hemorrhage, others).

- Record of days of stayed at the intensive care unit.
- Record of mortality rate.

7.4 The evaluation phase

- Each patient included at present evaluated for complications from admission to discharge, staying days at intensive care unit and mortality rate before and after implementation of educational program by using tools one and two to predict patients’ outcomes.
- Evaluation done before and after implementation of educational program.

8. Statistical analysis

The data were tested for normality using the Anderson-Darling test and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (No, %), where continuous variables described by mean and standard deviation (Mean ± SD). Chi-square test and fisher exact test used to compare between categorical variables where compare between continuous variables by t-test and ANOVA test. A two-tailed $p < 0.05$ was considered statistically significant. The researchers have used person Correlation to display the association between scores. All analyses were performed with the IBM SPSS 20.0 Software.

9. Results

Table 1: Frequency distribution of socio demographic and clinical characteristics of the Studied patients (No=60).

Variable	Pre-program Control (No=30)		Post program Study (No=30)		P. value
	No	%	No	%	
Age					
Mean ± SD (range)	44.87±16.81(17-77)		42.37±18.4(18-77)		0.585
	No	%	No	%	
Sex					
Male	4	13.3	7	23.3	0.317
Female	26	86.7	23	76.7	
Occupation					
Unemployed	23	76.7	23	76.7	0.090
Employer	5	16.7	3	10.0	
Retired	2	6.7	0	0.0	
Others	0	0.0	4	13.3	
Level of education:					
Illiterate	14	46.7	14	46.7	0.461
Read & write	1	3.3	0	0.0	
Secondary	7	23.3	11	36.7	
Bachelor	8	26.7	5	16.7	
Marital status:					
Single	1	3.3	5	16.7	0.085
Married	29	96.7	25	83.3	
Past medical diagnosis:					
No	21	70.0	21	70.0	1.000
Ischemic heart disease	1	3.3	2	6.7	0.554
Diabetes mellitus	4	13.3	7	23.3	0.317
Hypertension	7	23.3	6	20.0	0.754

Data described as (No & %) chi-square and (mean ±SD) independent sample t-test

Table 2: Comparison between studied groups of patients regarding complications of acute pancreatitis (No=60).

Items	Pre-program Control (No=30)		Post program Study (No=30)		P. value
	No	%	No	%	
Hypovolemic shock	1	3.3	0	0.0	0.313
Acute respiratory distress syndrome	2	6.7	0	0.0	0.150
Hypocalcaemia	13	43.3	6	20.0	0.052
Pancreatic pseudo cyst	1	3.3	2	6.7	0.554
Paralytic ileus	0	0.0	1	3.3	0.313
Absolute constipation	0	0.0	1	3.3	0.313
Acute hemorrhagic pancreatitis	3	10.0	1	3.3	0.301
Acute necrotizing pancreatitis	8	26.7	5	16.7	0.347
Septic shock	1	3.3	0	0.0	0.313
Bed sores	1	3.3	0	0.0	0.313
Hematemesis	1	3.3	0	0.0	0.313
Ascites	14	46.7	2	6.7	<0.001**
Hyperglycemia	1	3.3	0	0.0	0.313
Abscess of pancreas	1	3.3	0	0.0	0.313
Jaundice	1	3.3	0	0.0	0.313
Melena	1	3.3	0	0.0	0.313
Mild hepatomegaly	0	0.0	2	6.7	0.150
Mild splenomegaly	0	0.0	1	3.3	0.313

Chi-square test ** Significant difference at P. value<0.01

Table 3: Comparison between studied groups of patients according to intensive care unit staying and mortality rate (No=60).

Variable	Pre program Control (No=30)		Post program Study (No=30)		P. value
	No.	%	No.	%	
Mortality rate					
Yes	9	30.0	2	6.7	0.045*
No	21	70.0	28	93.3	
Days of Intensive care unit staying					
Mean ±SD (range)	8.4±8.23(2-40)		4.53±2.97(1-17)		0.019*

Chi-square test * Significant difference at P. value<0.05

Independent T- test* Significant difference at P. value<0.05

Table 1 shows the distribution of the studied subjects regarding age characteristics. It clearly shows that the majority patients of preprogram were ranged between 17-77 years with mean of (44.87 ± 16.81) and the majority patients of post program ranged between 18-77 years with mean of (42.37 ± 18.4). The majority of female patients, were unemployed, illiterate and married. There was no statistically significant difference between two groups regarding to socio-demographic and clinical characteristics of the studied patients.

