

Post-operative care in pancreatitis:

Nursing intervention

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Degree Thesis

Nursing

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DEGREE THESIS	
Arcada University of Applied Sciences	
Degree Programme:	Nursing
Identification number:	
Author:	Suman Rijal
Title:	Post-operative care in pancreatitis patient: nursing intervention
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<p>Abstract:</p> <p>This literature review will discuss the process of post-operative care in pancreatitis patient, complications aroused during the care process and the ways how nurses cope to overcome the complications. Pancreatitis is a sudden inflammation of the pancreas resulting to it's disfunction causing endocrine and exocrine insufficiency in body. The aim of this study is to guide through the post-operative nursing care process in patient's after pancreatitis surgery in nursing care perspective. The research shows that the post-operative care is a vast and complicated subject, therefore nurses are required to acquaint themselves with clinical competence to treat PONV, pain, wound care, fluid balance, catheterization, drainage etc. Also, the importance of nurse's motivational support, reassurance and patient education has been discussed thoroughly as the finding of this research.</p> <p>Scientific articles were obtained through Arcada's academic databases, Jama network and book to ensure the validity of the articles. The theory chosen to support this research is Katherine Kolcaba's comfort theory. A qualitative literature review was conducted reason being the time restrain, resources and the ethical approval consuming time on doing the quantitative study. The content derived from background were profusely analyzed and coded to get the relevant result for the research aim.</p>	
Keywords:	Pancreatitis, post-operative care and pancreatitis, PONV, post-operative pain management, post-operative wound care
Number of pages:	40
Language:	English
Date of Acceptance:	

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Acronyms

PD- Pancreaticoduodenectomy

AP- Acute pancreatitis

CP- Chronic pancreatitis

PONV- Post-operative nausea and vomiting

ERAS- Enhanced recovery after surgery

1 INTRODUCTION

According to Yadav and Lowenfels (2015), any inflammation of the pancreas is generally described as Pancreatitis which is a serious condition that manifests in either acute, chronic or acute on chronic forms leading to severe abdominal pain and one of the major socioeconomic burden. Gallbladder stone is the major cause of acute pancreatitis (AP) (Yadav and Lowenfels 2013), whereas alcohol consumption and acute pancreatitis progressing to chronic pancreatitis (CP) are the primary reason for chronic pancreatitis (Lankisch et al 2015, Yadav and Lowenfels 2013 and Irving et al 2009). According to Hungarian Pancreatic study group (2017), patients who smoke and consume alcohol in regular basis have higher chances of getting CP and these patient group are the one undergoing Pancreatic surgery.

The motivation for the author to explore further about this topic arose while doing the practical training in the post-operative ward as a nursing student. The desire to learn more about the post-abdominal surgery especially in pancreatitis surgery kept the author in position to do more research in this field and write a degree thesis. The clinical skill and the intuitive thinking of the nurses while doing the post-operative care influenced the author immensely to learn more about the post-operative care involved in patients after pancreatitis surgery. Although peri and intra-operative care being as important and

post-operative care, they haven't been included in this thesis because of the immense length and also due to author's main interest being post-operative care the thesis has been narrowed down to it. The topic is also selected due to the fact of being high morbidity rate in post-operative pancreatitis care that the nurses must be clinically competent, intuitive and be familiarized in this subject. Before doing the research, the author had some hypothesis in post-operative care of pancreatitis patient based on practical training. The author believed that there are several factors to be considered during post-operative care such as administration of oxygen, medication, pain management, fluid management, PONV management and preventing complications.

In the introduction chapter justification for this thesis is briefly presented. An overview of the pancreatitis (acute and chronic), signs and symptoms and post-operative care involved are discussed precisely in the background chapter. Because of the relevance to this research, Katherine Kolcaba's comfort theory and its conceptual framework has been briefly discussed in the Theoretical framework chapter. The methodology chapter looks at the research technique used by the researcher. In the findings chapter the outcome of the data analysis is presented and in the discussion these findings are expounded and discussed in detail. The concluding chapter which is the conclusion and recommendations chapter looks at the conclusion drawn from the study considering the limitations of the study and recommending on areas where improvements should be made are discussed.

2 BACKGROUND

In this chapter the background for the thesis and the central terms are defined more precisely. Some of the terms defined here are based on the nursing theories used to support this research. Previous research regarding the topic done by other authors and theorist is presented.

2.1 Pancreatitis

Pancreas is an organ situated behind the stomach in the upper abdomen that produces enzymes and hormones. Enzymes secreted from pancreas reach the intestine through pancreatic duct and help digest the food. The hormones, insulin and glucagon are re-

leased into the blood stream which helps to regulate the blood sugar level (Janet M Torpy, 2012). Pancreatitis is an inflammation caused by pancreatic duct obstruction. Generally, it stems from chronic, heavy alcohol abuse or biliary obstruction from cholelithiasis. Other contributing factors may include congenital abnormalities, drugs, hyperlipidemia, hyperparathyroidism, infection, trauma, and pregnancy. Pancreatitis is further divided into two categories (Ruppert Susan 1990).

Acute pancreatitis which has a sudden onset and short duration affects more men than women, usually takes an edematous form. Sometimes a more serious hemorrhagic form develops exceeding the mortality rate more than 50 percentage. Whereas chronic pancreatitis develops gradually and worsens overtime, resulting in permanent pancreas dysfunction. Eventually, this leads to decreased enzyme and bicarbonate production, resulting in nutrient malabsorption. The disease may be further complicated by secondary problems, especially potentially fatal pulmonary conditions such as pleural effusion, atelectasis, pneumonia, or adult respiratory distress syndrome (Lankisch et al. 2015; Yadav and Lowenfels 2013).

2.2 Signs and symptoms

Ruppert Susan (1990) pointed out that initially, pancreatitis produces nonspecific signs and symptoms that can be similar to other gastrointestinal problems. The main key symptom that is pain, begins gradually and may persist for hours or even days. It strikes the mid epigastrium and bores through to the back. The patient may also have pain in shoulder, left side of the chest, and midback. Severe pain, accompanied by nausea and vomiting, may make the patient fear as having myocardial infarction. Abdominal tenderness and possibly bloating can be found out on physical assessment. The patient's abdomen may appear greenish yellow and marbled probably from trypsin-induced vascular damage. Grey Turner's sign (bluish flank discoloration) and Cullen's sign (bluish periumbilical discoloration) also reflects pancreatitis. Both result from retroperitoneal blood. Pancreatitis usually causes a low-grade fever. Tachycardia and hypotension may indicate hypovolemia, suggesting possible hemorrhage, third-space fluid shift, or both. Jaundice may indicate biliary obstruction. Steatorrhea isn't common in acute cases but can be seen in chronic pancreatitis. Alcohol withdrawal syndrome, sepsis, or metabolic imbalance can change the mental status of patient. Diagnosis of the pancreatitis rely on

assessment along with the results from various procedures, including ultrasound, computed tomography scan, and endoscopic retrograde cholangiopancreatography, as well as laboratory studies, such as serum amylase and amylase-creatinine ratio (Ruppert Susan 1990).

