

# Assessing Influence of Solution-focused Nursing for Severe Acute Pancreatitis Patients in Double Filtration Plasmapheresis

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**Abstract:** Objective: To evaluate influence of solution-focused nursing for severe acute pancreatitis patients in Double Filtration Plasmapheresis. Methods: 260 patients were invited join our study who were diagnosed as acute pancreatitis, they undergoing Double Filtration Plasmapheresis from January 2015 to September 2019. The participants assigned randomly into the intervention group and control group. The control group patient receive traditional nursing services in treatment process. Also, the intervention group patient receive solution-focused nursing services. Additionally, we collected the data from all participants, the data included anxiety information, depression information, self-care ability, self-management effectiveness, Serum amylase, Urine amylase, tumor necrosis factor- $\alpha$  and interleukin-6. The used questionnaires include Self-Rating Anxiety Scale (SAS), Self-rating depression scale (SDS), exercise of self-care agency (ESCA) and Chronic Disease Self Efficacy Scales Stanfor (SESC). Result: The intervention group had greater score in SDS and SAS, but the gap of improvement between intervention group and control group was not big. In 4 domains of ESCA, all improvements were undistinguished in control group. Besides, the self-management ability improvement of two groups was slightly in the result, but intervention group had greater performance than that of control group in all domains. Conclusion: The solution focused nursing improve the outcome of DFPP treatment with AP patient in Chinese hospital. The improvement included 4 domains in the result, such as mental health (anxiety & depression), self-care ability, self-management ability and recovery status. But the simple size was limit the accuracy of results.

**Keywords:** Solution-focused Nursing, Acute Pancreatitis, Double Filtration Plasmapheresis

## 1. Introduction

Double Filtration Plasmapheresis (DFPP) is a general treatment method with patients with liver failure, has been used increasingly for induction of immunotolerance in high-risk operation [1-3]. In some Chinese hospital, DFPP teams have been assembled to manage perioperative DFPP. This approach allows for improved efficiency and reduced time to therapy [4, 5]. In addition, the DFPP team typically consists 6 roles, such as transfusion medicine physician, doctor with severe acute pancreatitis, perfusionist, pharmacist,

anesthesiologist and critical care nurses [6]. Base on report, DFPP's therapeutic effect is secondary to elimination of antibodies, immune complexes, and cytokines in plasma with the premise that removal of these mediators will ameliorate disease [7, 8]. DFPP is an apheresis procedure where the patient's plasma is separated, removed, and simultaneously replaced with another fluid to maintain a normal blood volume [9]. In 1914, the remaining blood fraction was re-introduced into the patient, patient's blood was removed from patients, plasma was discarded [10]. In addition, acute pancreatitis (AP) is one of the most common gastrointestinal disorders with

morbidity of 13-45/100,00 worldwide [11]. Approximately 10%~20% of AP cases will progress to severe acute pancreatitis (SAP), which is associated with rapid progression, multiple complications and high mortality [12].

Solution focused nursing (SFN) is a model of care that offers an alternative approach to engaging with clients, and to the discipline of nursing itself, an approach based on respect for the individual, and faith in that person's own resources and potential [13, 14]. Basically the difference between solution focused nursing and traditional nursing is an alternative way of thinking about problems and issues. There is increasing evidence that solution focused models of care do offer potential for improved outcomes [15, 16]. Base on some reports of all available outcomes studies on solution focused care available at time of reporting, five were well controlled, and four of these showed the solution focus to be better than standard care [13, 17]. The aim of our study is assess influence of solution-focused nursing for severe acute pancreatitis patients in double filtration Double Filtration Plasmapheresis.

## 2. Methods

### 2.1. Participants Enrollment and Survey Methods

260 patients who were diagnosed as acute pancreatitis were investigated join into our study, all of them undergoing Double Filtration Plasmapheresis from January 2015 to September 2019. We randomly assigned the participants to the control group (n = 130) and the intervention group (n = 130). In different groups, the patients were receive different nursing measure in treatment process. For one things, the patients of control group had traditional nursing services from our

researchers. For another things, the patients of intervention group were receive solution focused nursing. We collected the data from all participants, the data included anxiety information, depression information, self-care ability, self-management effectiveness, Serum amylase, Urine amylase, tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin- 6 (IL-6). We collected data using the following questionnaires; Self-Rating Anxiety Scale (SAS), Self-rating depression scale (SDS), exercise of self-care a- gency (ESCA) and Chronic Disease Self Efficacy Scales Stanfor (SESC). Another data was from patient record and assay result [18, 19].

