

Research Article

Nursing and collaborative diagnoses on perioperative patients with and without using six steps of diagnostic reasoning methods

Lisa Suarni^{1*}, Intansari Nurjannah², Heni Apriyani¹

¹Nursing School, Polytechnic, Tanjungkarang, Indonesia

²School of Nursing, Faculty of Medicine, Gadjah Mada University, Indonesia

Received: 19 October 2015

Accepted: 13 November 2015

*Correspondence:

Dr. Lisa Suarni,

E-mail: lisakausar@yahoo.co.id

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ABSTRACT

Background: Perioperative is a term that involving three different phases of surgery which are pre-operative phase, intraoperative phase and post-operative phase. Each phase is started and ended in the specific time with the sequence of events that shape patient experience related to surgery. This research is aimed at identifying the different types of nursing diagnosis and collaborative diagnosis on perioperative patients with and without using 6 steps of diagnostic reasoning method.

Methods: This is a descriptive quantitative research. Respondents of the research were 52 perioperative patients and 12 nurses.

Results: The less number of diagnoses were established without using 6 steps of diagnostic reasoning method. It is found that more various diagnoses established by using 6 steps of diagnostic reasoning method and more heterogenic diagnoses found in preoperative status than in intra and post-operative status. Specific diagnoses also only appear in a specific type of anesthesia.

Conclusions: There are differences between the variation and number of nursing diagnoses enforced by nurses on perioperative patients with and without using the 6 steps in diagnostic reasoning method.

Keywords: Diagnoses, perioperative, 6 steps

INTRODUCTION

Perioperative is a term that involving three different phases of surgery which are pre-operative phase, intraoperative phase and post-operative phase. Each phase is started and ended in the specific time with the sequence of events that shape patient experience related to surgery.^{1,2} Nursing interventions in perioperative are including all activities in pre-operative, intraoperative and post-operative. Perioperative care is started when there is a decision for undergoing surgery and it will be ended when patient in the surgery table. Activities in this preoperative phase including basic assessment, preoperative interview and prepare patient for having anaesthesia.²

Nursing activities in intraoperative phase is started when patient is moved to surgery table and will be ended when patient is moved to post anaesthesia care unit (PACU). In this phase, nurses' activities are to ensure safety and privacy patient, prevent from infection and foster healing process. Specifics nursing activities are providing emotional support, manage and maintain functional body alignment, applying aseptic principles, maintain fluid balance, ensure the precise number of dressing and instruments, helping surgeon, communicating with patients' family and other health professionals.³ Post-operative phase is started by moving patient to PACU and is ended when patient is discharged. Nursing activities in this phase are by monitoring physical and physiological patient, observing airway, vital signs,

neurology status, maintaining balance fluid and electrolyte, assessing drain output precisely.³

Nurses who are working at perioperative setting will also apply nursing process because nursing process is a framework and frame thinking for nursing profession.⁴ Wilkinson in 2007, stated that nursing process is cyclical process involving assessment, diagnosis, planning, implementation and evaluation.⁴ The Two important components of nursing process are assessment and establishing nursing diagnoses. These components will influence the next step of nursing process. Diagnostic reasoning process is considered to be complex and this process viewed differently by different author.⁵ Nursing diagnosis is defined as 'a clinical judgment about individual, family, or community experiences/responses to actual or potential health problems/life processes.'⁶

The important dimension of professional nursing rests on how accurate of diagnoses.⁷ Familiarity to cues (signs and symptoms) considered to be important in the effort to generating possible diagnoses. It is however found that nurse many find various cues (signs and symptoms) and have a problem to find where the cue belong to which diagnoses. In other case, data may be collected without awareness of 'what is the diagnoses'.⁸ Thus nurses may also collect data which has low relevance with specific nursing diagnoses. Research reveal that low accuracy in nursing diagnoses was related to high amount of low relevance data.⁸ This study will focus on identifying the different types of nursing diagnosis and collaborative diagnosis on perioperative patients with and without using 6 steps of diagnostic reasoning method.