2.3 Acute pancreatitis

Sudden inflammation of the pancreas causing severe pain in the abdomen and middle of the back is termed as acute pancreatitis. Nausea and vomiting are the primary symptoms associated with this disease. Gallstone is the primary reason for AP. Factors related to biliary disease and choledocholithiasis such as obesity and hypertriglyceridemia are the contributing causes of AP too (Yadav and Lowenfels 2013). According to Zarnescu NO et al. (2015), the risk of developing acute pancreatitis varies from country to country depending on socio-economic, ethnic and cultural factors itself and within the country as well. Furthermore, they describe that the age and sex distribution factor does not relate to gall bladder pancreatitis whereas the alcoholic consumption matters predominating females and older people with alcoholic pancreatitis. Research done by Cho JH, Kim TN and Kim SB in Edinburgh found out that overall mortality rate of acute pancreatitis is 8-13% which has fallen by 3% in recent years (Cho JH et al. 2015). Agreeing this, researcher of pancreatitis study group states that the innovation of great imaging field especially ERCP has contributed a lot in the diagnosis and treatment of acute biliary pancreatitis (Da Costa DW et al. 2015). The treatment process should include adequate resuscitation, nutritional support and careful monitoring to diagnose early complications (Naik N, Patel G and Parmar H 2016).

2.4 Chronic pancreatitis

CP is related with a spectrum of chronic exocrine and endocrine inadequacy leading to progressive pancreatic parenchyma with fibrotic tissue manifesting in malnutrition, disability, diabetes, medical cost and degrading quality of life (Yadav and Lowenfels 2013 and Braganza et al. 2011). Alcohol consumption is the major cause of CP (Lankisch et al. 2015 and Irving et al. 2009). Gallstone being the primary cause of AP, obesity and hypertriglyceridemia play a negligible role in CP except where AP progresses to CP (Yadav and Lowenfels 2013). Despite the progressive fibrosis of pancreatic tissue, the

typical symptoms to determine CP can be found only after the loss of 90% of functioning tissue (Layer P and Keller J 2003). According to the study done by Hungarian pancreatic study group, 68.6% of patient experienced unbearable abdominal pain whereas 11.5% and 11.35% had jaundice and fever respectively. 35% of patients had exocrine insufficiency leading to 3.03kg of weight loss per month and 12.66% with diarrhea. Diabetes as an indicator of endocrine insufficiency were reported in 38% of patients of which 37.5% were treated with insulin. The study also pointed out that patients who smoke and consume alcohol in regular basis are at the highest risk of having CP and significantly these patient groups are the one who goes under pancreatic surgery. According to numerous studies 13.4/100000 Finnish people are diagnosed with CP whereas in US it is far less to 4/100000. Despite of alcohol consumption and smoking being the primary reason of Pancreatic cancer, the study noted that patient with clinically proven CP are at higher risk of getting pancreatic cancer (Hungarian pancreatic study group 2017).

3 POST-OPERATIVE CARE

Nurses are the one who are directly involved in the post-operative care of patients in the ward likely 2-4 weeks depending on the health status of patients, wound healing process and physical and mental stability. Pancreatoduodenectomy (PD) has become one of the most standard operation for the patients with acute and chronic pancreatitis with the improvement in techniques and pharmaceutical prophylactic approaches (Shen, Yin F. and Jin W. 2013). PD is one of the most invasive abdominal surgery with 30-40 % of morbidity due to post-operative complications (Muller MW et al 2007). According to Hughes E (2004), there are several essential factors to consider in post-operative care such as administration of oxygen, medication, pain management, fluid management and preventing complications. The study further pointed out that pre-operational patient education plays a significant role in the improved outcomes following the surgery. Apart from consuming medication prescribed by the doctors after surgery there are several factors involved in the post-operative care of the pancreatitis patient which are thoroughly described below.

3.1 Intensive monitoring

The purpose of early intensive monitoring by the nurses is to detect the post-operative complications. The body undergoes physiological changes after the surgery and in substantial risk of shock and hemorrhage, therefore continuous observation of the patient's hemodynamic stability must be considered (Hughes E 2004). The patients are kept on a continuous surveillance monitoring of the vital signs for the first 2-3 hours depending on the observations. Then the vital signs are taken continuously every hour or within the interval if necessary when shifted to the wards. Preventing complications is rather sensible than treating them too late. Early identification of the physiological worsening would help the nurses to treat properly for the improved outcomes. Pulse oximetry, respiratory rate, blood pressure, blood glucose level, abdominal compartment pressure, temperature are the most common and vital monitoring factors in post-operative pancreatitis patients (I. Nesbitt 2006).

3.2 Post-operative nausea and vomiting (PONV)

Nausea is the sensation to vomit by the activation of central, sympathetic and parasympathetic nervous system whereas vomiting is the involuntary oral excretion of the gastric contents through coordination of automatic, gastrointestinal and respiratory system. PONV is the most incidence side effect of operation even above pain. Nurses use both pharmacological and non-pharmacological ways to treat PONV (James Blackburn and Ruth Spencer 2015). Research done by Jaesoon Son and Haesang Yoon (2017) reveals that the incidence of PONV was 27.1% within the first 24 hours after the surgery. Nurses in the ward use different risk scoring factors to determine the patient's PONV. The most common risk scoring scale is Apfel scoring system where 0 is the lowest possibility of PONV and 4 is the maximum score.

According to Table 1, there is 10% of PONV incidence with 0 score whereas the highest score of 4 explains the incidence of PONV by 79%.

Apfel score: Factors and associated risk	
1 point scored for each factor: female, non-smoker, perioperative opioids, PONV history	
Score	Incidence of PONV %
0	10
1	21
2	39
3	61
4	79

Table 1: Post-operative nausea and vomiting, James Blackburn and Ruth Spencer (2015).

Pharmalogical interventions used by the nurses to prevent or reduce the risk of PONV includes drugs with antiemetic properties such as Ondansetron, granisetron, dolasetron, steroids, phenothiazines, butyrophenones, benzamides etc. Good therapeutic measures to communicate with the patients, reassurance and a positive rapport, psychological interventions are the commonly used non-pharmalogical interventions by the nurses to reduce the risk of PONV (James Blackburn and Ruth Spencer 2015).