Their inclusion criteria were: (1) the patients were diagnosed as acute pancreatitis; (2) They undergoing Double Filtration Plasmapheresis; (3) Patients volunteered to participate in follow-up; Their withdraw criteria were: (1) the patients had too many complications; (2) They had other pancreatic problems.

### 2.2. Statistical Analysis

Survey responses were analyzed using descriptive statistics. Sample proportions, means, and standard deviation (SD) are reported. All analyses were performed in SPSS 24.

## 3. Result

In the result of SAS and SDS, the intervention group had greater score, but the gap of improvement between intervention group and control group was not big (Table 1). For depression status of patient, the effect of traditional nursing service was not significant in the outcome (from 71.03 $\pm$ 7.21 to 55.13 $\pm$ 6.27 vs from 71.14 $\pm$ 7.54 to 62.54 $\pm$ 6.35).

Table 1. The outcome of SAS and SDS (Mean  $\pm$  SD).

Projects	SAS		T	P value	SDS		T	P value
	BI	FI			BI	FI		
Intervention Group (n = 130)	69.36 $\pm$ 7.51	52.34 $\pm$ 5.24	23.1237	< 0.005	71.03 $\pm$ 7.21	55.13 $\pm$ 6.27	32.9367	< 0.005
Control Group (n = 130)	70.02 $\pm$ 7.71	58.34 $\pm$ 5.31	12.5822	< 0.005	71.14 $\pm$ 7.54	62.54 $\pm$ 6.35	17.3510	< 0.005
T	1.312	27.251	-	-	0.0172	13.5902	-	-
P value	0.594	0.021	-	-	0.381	0.149	-	-

SAS = Self-Rating Anxiety Scale  
 SDS = Self-rating depression scale  
 BI = before the intervention  
 FI = after the intervention

In the total of self-care ability, the patients of intervention group had stronger self-care ability after the intervention than that of control group (125.36 $\pm$ 16.54 vs 107.82 $\pm$ 15.69) (Table 2). In 4 domains of ESCA, all improvements were

undistinguished in control group. The different is that the patient of intervention group received greatest improvement in Self-care knowledge (from 21.26 $\pm$ 4.28 to 34.47 $\pm$ 5.21).

Table 2. Self-care ability (Mean  $\pm$  SD).

Projects	Period	Self concept	Self-care responsibility	Self-care knowledge	Self-care skills	Total	P Value
Intervention Group (n = 130)	BI	23.34 $\pm$ 3.58	24.21 $\pm$ 5.11	21.26 $\pm$ 4.28	24.33 $\pm$ 5.14	93.14 $\pm$ 12.31	< 0.005
	FI	31.21 $\pm$ 4.58	30.36 $\pm$ 5.16	34.47 $\pm$ 5.21	29.31 $\pm$ 6.11	125.36 $\pm$ 16.54	0.134
Control Group (n = 130)	BI	23.44 $\pm$ 3.77	24.31 $\pm$ 5.37	21.22 $\pm$ 4.11	24.57 $\pm$ 5.16	93.54 $\pm$ 12.22	0.042
	FI	26.35 $\pm$ 4.62	27.23 $\pm$ 4.89	27.66 $\pm$ 5.13	26.58 $\pm$ 6.27	107.82 $\pm$ 15.69	< 0.005

BI = before the intervention  
 FI = after the intervention

Base on Table 3, it shown the self-management of patient at before intervention and after intervention. Overall, the improvement of two groups was slightly in the result, but intervention group had greater performance than that of

control group in all domains. In particular, compared with the other domains, the emotion management score of intervention group had biggest change, the emotion management score of intervention group was from  $4.68 \pm 0.69$  to  $8.13 \pm 2.14$ .