METHODS

Design

This is a descriptive quantitative research. Data collected through interview with nurses who responsible for nursing care and through assessing patient using 6 steps in diagnostic reasoning method by researchers.

The 6 steps method of diagnostic reasoning consists of following.⁹

1. Classify data and use the Intan's Screening Diagnoses Assessment (ISDA) or the book the fast Method of Formulating Nursing Diagnoses for Diagnostic reasoning in Nursing if necessary to find the possible nursing diagnoses and collaborative problems.
2. Activate possible nursing diagnoses and collaborative problems.
3. Read or learn from appropriate references about those possible nursing diagnoses and collaborative problems and determine:
 - a. If the diagnoses are confirmed
 - b. If the diagnose are ruled out

- c. If more assessment is needed related to those nursing diagnoses and/or collaborative problems
4. Using the Poster "The Map of Nursing Diagnoses" for nursing diagnoses which have an 'A' category.
 5. Continue focus assessment if necessary (for nursing diagnoses and collaborative problems of category A and C).
 6. Label the diagnoses.

Sample

A total sample of patient who were treated in perioperative wards and nurse who were working in these perioperative wards were recruited in the period of three months in 2014. Respondents consist of 52 perioperative patients and 12 nurses who were working on perioperative ward at two hospitals in Lampung province Indonesia. Data was collected in three months from December 2013 to February 2014. The inclusion criteria for nurses were minimum education was diploma and having minimum a year experience as a nurse practitioners.

Data collection

Both nurses who were working in the perioperative ward and researcher assessed and established nursing and collaborative diagnosis to the same patients. The 6 steps of diagnostic reasoning methods were used by researcher in the process of establishing diagnosis. Data on nursing and collaborative diagnoses established by nurses (without using 6 steps of diagnostic reasoning methods) in perioperative ward were identified through interview to nurses as the documentation of nursing diagnoses was unavailable in medical record.

Instruments

Researchers follow 6 steps in diagnostic reasoning process and using ISDA as the primary tools in doing patient assessment.

Ethical consideration

Ethic approval sought through Ethic committee in Faculty of Medicine Gadjah Mada University, Indonesia.

Data analysis

Analysis was conducted to compare the result of diagnosis established by nurses in the ward and diagnosis established by researchers. Diagnoses were categories into three parts: preoperative, intra-operative and post-operative. Because all of participants were Indonesian then NANDA translation in Indonesian language and original NANDA taxonomy (2012-2014) in English language was used to ensure that the diagnoses identified by participants can be referred to diagnoses terms in original NANDA taxonomy (2012-2014) (in English).

Other sources to refer the label of diagnoses were from label diagnoses available in two other books by Wilkinson and Ahern in 2013 and Carpenito in 2006.

RESULTS

The result of this study will report on different aspects which are: demographic data, type of anesthesia, type of surgery and type of diagnoses. Diagnoses are also divided into diagnoses that are established in pre-operative, intra-operative and post-operative.

Demographic characteristic of respondents, type of anesthesia and type of surgery

This study found that the majority of respondents were male (61.5%, n = 52) and as many as 26 respondents (n = 52) age were between 36-58 years old.

There were three types of anesthesia the type of surgery applied to respondents as can be seen in table 1. The majority of respondents had spinal/lumbal anesthesia (65.4%).

Nursing and collaborative diagnoses

Diagnoses which are established using 6 steps in diagnostic reasoning method is more vary than without using this method as can be seen in Table 2.

DISCUSSION

Discussion will be divided into two topics. First topic will be about the different between diagnoses established with and without using 6 steps of diagnostic reasoning method. The second topic will be about the type of diagnoses in pre-operative, followed by type of diagnoses in intra and post- operative status. Topic will also be followed by discussion about the type of diagnoses established both using with or without 6 steps of diagnostic reasoning method.

The different diagnoses established between diagnoses established using with and without 6 steps in diagnostic reasoning method.

Table 1: Anesthesia and types of surgery.