3.3 Post-operative pain management

According to WHO (2004), pain relief is so important in order to achieve good physical and mental health. Post-operative pain refers to psychological and physiological distress that may delay post-operative recovery and lead to increased depression and development of chronic post-surgical pain (Nielsen et al. 2007). Post-operative pain is a best example of an acute pain which is generally limited to a couple of days after the surgery (Messerer et al. 2010). Postoperative pain management should be based on a well-organized health care system that gives high priority to documentation of the management outcome for each individual patient. Approximately 50% of post-operative patients have been inadequately treated for pain (Abdalahim et al. 2008). While accessing

the post-operative pain, health care provider/nurses ask questions as listed below in Table 2.

Element	Questions used for pain assessment
1. Onset and pattern	When did the pain start? How often does it come? Changes in Intensity?
2. Location	Where is the pain? Is it in the surgical site or elsewhere?
3. Quality of pain	What does the pain feel like?
4. Intensity	How severe is the pain? What is the score in pain measuring scale?
5. Aggravating and relieving factors	What makes the pain better or worse?
6. Treatment history	What makes the pain better or worse?
7. Effect	How does the pain affect physically, mentally?
8. Barriers to pain assessment	What factors might affect in the accuracy while assessing pain? (such as communicational problem, misconception about interventions).

Table 2: Suggested elements of post-operative pain assessment (Chou et al.2016).

According to Messerer et al. (2010), the most common way to quantify and tell pain is using different pain scales. Several scales were validated and published to assess post-operative pain. To be most effective, pain measurement tools must be effortless, practical and useful without putting a large burden on caregivers, while they measure pain at large. The study of Lundeberg & Lönnqvist (2004), claims that intervention for pain management includes both pharmacological and non-pharmacological ways whenever possible and work together to give positive results. Non-pharmacological techniques include distraction, physical therapy, TENS (Transcutaneous Electrical Nerve Stimulation), acupuncture, etc. Pharmacological interventions include nonopioids [e.g. paracetamol, Non-steroidal anti-inflammatory drugs (NSAIDs), clonidine], opioids (e.g. mor-

phine, meperidine, and hydromorphone), local anesthetics and other drugs prescribed by doctors.

3.4 Post-operative nutrition

According to Hughes E (2004), increase in cortisol level after the surgery leads to the protein and muscle depletion therefore early nutrition plays very important role in the recovery of patients after surgery. Malnutrition is one of the dominant cause of morbidity in patients after pancreatitis surgery. After the surgery, patients might undergo surgical trauma characterized by hyperdynamic changes, hypermetabolism and serious gastroparesis might cause complications in post-operative nutritional approach. Also, only enteral nutrition cannot fulfill the demand of increased calorie intake thus, parenteral nutrition is considered as the second option for post-operative nutrition. Enteral and parenteral nutrition together with the supplements such as omega-3 fatty acids, arginine, glutamine and selenium with probiotics and prebiotics help to reduce inflammation and infection (Xiequn. Xu et al. 2018). According to Xiequn Xu et al. (2018), the use of nasogastric/jejunal tube or percutaneous endoscopic jejunostomy can be beneficial in patients with high risk of post-operative complications. Results from the experiment done by Shen Y. and Jin W. (2013), strongly suggests that enteral nutrition preserves gut function, reduces hypermetabolic function, maintains effective immune system and increases the survival rate after surgery. Reduced septic complications, reduced hospital stays and improvement in health status were also reported in the study when enteral nutrition is administered to the patients after pancreatitis surgery.

3.5 Early mobilization

Early mobilization after the surgery helps to improve functional independence, psychological well-being, level of consciousness, cardiovascular and respiratory system. It also helps to avoid patients pain and ileus. The study reveals that patients who walked significant distance on the first 7 days of surgery enabled them to perform better physical activities later after the recovery. Motivation from the health care providers and patients plays a key role in the early mobilization of the patients. Also, early mobilization decreases the risk of thromboembolic function and pulmonary complications which ultimately helps in the wound healing process. Patients self-motivation, inadequate pain

control, catheters, continuous intake of intravenous fluid can be the cause of failure in early mobilization process (Xiequn Xu et al. 2018).

3.6 Wound care

After the surgery, surgeons might close the wound either with stiches, staples, butterfly bandages (flexible skin closure tapes) or with adhesive glue depending on the nature of surgery. The wound needs to be kept clean and dry as possible. For the first few days after the surgery, pain medication is given in regular basis to make the patient comfortable. According to Sarvis Connie (2006), taking shower, using swimming pool and sauna right after the surgery can be harmful and infectious to the wound. Also, the study pointed out that eating nutritious food high in protein, vitamin c and zinc helps in wound healing process. Added protein supplements and multivitamins further helps the wound to heal faster. The wound usually heals in 2-3 weeks depending on the nature and size of wound and further information regarding the wound care and removing stiches/staples are given by the nurses before the patient leaves the hospital (Sarvis Connie 2006).

3.7 Fluid balance

According to Andersson (2003), bowel preparation, infiltrated cannulas, poor fluid prescription and pre-operative fasting times are the major factors for the fluid imbalance after surgery. The main aim of fluid balance in surgical patients is to maintain the homeostatic of the body by maintaining both the intracellular and extracellular spaces of the cell. For this nurse might use 0.9% sodium chloride, 5% dextrose or Hartman's solution (Ringer's lactate solution) as prescribed by the surgeons (Hughes E 2004). The study noted that the hypovolemic shock after the surgery needs to be treated with restoring adequate tissue perfusions. The study also pointed out that the excessive blood loss needs to be restored with blood transfusion (Hughes E 2004).

3.8 Catheters and drainage

Early removal of urinary catheters significantly reduces the chance of urinary tract infection, pain and uncomfortable feeling to the patient. The study pointed out that nurses

need to make sure that the patients can urinate by themselves before leaving the hospital premises (Xiequn Xu et al. 2018).

According to Sarvis Connie 2006, draining tubes are kept in the surgical site to remove excess fluid or blood after the surgery. The container bag is emptied by the nurses and further information on emptying the bags are given if the patient decides to do it by themselves or if the patients leaves the hospital before taking the drains out. Usually the draining tubes are taken out by health professionals once the excess fluid/blood stops coming out or are less than 30ml (Sarvis Connie 2006).