Also, Table 2 shows the distribution of the studied subjects regarding complications. It was observed that there was statistically significant difference regarding ascites (p<0.001**). And in spite of there were no statistically significant difference between pre-program and post program patients' groups regarding complications but incidence of these complication decreased after educational program implementation especially hypocalcaemia, and acute necrotizing pancreatitis (20%, 16.7% respectively).

As for Table 3, it illustrates the studied subjects regarding intensive care unit stay and mortality. Duration of intensive care unit stay before program with mean 8.4±8.23 which decline to 4.53±2.97 after implementation of program. There was statistically significant difference between pre-program and post program patients' groups (P= 0.019*). Regarding mortality rate in patients diagnosed with acute pancreatitis was 30% before implementation of the program. This mortality rate decreased in patients group after implementation of program was 6.7 %. There was statistically significant difference between pre-program and

post program patients' groups (p= 0.045*).

10. Discussion

Continuing nursing education and the application of new knowledge to practice are increasingly important means to improve patient care in today's health environment. The willingness and ability to transfer knowledge, skills, and attitudes are critical to improving patient outcomes (Wellings *et al.* 2017)^[15].

Therefore the aim of this study was to evaluate effect of an educational program about acute pancreatitis patients' outcomes.

The results of the present study showed that the majority of studied patients ranged between 18-77 years. The majority of the patients were unemployed, illiterate and married females. The result may attributed to more common causes of acute pancreatitis in Egypt is gall bladder stone and more liable in female rather than male.

The results of the present study agree with (Hinkle & Cheever, 2014)^[6] who stated that, acute pancreatitis affects people of all ages. This also agree with (Prasad & Nagarjuna, 2016)^[9] who found that the majority of patients at the age group of 41-60, the youngest patient was 18 yrs and the oldest Patient was 75 years.

The results of the present study agree with (Guercioni *et al.* 2009)^[5] who stated that, Women are two times more commonly affected, likely related to the increased prevalence of cholelithiasis in females. These result are in line with the result reported by (Akhter *et al.* 2017)^[11] who found that a female to male predominance with the ratio of

2:1. This epidemiological data was also confirmed in other study which stated that biliary acute pancreatitis being twice frequent in women than in men.

The results of the present study disagree with (Chemens *et al.* 2016) [3] who stated that, acute pancreatitis was found more commonly in males compared to females.

There was statistically significant difference between pre-program and post program patients' groups regarding complications (ascites $p = <0.001^{**}$), and in spite of there were no statistically significant difference between pre-program and post program patients' groups regarding complications but incidence of these complication decreased after educational program implementation especially hypocalcaemia, and acute necrotizing pancreatitis (20%, 16.7% respectively).

The present study showed that, there were statistically significant difference between pre-program and post program patients' groups regarding mortality and staying in intensive care unit were ($p=0.005^{**}$, 0.019^* respectively).

These present results may attributed to implementation of educational program regarding acute pancreatitis equipped and provide the nurses with knowledge and high quality practices, which reflect on minimizing complications and improved patients' outcomes. Critical care nurse must able to select patients' problems that are the most serious or most important to the patients which reflected on patients condition.

The results of the present study disagree with (Akhter *et al.*, 2017) [1] who stated that, acute fluid collection around pancreas being the top line complication, followed by other complications including pleural effusion, pseudocyst, pancreatic ascites, sterile and infected pancreatic necrosis, portal or splenic vein thrombosis, hyperglycemia, hypocalcemia, and renal failure are rare.

The results of the present study disagree with (Zerem, 2014) [16] who stated that, the most common local complication was acute fluid collection followed by pancreatic necrosis, pancreatic abscess and infected pancreatic necrosis, in the same line The results of the present study disagree with (Desai *et al.*, 2016) [4] who stated that, the most common complications were pulmonary followed by acute renal failure.

The results of the present study agree with (Zhanxia *et al.*, 2016) [17] who stated that, early observation and preventive nursing of SAP complications can effectively reduce the incidence of complications. Even in the occurrence of complications, timely and effective nursing and treatment could also reduce the severity of complications and improve the prognosis. As SAP has many complex and dangerous complications, it is necessary to formulate reasonable nursing procedures in the process of clinical nursing for patients with SAP, screen for complications according to the nursing program, and improve the corresponding nursing quality.