**Table 3.** Self-management effectiveness (Mean  $\pm$  SD).

Projects	Period	Symptom management	Emotion management	Self management	Fatigue management	Drug administration	Pain management
Intervention Group (n = 130)	BI	5.11 $\pm$ 1.05	4.68 $\pm$ 0.69	5.39 $\pm$ 1.24	4.69 $\pm$ 1.17	6.02 $\pm$ 1.43	5.02 $\pm$ 1.08
	FI	7.75 $\pm$ 1.35	8.13 $\pm$ 2.14	7.88 $\pm$ 1.68	6.98 $\pm$ 1.46	8.79 $\pm$ 2.21	7.75 $\pm$ 1.16
Control Group (n = 130)	BI	5.13 $\pm$ 1.12	4.71 $\pm$ 0.73	5.41 $\pm$ 1.26	4.72 $\pm$ 4.21	6.11 $\pm$ 1.44	5.06 $\pm$ 1.13
	FI	6.57 $\pm$ 1.36	6.21 $\pm$ 2.11	6.24 $\pm$ 1.72	5.44 $\pm$ 1.42	7.16 $\pm$ 1.86	6.27 $\pm$ 1.05

BI = before the intervention

FI = after the intervention

The data of serum biochemical index and amylase index was from patient test in treatment process, it included 4 domains, such as TNF- $\alpha$ , IL-6, Serum amylase and Urine amylase (Table 2). Those data shown the change of acute

pancreatitis status of patient. Base on Table 2, the intervention group had better recovery in the result that that of control group, but the improvement was not significant in the serum biochemical index and amylase index.

**Table 4.** Serum amylase, Urine amylase, tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin- 6 (IL-6) (Mean  $\pm$  SD).

Projects	Period	Serum biochemical index		Amylase Index	
		TNF- $\alpha$ (ng/L)	IL-6 (ng/L)	Serum amylase (U/L)	Urine amylase (U/L)
Intervention Group (n = 130)	BI	395.27 $\pm$ 35.26	78.98 $\pm$ 12.58	171.13 $\pm$ 26.21	1555.13 $\pm$ 336.77
	FI	256.69 $\pm$ 26.58	53.24 $\pm$ 10.74	91.55 $\pm$ 23.12	709.65 $\pm$ 332.16
Control Group (n = 130)	BI	396.13 $\pm$ 36.02	78.71 $\pm$ 12.41	178.14 $\pm$ 27.54	1572.51 $\pm$ 314.97
	FI	271.25 $\pm$ 25.58	59.71 $\pm$ 11.71	108.67 $\pm$ 28.90	1067.91 $\pm$ 301.06
T	-	2.518	42.241	0.314	25.390
P value	-	0.094	0.007	0.224	< 0.005

BI = before the intervention

FI = after the intervention

## 4. Discussion

AP is the leading cause of gastroenterological hospitalisations. In the UK, the hospitalisation rate for acute pancreatitis is 9.8 per 100,000 per year, and is associated itself with significant morbidity and mortality [20]. Base on the reports, the AP patients have 10% progressing to chronic pancreatitis, because patients with acute pancreatitis have an increased risk of further reoccurrence [21]. Additionally, AP may lead to some complications, they may cause significant morbidity and even mortality. In fact, AP may result in transient (lasting 48 h) or persistent (>48 h) organ failure and various local complications, including acute peri-pancreatic fluid collection, pancreatic necrosis, pseudocyst, and walled-off necrosis with or without infection.

Base on the result of this study, the solution focused nursing improve the outcome of DFPP treatment with AP patient in China. The improvement included 4 domains in the result, such as mental health (anxiety & depression), self-care ability, self-management ability and recovery status. In mental health domain, the patients of intervention group had greater improvement in total score of SDS and SAS. Moreover, depression of intervention group patient was weaker than that of control group, that SDS result of intervention group patient had greater gap between before intervention and after

intervention. Similarly, in self-care ability and self-management ability of patient, they had slight improvement in the treatment, it shown the solution focused nursing service provide medical image and service quality to the patient in the treatment process. However, parts of result were not statistical significance as simple size was limit the accuracy of results. The table 4 shown the AP status of patient in two groups, The AP status of total patient were sustained recovery, but the intervention group and control group had different recovery efficiency. Base on the result of test, the solution focused nursing had better recovery efficiency in the treatment process as its related index is closer to normal range.

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