4 THEORETICAL FRAMEWORK

Theoretical framework is the most essential guidance of a nursing research. A theoretical framework is based on experimental evidence based on scientific research and articles which has been thoroughly controlled and approved to avoid bias. The general purpose of theoretical framework is to make the research meaningful and easily interpreted. A theoretical framework for assessment is also necessary to diagnose and for appropriate nursing intervention. It is also important to generate relevant patient data that will ease nurses in collection and documentation of data. Theories and theoretical framework helps to make sense as well as provide immense meaning to the research finding (Polit and Beck, 2007). This is the reason why most of the research is either done to test the existing theory or to build completely new theory. Fain (2004), explains theoretical framework as a matter of interpretation when concepts becomes organized enough to produce theory. However, Parahoo (2006), suggests that “theoretical framework” should be used when the research is guided by one or multiple theory and “conceptual theory” draws a concept from various theories to guide the research. Fain (2004), clearly believes that where a framework is based on concepts then it should be called “conceptual framework” whereas where the framework is based on theories then it is called “theoretical framework”.

Hence, there can be discussions and arguments between “theoretical framework” and “conceptual framework”. Thus, Fulton, Krainovich Miller and LoBiondo Wood (2010), concluded that framework is a designed map for research which should complement the research questions, aims and purposes and literature review.

4.1 Comfort theory

The theoretical framework that is suitable for the author’s research purpose is Katherine Kolcaba’s comfort theory.

Webster (1990), explains comfort as a state of easy, to soothe in distress or sorrow, to give strength and hope. She argues that this definition provided a sufficient scientific justification for nurses to give comfort to patients so that the patient will feel better and the nurse will feel satisfied too with their job.

Kolcaba defines comfort as “the immediate state of being strengthened through having the human needs for relief, ease and transcendence addressed in four contexts of experience” (Kolcaba, 2003). Kolcaba’s theory of comfort was induced by compiling three existing theories: relief, ease and transcendence. Orlando (1961), derived theory of relief, Ease was derived from Henderson (1966), who described 13 basic functions of human beings to provide care and the third one is Transcendence which she derived from Zderad (1975), explained that patients could rise above their problems by being assisted by nurses.

The four global concepts which Kolcaba relate the comfort theory are human-beings, environment, health and nursing.

4.1.1 Human beings

Comfort is achieved when the patient’s pain is controlled by medications/non-pharmaceutical way. The comfort relief is achieved since they feel relief from pain medication on their pain. Ease comfort deals with the psychological aspect. Since the pain is subsiding, the patients are at ease. The comfort transcendence occurs when the patient can rise above their health challenges and pain Kolcaba (2007).

4.1.2 Environment

Calm and comfortable environment will help the patient to reduce the anxiety and stress of patient thus, increasing the level of comfort and relaxation to the patient. This can be further maintained by enhancing the caring nurse and patient's dear ones being near.

4.1.3 Health

According to Kolcaba (2011), health is optimal functioning as defined by the patient, group, family or community. The patient can focus on needed care and recovery process once the pain and anxiety are addressed.

4.1.4 Nursing

As the patient feels that the care given is satisfactory or good enough, they will be mentally and emotionally strong which will help them in their recovery process. Also, as the patient's comfort changes the nursing interventions need to be updated too.

4.2 Conceptual framework for comfort theory

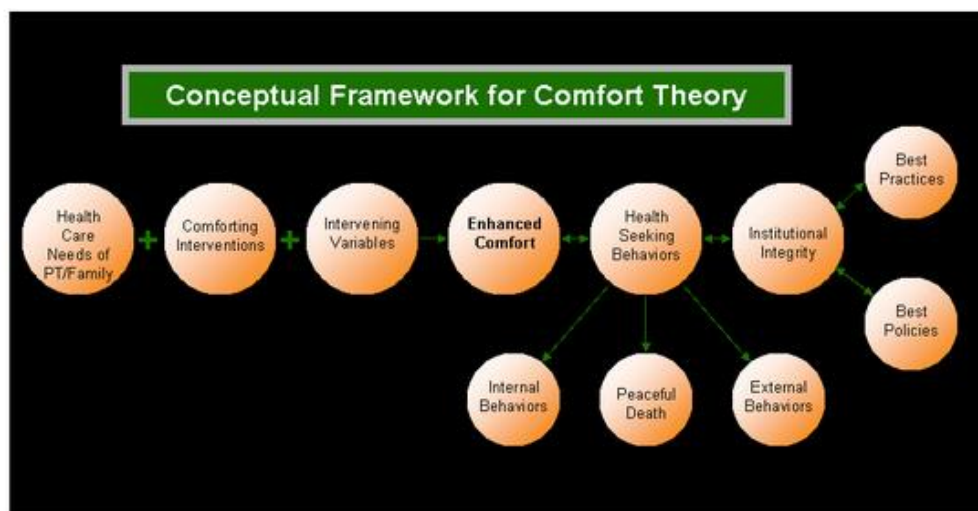


Figure 1. Framework for comfort theory, Kolcaba (2010).

The diagram above (Figure 1) gives the detail picture of major concepts associated with comfort theory. Health care needs are identified by the patient or the family members. Then they try to comfort themselves using the available resources within their vicinity. Interventions variables includes financial status, socio-cultural background, prognosis etc. on which the patient/family members have less control over it and likely the variables do not change. Comfort is the immediate desirable outcome of nursing care as described by comfort theory. Systematic organization of health care, financial stability (support) and values are determined by institutional integrity. The procedures that follows after gathering the evidence is the best practice upon a specific patient. Best practices are guided by the best policies.

4.3 Comfort theory in post-operative care

Context in which comfort occurs are

- Physical: Related to bodily sensations and homeostatic mechanisms.
- Psychospiritual: Deals with internal awareness, self-esteem, sexuality, meaning in one's life, and their relationship to higher order
- Environmental: Deals with the surrounding or external background such as light, sound, odor, color etc.
- Sociocultural: Deals with the interpersonal, family and social relationships such as finance, health care, ethics etc.

The clear and precise picture of how the comfort theory is relevant to post-operative care has been discussed below in Figure 2.

	• Relief	• Ease	Transcendence
Physical	Abdominal pain, nausea, vomiting, lack of mobility	Homeostatic, position of patient, Pain., comfort	Controlled pain.
Psychospiritual	Anxiety and stress	Deep breathing, assurance, role models.	Emotionally and spiritually at ease.
Environmental	Double patient rooms, temperature, noise.	privacy provided, low lighting, suitable temperature.	Feels comfortable with the surrounding.
Sociocultural	Family not present, financial problem, ethical problems.	Visitors, phone calls, social help.	Feels supported.

Figure 2. Kolcaba, K., Fisher, E (1996), A holistic perspective on comfort care as an advance directive, *Critical care nursing quarterly*, 18(4), pp. 66-76

Webster (1990) defined comfort in several ways: (1) to soothe in distress or sorrow; (2) relief from distress; (3) a person or thing that comforts; (4) a state of ease and quiet enjoyment, free from worry; (5) anything that makes life easy; and (6) the lessening of misery or grief by cheering, calming, or inspiring with hope. By the very difference of these definitions, we can clearly see that comfort is a holistic and a complicated term.