Type of surgery	General anesthesia		Spinal anesthesia		Local anesthesia	
	Σ	%	Σ	%	Σ	%
Tumor excision	6	18.75	6	18.75	1	1.9
Herniotomy	5	15.6	5	15.6	0	0
Benigna Prostat Hipertrophy	0	0	9	17.3	0	0
Sectio Caesarea	2	3.85	6	18.75	0	0
Debridement	1	1.9	0	0	2	3.85
Laparatomy	0	0	3	5.8	0	0
Appendectomy	0	0	3	5.8	0	0
Mastectomy	1	1.9	0	0	0	0
Fracture	0	0	1	1.9	0	0
Haemorrhoidectomy	0	0	1	1.9	0	0
Total	15	28.8	34	65.4	3	5.7

Table 2 : Diagnoses on pre, Intra and Post – operative.

Nursing diagnoses /collaborative problems	Pre-Operative		Intra Operative				Post-Operative					
	6 Steps		Nurse		6 Step		Nurse		6 Steps		Nurse	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Readiness for enhanced knowledge	36	69.2	-	-	-	-	-	-	-	-	-	-
Deficient knowledge*	-	-	34	65.3	-	-	-	-	-	-	-	-
Fear	36	69.2	-	-	26	50	-	-	-	-	-	-
Acute Pain	33	63.5	-	-	-	-	-	-	49	94.2	-	-
Risk for falls	25	48.1	-	-	-	-	-	-	50	96.2	-	-
Disturbed body image	23	44.2	-	-	-	-	-	-	-	-	-	-
Risk for vascular trauma	21	40.4	-	-	51	98.1	-	-	48	92.3	-	-
Readiness for enhanced comfort	17	32.7	-	-	-	-	-	-	-	-	-	-
Ineffective role performance	15	28.8	-	-	-	-	-	-	-	-	-	-