Finally, it can be concluded that, the educational program for nurses working with acute pancreatitis patients has achieved, their objectives by improving nurses' knowledge and practice regarding acute pancreatitis patient care. Also educational program showed its impact on early detection and / or reduces of acute pancreatitis complications.

11. Conclusions

The current study evaluates effect of an educational program on patients' outcomes about acute pancreatitis. Based on the results of this study, it can be concluded that:

- The incidence of acute pancreatitis complications for patients cared by nurses after education program implementation was decreased.

12. Recommendations

- Development and application of training program for all nurses to update their knowledge and improve their skills and attitude to care of patients undergoing acute pancreatitis.
- Replication of this research on a larger probability sample acquired from different geographic area in Arab republic of Egypt for generalization.

13. References

1. Akhter S, Khan ZR, Ahmed B, Ahmed F, Memon ZA. Complications of Acute Pancreatitis in Tertiary Care Hospital. International Journal of Hepato Biliary and Pancreatic Diseases. 2017; 7:23-27.
2. Chaghar M, Saffari M, Ebadi A, Ameryoun A. Empowering education: A new model for in-service training of nursing staff, J Adv Med Educ Prof. 2017; 5(1):26-32.
3. Chemens DL, Schneider KJ, Arkfeld CK, Grode JR, Wells MA, Singh S. Alcoholic pancreatitis: New insights into the pathogenesis and treatment. World J Gastrointest Pathophysiol. 2016; 7:48-58.
4. Desai A, Panchal H, Paramar H. Acute pancreatitis: Causes, pathophysiology, different modalities of management. IAIM. 2016; 3(4):66-71.
5. Guercioni G, Siquini W, Senati E. Epidemiology, classification, etiopathogenesis, and diagnosis of acute pancreatitis. In: Siquini W, editor. Surgical treatment of pancreatic diseases. Italia: Springer Verlag, 2009, 31-61.
6. Hinkle JL, Cheever KH. Brunner & Sunddardh's Textbook of Medical-Surgical Nursing. 13th ed. Wolters Kluwer/Lippincott William & Wilkins, Printed in China. 2014, 1390-1403.
7. Hofmeyr SS, Warren BL, VanRensburg CJ. Improving outcomes in acute pancreatitis, South African Gastroenterology Review. 2014; 12(1):28-31.59.
8. Hospital records of Assiut University (2016 & 2017). Mossad D, Dinh B, Markert R and Musleh M. Predictors of In-Hospital Mortality in Acute Pancreatitis, Journal of the Pancreas. <http://pancreas.imedpub.com>. 2017; 18(6):465-469.
9. Prasad HL, Nagarjuna TR. Clinical profile of patients with acute pancreatitis. International Journal of Research in Medical Sciences. 2016; 4(7):2994-2997.
10. Sayed SM. Impact of implementing standardized nursing care on hepatic encephalopathy patients' outcomes in intensive care unit at main Assiut university hospital, Master degree, Critical care Nursing department, Faculty of Nursing, Assiut University. 2014, 5.

11. Shebl AM, Mohamed SA, Othman WN. Effect of Nursing Intervention on Clinical Outcomes and Patient Satisfaction among Upper Gastrointestinal Bleeding Journal of Natural research. 2013; 3(8):50.
12. Sole ML, Klein DG, Moseley MJ. Introduction to Critical Care Nursing. 7th ed. Elsevier, Inc. printed in China. 2017, 500-507.
13. Tesoriero R, Diaz JJ. Critical Care Management of Severe Acute Pancreatitis. 2016, 181-184.
14. Urden LD, Stacy KM, Lough ME. Priorities in Critical Care Nursing, 7th ed. Mosby. An imprint of Elsevier, printed in Canda, 2016, 431- 435.
15. Wellings AC, Gendek AM, Gallagher ES. Evaluating Continuing Nursing Education, Journal for Nurses in Professional Development. 2017; 33(6):281-286.
16. Zerem E. Treatment of severe acute pancreatitis and its complications. World J Gastroenerol. 2014; 20(138):79-92.
17. Zhanxia Y, Suyan W, Guangzhen W. Study on the nursing effect on complications of severe acute pancreatitis. Int J Clin Exp Med. 2016; 9(2):5228-5232.