The word comfort and the meaning it possess can be used in a varying way such as comfortable, in comfort, comforting, and comforter. Comfort can be described as a process (“The nurse comforted patient”) and can also be stated as a product (“The patient felt comforted”). However, the state of comfort one might feel is more than the absence of discomfort that the same person feels. (Kolcaba & Dimarco 2005).

The author truly believes comfort is a basic need of the patient in nursing care. The comfort theory can be applied and used in various sectors of nursing such as surgical or post anesthesia nursing, pediatrics nursing and many others. The state of physiological and psychological wellbeing can be achieved through improved comfort level of the patient. The process of comforting actions implied by nurses to the patients are the basic concepts of comfort theory. The patient feels relieved from pain, less stress, motivated, reassured and overall gets a positive feeling through the comforting measures taken by nurses. It is very important for the patient to recovery, be healthy and return to the working life as healthy as possible, and for this the comfort level of the patient must be the same as a healthy individual. The author believes the practice of this theory, comfort and care are the essence of nursing and it guides nursing decisions regarding the patient and creates a tangible picture of the interventions needed to achieve comfort for the patient.

5 AIM AND RESEARCH QUESTION

The aim of this study is to guide through the post-operative nursing care process in patient’s after pancreatitis surgery in nursing care perspective. The patient goes through terrible shock and it is health care worker’s job to retain the patient’s mental and physical condition with optimum possible stability. Since there are 30-40% morbidity chances after pancreatitis surgery due to post-operative complications it is very important for the nurses and health care workers to know and implement the appropriate and quality post-operative care for the patient. The patient’s health is at vulnerable state after surgery thus, complications cannot be ignored which can even lead to the death of patient therefore, nurses should must be intuitive, experienced and well informed about the post-operative care.

Therefore, to meet the aims of this study following research questions has been set up

- 1) How is the post-operative nursing care done in patient's after pancreatitis surgery?
- 2) What are the post-operative complications after pancreatitis surgery and how the nurses need to tackle them?

6 METHODOLOGY

The presented degree thesis is a literature review of the scientific articles written by other authors on the topic post-operative nursing care in pancreatitis patient. According to Webster and Watson (2002), a literature is created to create a firm foundation for a progressing knowledge. The scientific articles/journals that address the research issues are reviewed to give an understanding to the subject and thereby answering the research questions. The genuineness and validity of the research presented are determined by the information provided by the scientific articles/journals, therefore it is very important to describe precisely and clearly how the research was done and what methods are used to make this research meaningful. Methodology in most cases used as a guideline for solving an issue with particular components, for instance methods, tasks, phases, techniques and tools (Ishak and Alias, 2005). The description of the material used for the research process should also be included in the methodology since scientific writing is genuine and orderly. Besides that, the material preparation process, description of research protocol, explanation of calculations and measurements performed, statistical tests considered to analyze the data should also be included in the methodology. Then the written and collected drafts are sorted out to make the meaningful, simple and clear findings.

6.1 Data collection

As seen in Figure 3, the data were retrieved from Arcada's academic databases which includes Academic Search Elite (Ebsco), pubmed, science direct and Cinahl. Due to the limitation of articles from Arcada's academic database, the very few articles (only one article) is also collected from Jama network. The data were searched on systematic way

that ensures the articles found and used for the research purpose were relevant, recent and gives clear understanding and justification to the research questions. The main phrases used for searching were: Post-operative care in pancreatitis patient, pancreatitis surgery, pancreatoduodenectomy, post-operative pain, acute and chronic pancreatitis, post-operative care, post-operative wound care, PONV, alcohol and pancreatitis, post-operative patient education and enhanced recovery after surgery. Going thoroughly with the abstract and article, the most relevant and recent articles were selected for the research.

With those immense amounts of hints derived from the search words, inclusion and exclusion criteria as seen in Table 3 were determined to find the most relevant and justifying articles for the research. Articles were excluded if they were older than 2000 (except one article written by Ruppert Susan (1990)), it was not in written in English and obviously if the articles were not in full text.

<u>Inclusion Criteria</u>	<u>Exclusion Criteria</u>
<ul style="list-style-type: none"> • Must be retrieved from Academic databases such as EBSCO, Cinahl, Pubmed, Sage, Sciencedirect etc. • Articles must be in full text. • Articles must be recently published >2000 unless they are very useful and important for this research. • Articles must be written in English. • Articles must be freely accessible. 	<ul style="list-style-type: none"> • Articles without any nursing perspectives of post-operative pancreatitis nursing care.