Bathing/hygiene self-care deficit	14	26.9	-	-	-	-	-	-	-	47	90.4	-	-
Dressing / grooming self-care deficit	14	26.9	-	-	-	-	-	-	-	47	90.4	-	-
Feeding sel Care defisit	-	-	-	-	-	-	-	-	-	46	88.5	-	-
Urinary retention (BPH)	14	26.9	-	-	-	-	-	-	-	-	-	-	-
Toileting self-care deficit	13	25.0	-	-	-	-	-	-	-	47	90.4	-	-
Risk for constipation	13	25.0	-	-	-	-	-	-	-	50	96.2	-	-
Constipation	12	23.1	-	-	-	-	-	-	-	-	-	-	-
Impaired physical mobility	12	23.1	-	-	-	-	-	-	-	-	-	-	-
Impaired bed Mobility	11	21.2	-	-	-	-	-	-	-	41	78.8	-	-
Insomnia	11	21.2	-	-	-	-	-	-	-	-	-	-	-
PC : Antihypertensive Therapy Adverse Effect	10	19.2	-	-	-	-	-	-	-	-	-	-	-
Risk for infection	10	19.2	-	-	52	100	50	96.2	52	100	-	-	-
Risk for imbalanced electrolyte	10	19.2	-	-	34	65.3	-	-	-	-	-	-	-
PC: Decreased cardiac output	8	15.4	-	-	26	50	-	-	-	-	-	-	-
Risk for imbalanced fluid volume	8	15.4	-	-	-	-	-	-	-	-	-	-	-
Risk for cardiac tissue perfusion	7	13.5	-	-	-	-	-	-	-	-	-	-	-
Risk for ineffective cerebral tissue perfusion	7	13.5	-	-	-	-	-	-	-	-	-	-	-
Impaired skin integrity	7	13.5	-	-	52	100	52	100	52	100	52	100	-
PC : Paralytic ileus	7	13.5	-	-	-	-	-	-	33	63.5	-	-	-
Risk for ineffective renal perfusion	7	13.5	-	-	-	-	-	-	-	-	-	-	-
Spiritual distress	7	13.5	-	-	-	-	-	-	-	-	-	-	-
Chronic low esteem	7	13.5	-	-	-	-	-	-	-	-	-	-	-
Self-neglect	6	11.5	-	-	-	-	-	-	-	-	-	-	-
Risk for trauma	6	11.5	-	-	50	96.2	-	-	-	-	-	-	-
PC: Hypermagnesemia	6	11.5	-	-	-	-	-	-	-	-	-	-	-
Dysfunctional GI motility	5	9.6	-	-	-	-	-	-	-	-	-	-	-
Impaired dentition	5	9.6	-	-	-	-	-	-	-	-	-	-	-
Risk for ineffective renal perfusion (malignant hypertension)*	5	9.6	-	-	-	-	-	-	-	-	-	-	-
Ineffective sexual pattern	4	7.7	-	-	-	-	-	-	-	-	-	-	-
PC : Anticoagulant therapy adverse effects	4	7.7	-	-	-	-	-	-	-	-	-	-	-
Ineffective sexuality pattern	3	5.8	-	-	-	-	-	-	-	-	-	-	-
Feeding self-care deficit	3	5.8	-	-	-	-	-	-	-	-	-	-	-
Risk for autonomic dysreflexia	3	5.8	-	-	-	-	-	-	-	-	-	-	-
Risk for peripheral neurovascular dysfunction	3	5.8	-	-	-	-	-	-	-	-	-	-	-
Ineffective role performance	3	5.8	-	-	-	-	-	-	-	-	-	-	-
Nursing diagnoses/ collaborative problems	Pre-Operative		Intra Operative				Post-Operative						
	6 Steps	Nurse	6 Steps	Nurse	6 Steps	Nurse	6 Steps	Nurse	6 Steps	Nurse			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	
PC : Syndrome HELLP (Hemolysis, Elevated Liver enzyemen and Low Platelet count)	2	3.8	-	-	-	-	-	-	-	-	-	-	-
PC : Seizure	2	3.8	-	-	-	-	-	-	-	-	-	-	-
Risk for infection	2	3.8	-	-	-	-	-	-	-	-	-	-	-
Decreased cardiac output	2	3.8	-	-	-	-	-	-	-	-	-	-	-
Post trauma syndrome	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Risk for injury	1	1.9	-	-	49	94.2	-	-	52	100	-	-	-
Nausea ***	1	1.9	-	-	-	-	-	-	15	28.8	-	-	-
Risk for allergy response	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Powerlessness	1	1.9	-	-	-	-	-	-	-	-	-	-	-
PC : GI Bleeding	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Deficient fluid volume	1	1.9	-	-	-	-	34	65.3	-	-	-	-	-
Stress overload	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Readiness enhanced resilience	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Hyperthermia	1	1.9	-	-	-	-	-	-	-	-	-	-	-
Impaired urinary elimination	1	1.9	6	11,5	-	-	-	-	-	-	-	-	-

PC : Thrombocytopenia	1	1.9	-	-	-	-	-	-	-	-	-	-
PC : Cerebral edema	1	1.9	-	-	-	-	-	-	-	-	-	-
Risk for bleeding	-	-	-	-	52	100	-	-	52	100	-	-
PC:Compartemental sindrom	-	-	-	-	52	100	-	-	-	-	-	-
PC : Hipovolemik	-	-	-	-	48	92.3	-	-	49	94.2	-	-
Risk for perioperative Positioning injury	-	-	-	-	37	71.2	-	-	52	100	-	-
Risk for imbalanced fluid volume	-	-	-	-	33	63.5	-	-	33	63.5	-	-
PC : Atelectasis pneumonia	-	-	-	-	33	63.5	-	-	33	63.5	-	-
Anxiety **	-	-	21	47.1	26	50	-	-	-	-	-	-
Perdarahan*	-	-	-	-	-	-	41	78.8	-	-	-	-
Delayed Surgery Recovery	-	-	-	-	-	-	-	-	52	100	-	-
Risk for dysfungsional GI motility	-	-	-	-	-	-	-	-	49	94.2	-	-
PC : Pulmonary Emboli	-	-	-	-	-	-	-	-	48	94.2	-	-
PC : Paralytic Ileus	-	-	-	-	-	-	-	-	33	63.4	-	-

*Diagnoses are only established without using 6 steps of diagnostic reasoning methods;**Diagnoses are only experience on patients with spinal anesthesia in intraoperative status;***Diagnoses are only experienced in patient with general anesthesia.