Table 3: Inclusion and exclusion criteria

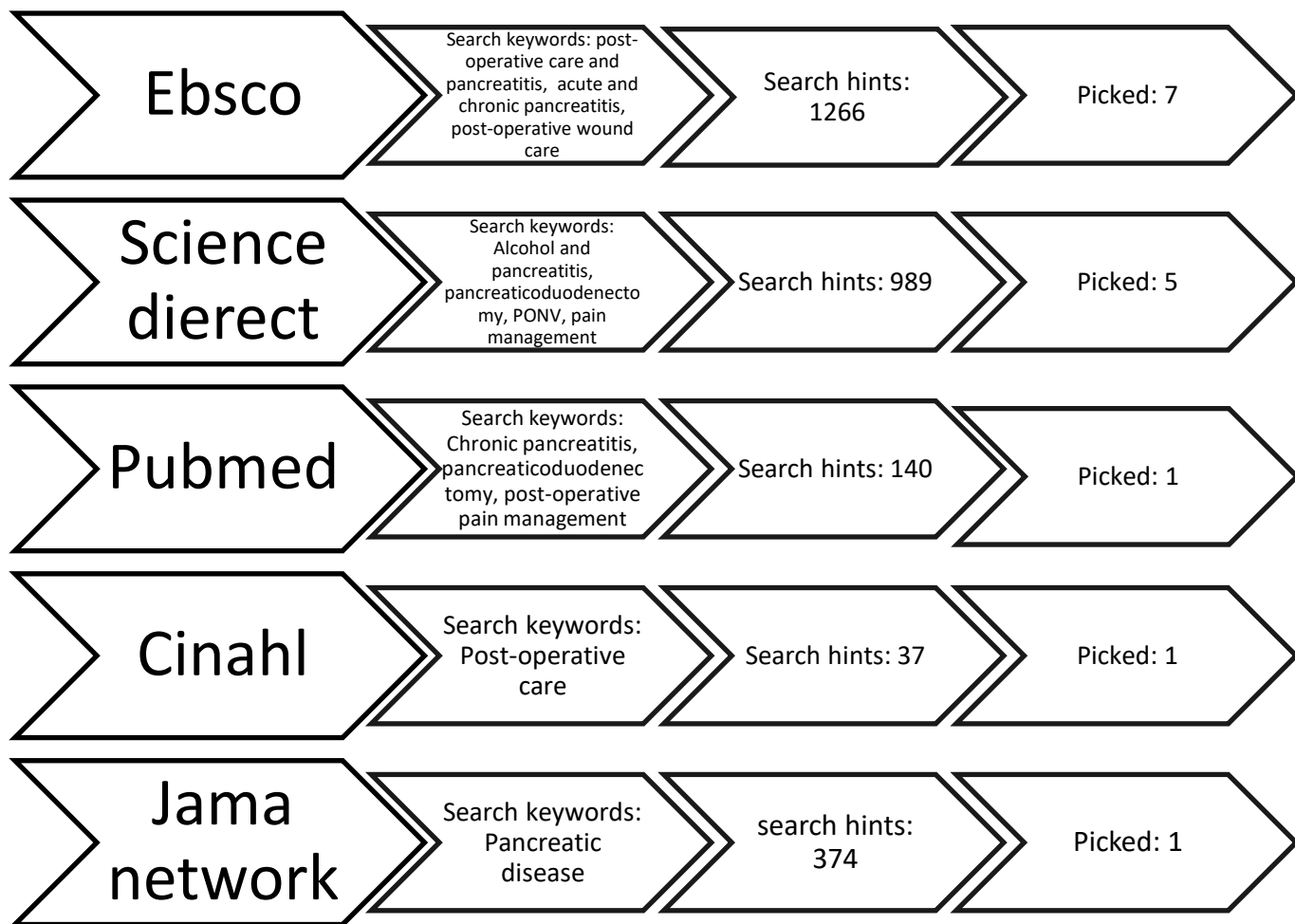


Figure 3: Data collection

The articles selected for the thesis writing purpose are listed below as shown in Table 4. The author tried to select the article related to nursing perspective in this paper as much as possible. Out of 15 articles chosen for this research 9 articles dealt with the nursing care perspective in post-operative pancreatitis whereas 6 articles dealt with its clinical aspect. Despite of being 6 articles selected as the clinical part the author strongly believes that it has added a lot more value while doing this research.

Authors	Title	Year of publication	Journal
Varunmai N L et al.	Incidence and etiology of pancreatitis among alco-	2017	International archives of inte-

India	holic and non-alcoholic patients.		grated medicine.
Janet M Torpy et al US	Pancreatitis	2012	Jama Network
Ruppert Susan US	Detecting and managing pancreatitis	1990	EBSCO
Andriy V et al. Canada	Alcohol consumption as a risk factor for acute and chronic pancreatitis: a systemic review and a series of meta-analyses	2015	Ebiomedicine
Naik Nehal et al. India	Etiology, age and sex distribution, investigations and treatment of gallstone pancreatitis	2016	International archives of integrated medicine
Szücs Ákos et al. Hungary	Chronic Pancreatitis: Multicentre prospective data collection and analysis by the hungarian pancreatic study group	2017	Plos one
Shen Yinfeng & Jin, WinYin China	Early enteral nutrition after pancreatoduodenectomy: a meta-analysis of randomized controlled trials	2013	Langenbeck's archives of surgery
James Blackburn & Ruth Spencer UK	Post-operative nausea and vomiting	2015	Anaesthesia and intensive care medicine
Xiequn Xu et al.	Enhance recovery after surgery for	2018	International journal of surgery

China	pancreaticoduodenectomy: Review of current evidence and trends		
I Nesbitt UK	Post-operative monitoring	2006	Current anaesthesia and clinical care
Sarvie Connie Canada	Post-operative wound care	2006	Nursing
Hughes E UK	Principles of post-operative patient care	2004	Nursing standard
Belyaev Orlin et al. Germany	Early and late post-operative changes in the quality of life after pancreatitis surgery	2013	Langenbeck's archives of surgery
Tao Xia et al. China	Risk factors for post-operative pancreatic fistula after laparoscopic distal pancreatectomy using stapler closure technique from one single surgeon	2017	Plos One
Harrington Linda US	Post-operative care of patients undergoing Bariatric surgery	2006	Medsurg nursing

Table 4: Presentation of selected articles

6.2 Content Analysis

According to Graneheim and Lundman (2004), content analysis is described as a qualitative method of a data analysis through a systemized process involving classification,

evaluation and unbiased verification of qualitative data. The deductive content analysis is done in this paper because of the limitation of enough studies regarding this topic and also the author strongly and honestly believes that the author is still in learning phase and is not that experienced enough to induce new theory in such important topic which requires deep research. The deductive content analysis of the chosen 15 articles were done using this method which involves primarily reading of the articles to gain understanding and then figure out the manifest and latent meaning contained in the texts. The apparent meaning obtained through reading the articles is known as manifest content whereas the foundation and bottom line of the text is known as latent meaning. The 15 selected articles are called unit of analysis which were read thoroughly and reviewed. The words, phrases, texts or paragraphs which are related to each other in context and content both wise are known as meaning units. Then those meaning units are marked by the codes to classify them and the codes with similar contents are gathered together into categories. These codes were based on the relationship based on the keywords used in the research. The keywords were highlighted with colored markers for easier identification when needed for easier coding. The data were analyzed, coded and put into categories as shown in Table 5 below. The content analysis was done in such a way that the results with sub-categories were then included in different sub-title. Patient education, nurse's clinical competence, patient education, therapeutic nurse patient relationship was merged into the sub- categories of Nurses role.

Meaning units	Codes	Categories
PONV, pain management, early mobilization, pharmacological and nonpharmacological treatment, post-operative nutrition	Post-operative nursing care	Enhanced recovery after surgery
Wound care, pain management, fluid balance, catheterization	Clinical competence	Nurses clinical competence

Nurses motivation, reassurance, information source, education, nurse patient therapeutic relationship	Nurses therapeutic role	Patient education
PONV, diabetes, delayed gas emptying, post-operative complications	Complications	Post-operative complications

Table 5: Content analysis

6.3 Research Ethics

“Research ethics are the set of ethics that govern how scientific and other research is performed at research institutions such as universities, and how it is disseminated” (SkillsYouNeed 2017). The main concept of research ethics is to avoid the breach of copyright, transparency and not using fabricated information to mention a few. The research ethics helps to improve the knowledge, collaboration between the researchers, fairness, accountability of information used, and work done and trust. Following research ethics guide will also help to avoid conflicts of interest, misconduct doing harm to others or their information (SkillsYouNeed 2017).

The researcher used the standard and instructions that have been laid down by Arcada University of Applied Science and the ethics rule guided by the scientific writing. The reference was provided while using the articles and paraphrased it to ensure that rules against copy pasting were adhered to. In the entire process of presenting the methodology used in this thesis that is the data collection, analysis and interpretation the researcher has endeavored to be objective to prevent bias and personal views.

7 FINDINGS

The findings of the content analysis showed that various complications need to be faced and tackled by both nurses and patients after the pancreatitis surgery. Since nurses are the one directly involved in the care process nurses need to be acquainted with right process, right technique, evidence-based care, management and utilization of available resources. The nurses involved in the post-operative care of pancreatitis patient should also be clinically experienced in patients PONV management, pain management, pharmacological and non-pharmacological treatment process, post-operative nutrition, fluid balance, catheterization which are thoroughly described above in the background chapter. The findings of the content analysis also show that the motivational and feeling good support by the nurse plays a significant role in the early mobilization of the patient ultimately helping in the wound healing process as well as improving mental and physiological aspect of the patient. The finding also shows that nurse plays a significant role throughout the entire process of post-operative care which cannot be ignored. Guided by theoretical framework of Kolcaba's comfort theory the findings were even more justified as the ultimate goal of the nurse is to make the patient feel comfortable, safe, sound and healthy after the surgery.

7.1 Enhanced recovery after surgery

The enhanced recovery after surgery (ERAS) has proven to reduce length of hospital stay, cost, morbidity, reducing post-operative complications and accelerating recovery. ERAS is a co-ordination of a multimodal and standardized protocols used clinically and critically applied to surgical fields. The evidence-based interventions among the surgeons, anesthesiologist, intensive care staff, nurses and other health care workers make the ERAS protocol more effective. Patient education before and after the surgery in one of the main key point of ERAS. Other ERAS protocols include thromboembolic prophylaxis (managing thromboembolism after surgery by using low molecular weight heparin or unfragmented heparin, using elastic stockings and pneumatic compression), optimum management of PONV, addressing pain management, post-operative glycemic control, fluid balance, managing bowel function, early mobilization, post-operative nu-

trition etc. (Lundberg and Lönnqvist 2004; Xiequn Xu et al.2018). The study found out that applied ERAS protocol reduces the patient's stress, pain, PONV and helps in recovering fast post-surgery providing optimum mental and physiological stability to the patient as well as patient satisfaction and safety after the discharge (Xiequn Xu et al. 2018).

7.2 Nurses role

The results of the content analysis predict that nurses play a significant and crucial role in the post-operative care of pancreatitis patient. The results of the content analysis based on nurse role can be further divided into mainly three clinical efficiency, emotional and motivational support and patient education.

7.2.1 Clinical competence

Working on the post-operative ward demands nurse to be highly professional and clinically efficient. Post-operative intensive monitoring and observing patient's vital signs, gesture and behaviors to maintain the hemodynamic stability of the patient requires nurse to be highly clinically experienced (Hughes. E 2004; I. Nesbitt 2006). According to James Blackburn and Ruth Spencer (2015) nurses needs to be both pharmalogically and non-pharmalogically acquainted to manage the most invasive side effect PONV after the surgery. The result further shows that similar intervention of using pharmalogical and non-pharmalogical approach needs to be followed to manage post-operative pain (Lundeberg & Lönnqvist 2004). Being clinically efficient with the enteral and parenteral nutritional process also plays a vital role in post-operative care (Shen Y. and Jin W. 2013; Xiequn Xu et al.2018). Furthermore, the finding relies on clinically efficient nurses acquainted with wound care, fluid balance, catheterization and drainage system (Sarvis Connie 2006; Andersson 2003; Xiequn Xu et al. 2018).

7.2.2 Therapeutic nurse patient relationship

It is defined as a relationship between a nurse and a patient based on mutual trust, respect, empowering positive attitude to the patient and care to retain patient's mental and physical improvement and stability. The primary aim of the nurse is the patient's well-being. Thus, to achieve this goal nurse are obliged to establish and maintain this key

relationship by using the necessary nursing knowledge and skills, applying caring attitude and behavior in a patient-centered care approach (College of nursing of Ontario 2006). The motivational support from the nurse helps the patient to tackle PONV and in post-operative pain situation. The content analysis also gives the result that the non-pharmalogical approach such as reassurance and positive rapport by the nurse, effective communication, trustiness and psychological intervention plays a positive effect on the early recovery of patient (James Blackburn and Ruth Spencer 2015). Nurse motivational and needed physical support helps patient in early mobilization after the surgery to gain patients self-confidence, to improve functional as well as psychological well-being enhancing cardio-vascular and respiratory system (Xiequn Xu et al. 2018).

7.2.3 Patient education

Patient education is a process of educating patient through empowerment to enable them to be responsible of their own health. The main aim of patient education is to empower patient to make right appropriate health care decisions (Mei Yu Yeh et al. 2018). Informing the specific surgical procedure of PD and the concept of ERAS along with the post-operative care considering patients' future career seems to allow better understanding to the patient. It could reduce anxiety and fear of the patient enhancing postoperative recovery and shortening the length of hospital stay. The patient education in the post-operative nutrition includes the proper diet, timing of eating and extra supplements enhances in post-operative recovery. Also, the patient education in the importance of early mobilization gives motivational support to the patient to gain self-confidence. The patient education plays a significant role in the patient to limit or avoid consuming alcohol in excess amount since it is the primary reason of Chronic pancreatitis based on this research result (Xiequn Xu et al. 2018; Andriy V et al. 2015).

Patient education cannot be ignored at the time of discharge too. At this stage health education on patient self-care of wound, diet, exercise, rest, pain management and medicinal information needs to be provided to the patient. The nurse needs to evaluate the progress of intervention and make sure to achieve the goal while admitting the patient in the ward. In case of unmet goals, the patient may be referred for follow-up. For a successful outcome, nurse at this point ensure that the patient is given all the required in-

formation on self-care and how to react and whom to contact in any alarming situation prior to the discharge (Harrington Linda 2006).

7.3 Post-operative complications

Because of the standardization of care, multidisciplinary approach in the health sector and centralization at high volumes there has been a vast improvement in the pancreatitis surgery. Although the mortality rate is reduced, morbidity rate can be accepted, hospital stay, and cost has been reduced the patient's quality of life after pancreatitis surgery cannot be ignored (Belyaev O et al. 2013). The study also found that age of the patient and endocrine and exocrine insufficiency after the surgery are the primary reason for lower post-operative Qol mainly affecting the physical health of the patient. The study further provides evidence that because of malignant disease such as Diabetes there is a substantial reduction in the Qol both on short and long term after pancreatitis surgery (Belyaev O et al. 2013). Study done by Tao Xia et al. (2017) concluded that the most common complications include hemorrhage, delayed bowel emptying, development of intestinal and pancreatic fistulas which are life threatening to the patients.