The type of diagnoses established by using 6 steps of diagnostic reasoning method are more various than without using 6 steps of diagnostic reasoning method. This result may be because the method used ISDA as an assessment tool considering all patients' aspect. ISDA is a tool designed based on a sequence that is considering the critical assessment (such as vital signs) as the first assessment followed by other aspect of assessment. ISDA also is designed firstly by considering the definition of nursing diagnoses.

This research also found that there are no collaborative problems diagnoses established when the 6 steps diagnostic reasoning method was not used. In the contrary, by using 6 steps of diagnostic reasoning, researchers are able to identify 16 collaborative problems. This fact shows that without 6 steps diagnostic reasoning methods, nurses experience difficulty to establish accurate diagnoses (missing diagnoses). The impact of these missing diagnoses may be that nurses may not be able to show the evidence based, even though their activities may related to activities referred to collaborative diagnoses.

The result also shows that the type of diagnoses different for each perioperative states. Preoperative status is depend on the cause of surgery, also depend on the type of anesthesia and patient' condition when surgery undertaken.⁶

Kleinbeck in 2000 however found four type or label of nursing diagnoses in the perioperative state which are: (1) Patient's and Family's response toward surgery, (2) patient's safety in perioperative state (3) patient's physiology response toward surgery and (4) patient's emotion al responses toward surgery.¹¹

In this study, pre-operative diagnoses mostly influenced by patient's disease as the cause of surgery. This may result in various types of nursing and collaborative diagnoses. Considering what type of surgery will be

important factors in designing nursing care for patient undergoing surgery.

The type of anesthesia also need to be considering in designing nursing care plan for patient undertaking surgery, as there is a specific pattern of diagnoses established with different type of anesthesia.

Diagnoses in pre-operative state

It is found that there were 62 diagnoses established in pre-operative status by using 6 steps diagnostic reasoning method compared to only 3 diagnoses established without using this method. It is also found that diagnoses established mostly because of the cause of surgery such as disease. For example, nursing diagnosis acute pain mostly is not because of the surgery but because of the symptoms of the disease.

Diagnoses pre-operative established both by using and without using 6 steps in diagnostic reasoning method are including 'readiness for enhanced knowledge', 'fear', while 'acute pain' is diagnosis that only established using 6 steps in diagnostic reasoning method. Readiness for enhanced knowledge is established based on data: patients' expresses their curiosity related to the surgery procedure, disease and the result of surgery. This result similar to research conducted by Mallen (1986) and Yoder (1984) show that the most frequent diagnoses in pre-operative state are deficient knowledge related to surgery procedure.^{12,13} In addition, Lopes et al (2009) found that 95% dari 20 respondents have deficient knowledge related to disease and perioperative state as their primary nursing diagnoses.¹⁴

Nursing diagnoses 'fear' also established with or without using 6 steps in diagnostic reasoning method. This data is supported by several symptoms which are patient express anxious, fear for surgical process, and fear of death and show agitation. The similar result of diagnoses established in this state is found by Malen in 1986 and Yoder (1984).^{11,13} In addition Dosch (2003) found that

psychosocial reaction related to surgery is fear especially fear to feel pain, death, anaesthesia and fear of role and separation.¹⁵

Acute pain is another diagnoses established with and without using 6 steps in diagnostic reasoning method. Symptoms which support this diagnosis are expressing pain, touching, body part which pain, crying, sighing, agitation, these symptoms mostly found on patient with appendicitis, hernia, BPH, fracture, hemorrhoid, and vesicolithiasis. These symptoms usually appear in patient with appendicitis, hernia, fracture, vesicolithiasis and haemorrhoid.² For patient with Sectio Caesarean, acute pain is caused by delivery process. These results indicate that pain is mostly caused by pathophysiology of disease. Lopes et al. (2009) found that in 75% of patient with oesophagus surgery experience chronic pain.¹⁴

Diagnoses in intra operative state

There are four nursing diagnoses and two collaborative diagnoses established in intra-operative state using 6 steps in diagnostic reasoning method. A first nursing diagnosis is 'Impaired skin integrity'. Adamina and Dermatinas (2012) stated that impaired skin integrity in intra-operative is caused by surface pressure, immobilization and duration of pressure. This impaired skin integrity also because of surgery, intrinsic factor as genetic. Other caused by factor extrinsic which are the distance between patient's body and position and also the instruments being used to maintain patient's position during surgery, friction and also haemodynamic changes.¹⁶

Risk for infection is another nursing diagnosis. Other risk factors for infection are tissue location, contamination degree that will influence surgery infection, nutrition state, radiotherapy before surgery, renal failure, ventilator requirement, using colostomy bag, massive blood transfusion, and hypothermia during surgery.¹⁷

The third nursing diagnosis is Risk for bleeding. Bleeding is the most frequent complication in surgery and can cause death during surgery. This bleeding can be mild or severe.¹⁸

Two collaborative problems are established. PC: Hypovolemia is the first collaborative diagnosis established in this intra operative. This collaborative diagnoses mostly occur when patient loss their fluid during surgery. The second collaborative diagnosis is PC: Atelectasis pneumonia. Millen (2010) found that atelectasis is one of surgery complication and it occurs when patient could not breath then mucous will be stuck in lung and caused pneumonia. This diagnosis however, mostly because of general anesthesia than other cause.¹⁹

Diagnoses in post-operative state

There are five nursing diagnoses established in post-operative state which are 'Self-care deficit', 'impaired bed mobility', 'Risk for perioperative positioning injury', 'Nausea'. 'Self-care deficit' is nursing diagnosis which is established only by using 6 steps in diagnostic reasoning method. Post-operative state is a condition which most patient experience pain and they cannot participate in doing activity daily living (ADL), and they will need other people help to do their activity.²

Impaired bed mobility is another nursing diagnoses established in post-operative state. Based on NANDA taxonomy,⁶ the symptoms of these diagnoses are pain, anesthesia effect and muscle weakness. In addition, Bader et al. (2010) state that inadequate pain management also will reduce mobilization ability.²⁰

The third nursing diagnoses in this state are Risk for perioperative positioning injury. This diagnosis is a risk condition to experience anatomical and physical changes because of invasive procedure. There are several consideration when managing patient's position and prevent them from injury in joint, mechanical injury, impaired in tissue integrity and to ensure that patient is supported appropriate during anaesthesia, and surgery time range can help to reduce this risk for injury.²¹

Nausea is the last diagnoses established in post-operative state. This diagnoses mostly experience in patient who experience general anesthesia. Becker (2010) asserts that nausea and vomiting are complication of general anesthesia even though the pathophysiology of nausea and vomiting is unclear.²² As many as 30% patients who experience general anesthesia will be predicted to experience gastro intestinal problem in the 24 hours after surgery.²³

CONCLUSION

The number and variation of diagnoses established different with and without using the 6 steps of diagnostic reasoning method. In addition there are different pattern of diagnoses type in pre –operative state, intra-operative state and post-operative state. By using the 6 steps of diagnostic reasoning method, researchers are able to established collaborative diagnoses.

Recommendation

Nurses are recommended to use the 6 steps of diagnostic reasoning method in clinical practice. The result in this study can also be used for designing clinical pathway for patient undergoing surgery.

ACKNOWLEDGEMENTS

The authors would like to thanks all nurses at Regional Hospital Mayjend HM Ryacudu Kotabumi for assistance

in collecting data about perioperative patients. They would also like thanks Director of Nursing Adamina M, Gie O, Demartines, N, Ris F 2012, Bader et al, 2010; Baradero et al , 2005 (D.E., 2010) School Polytechnic Lampung Indonesia.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Suarni L, Nurjannah I, Apriyani H. Nursing and collaborative diagnoses on perioperative with and without using six steps of diagnostic reasoning methods. *Int J Res Med Sci* 2015;3(Suppl 1):S97-103.