PONV is also considered as one of the major complication after surgery in the overall improvement of patient's health status. Managing post-operative glycemic control is another but not less important challenge for the health care workers after surgery (Xiequn Xu et al. 2018). The study further concluded that pain management is another challenge for the nurse after PONV.

8 DISCUSSION

This chapter further discusses the result/findings derived on this thesis research and compare the hypothesis that the author had before doing this research on basis of author's own practical training experience. Based on the result of content analysis it has found that post-operative care for pancreatitis patient includes many crucial steps, each needed to be followed with equal importance both by the health care workers and patient himself. Since the morbidity rate is 30-40% after PD (Muller MW et al 2007), the

post-operative care followed by guided principle can reduce the post-operative complications and morbidity rate.

At first patients are kept under intensive monitoring right after the surgery. The nurse's role is to monitor the vital signs and any physiological disturbances in advance to prevent post-operative complications. The pulse oximetry, heart rate, blood pressure, respiratory rate, patient's gesture, expression, blood glucose level, abdominal compartment pressure, temperature are the most common vital signs to be followed at this stage. The patients are at immense pain and the nurse's role at this point is also to treat patient with pain medication or by the coordination with anesthetist.

After 2-3 hours of being kept under surveillance the patient is then transferred to the post-operative ward where the actual post-operative care of the patient is done until the patient is ready to discharge for home, follow up or to other hospital wards depending on the progress of patient. The primary task of the nurse is to treat the patient PONV at this stage. Nausea and sensation to vomit is called as PONV. Patients suffer with PONV more than the pain after the pancreatitis surgery (James Blackburn and Ruth Spencer 2015). Nurses may use different scoring system to access the PONV and treat it accordingly by giving antiemetic medications prescribed by the doctors. Being close with the patient and make them feel safe with motivational support works as a non-pharmalogical way to treat PONV. Similarly, pain management is one of the critical aspect of nurse after surgery. Different pain measuring scoring system are used by the nurse to access the pain. By giving medications prescribed by the doctors and coordinating anesthesiologist on giving anesthesia helps to treat and manage pain. Furthermore, the reassurance of the nurse, emotional and motivational support too plays a key role to treat patient's pain to some extent.

Administering the oxygen in need and treating other underlying disease of the patient also needs to be considered by the nurse's and treat with medications as prescribed by the doctors. Nurse's job is also to maintain the proper fluid balance to keep the body metabolism functioning at it's best. The drainage and catheterization are to be checked and emptied if necessary.

The proper nutrition with added supplements such as glutamine, omega 3 fatty acid and protein helps the patient to recover soon and also helps in wound healing process. The exocrine and endocrine insufficiency may lack the proper function of digestive system, therefore the nurse competence in providing nutritional support at proper time and in right quantity plays a key role in patient's recovery.

Based on the result analysis, early mobilization of the patient helps in enhancing patient's cardio-vascular and respiratory system providing patient with self-confidence, consciousness and control of their own body ultimately helping in the early patient recovery. Nurse motivational support and reassurance to take patient one more step helps throughout this process.

Nurse's clinical competence, experience in post-operative ward and intuition can reduce the post-operative complications to some extent. Any complications occurred are to be informed and followed strictly as the doctor's, anesthesiologist and surgeon's advice. The catheters can be removed once the patient is able to urinate by himself and nurse must assure that the patient's bowel system is functioning well.

The patient education offered by nurse plays a significant role in post-operative care. The patient education in nutritional support helps in early recovery. Similarly, the patient education on the importance of mobilization helps in enhancing the patient's cardio-vascular and respiratory system helping in wound healing process. The patient's education is most important at the time of discharge. Patient's need to be educated on self-wound care, educate on importance of taking medications for recovery and also to manage pain, need to be informed on any follow-up in near future. The patient also need to be informed whom to contact in case of emergency. Based on the result analysis, the consumption of alcohol and smoking can cause acute pancreatitis, the patient need to be educated about their adverse effect.

Based on the result analysis it has been found that the author's hypothesis on the post-operative care of pancreatitis patient and encountering complications after the surgery, were true despite the clinical fact which the author still need to gain in this field.

Prior to this research, author did a practical training in the surgical ward where nurses were clinically competent, intuitive, informative and responsible. The patient was treat-

ed very kindly and motivated enough to recover soon post-operatively. The author learnt that the kind, good and honest relationship between patient and nurse is very important in the treatment process. The author felt treating PONV and managing pain in the post-operative pancreatitis is the most challenging aspect for the nurse. Nurses in the ward knew the importance of patient education and patient were given information as required during their stay at hospital. The clinical tasks were done very carefully considering personal hygiene and infection to the wound. The whole team in the ward was very functional and efficient. Therefore the positive, constructive and caring environment of the ward inspired the author to learn and do research in this field.

9 CONCLUSION

This chapter discusses the conclusions of the research. The aim of the research is reviewed, and the estimation of how well the research aims were achieved through this research is presented. The aim of this study was to guide through the post-operative nursing care process in patient's after pancreatitis surgery in nursing care perspective. The articles and research used in this paper confirms that the post-operative care in pancreatitis patient is a vast and complicated process. Nurses are required to acquaint themselves with clinical competence to treat PONV, pain, wound care, drainage, catheterization, fluid balance accessing the vital and physiological signs of the patient. The challenge the nurses face during post-operative complications need to be treated with intuition, clinical competence with the coordination of other health worker such as surgeon and anesthesiologist.

The author's question has been answered in this research, but the need for further research in nursing care perspectives apart from clinical perspective is needed, to ensure the wellbeing and quality post-operative care in the pancreatitis patient.

9.1 Limitations and recommendations

Though this study succeeded in achieving its goal to answer the research questions posed at the beginning there were certain limitations which accompanied the search for the answers. The articles dealing with this issue were limited as this was the literature

review approach. Some of the articles appropriate for the research were not accessible from Arcada's database and some of them were not free therefore restricting availabilities. Since this thesis is based on nursing care, the clinical aspect of post-operative care for pancreatitis patient has been limited to minimum as possible.

The prior research, specifically done in the post-operative care for pancreatitis patient mainly focus on the clinical aspect, the author would recommend more deep research from nurse perspective and responsibilities. Research on clinical competence and guideline for the nurse in surgical ward would be further recommended. Also, accessing articles which were not free could strengthen the research topic.

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