



Relieving anxiety among patients with tracheostomy in intensive care

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<p>Abstract:</p> <p>Tracheostomy requires not only competent nursing clinical skills but also emotional support for tracheostomy patients. This study aimed to primarily find out the strategies to relieve anxiety for tracheostomy patients in intensive care and overcome the barriers in the process of alleviating anxiety. A literature review was conducted to find the answers to two questions: (1)What strategies are there to relieve anxiety among tracheostomy patients in ICU? (2)What kinds of barriers are there and how to prevent them when caring for tracheotomy patients with anxiety? Peplau's interpersonal relations theory, Peplau's classification of levels of anxiety and their corresponding nursing interventions were used as the theoretical framework. 11 articles related to the questions of this study were selected through inclusion and exclusion criteria. Data were analyzed through gathering, reading, describing, identifying, comparing, rechecking and scrutinizing. The findings of this study indicated that anxiety resulted from mechanical ventilation, communicative impairment, critical disease and changes in the health care environment. Communication, education, and collaboration play important roles in alleviating anxiety among patients with tracheostomy. Besides, inevitable barriers such as mechanical ventilation, sedative medication and changes in the health care environment can be prevented through such procedures as technical devices, clinician support, and discharging plan. In conclusion, enhancing awareness of holistic care for tracheostomy patients should be taken into account for tracheostomy patients.</p>	
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1.INTRODUCTION

Tracheostomy is a procedure to bypass the upper respiratory tract through one incision on the front of the neck. A tracheostomy tube is inserted from the incision to the trachea to provide an artificial airway. There is a wide variety of reasons for conducting tracheostomies such as upper airway obstruction, aspiration, respiratory failure, etc. (Hinkle& Cheever 2014) The principle roles of tracheotomy in intensive care can be summarized as the alternative of the endotracheal tube (Russell & Matta 2004) and the way to facilitate weaning of mechanical ventilation. (Jaeger, Littlewood& Durbin 2002) Patients with tracheostomy in intensive care not only have physical critically stress, but also do they experience stress, anxiety, and fear due to communicative impairment, mechanical ventilation and changes of a caring environment. (Everitt 2016b; Everitt 2016c)

After reading a variety of articles related to tracheostomy, it can be seen that many pieces of research highlight how to take care of patients with tracheostomy clinically. Despite that many articles have mentioned that patients with tracheostomy experience anxiety in intensive care, there is limited study on alleviating anxiety for tracheotomy patients. In the background part, tracheotomy will be explained in terms of its classification, indication, advantages, and complications. The cause of anxiety associated with the environment, ventilation, duration. and critical disease and communication will be discussed. The primary aim of this study was to find out the strategies to relieve anxiety for tracheostomy patients in intensive care and the secondary aim was to find out how to prevent barriers in the process of alleviating anxiety. The purpose of this study is to provide evidence-based knowledge to nursing students and nurses on how to alleviate anxiety among patients with tracheostomy in intensive care.

The idea of this study is associated with self-motivation to combine somatic and psychiatric care in nursing. In practical training, the author had the opportunity to take care of tracheostomy patients in the medical and surgical ward. Besides that competent clinical skills were required, emotional support and therapeutic communication were so important for this group of vulnerable patients. Some of them could only blink eyes due

to dysfunctional mobility. To learn more about tracheostomy patients and their levels of anxiety, the author reviewed different researches and conducted the study.

2 BACKGROUND

Tracheostomy is a procedure bypassing the upper respiratory tract and one stoma is made between the second and third tracheal rings for inserting one tracheotomy tube into the trachea. The vocal cords, which enable people to produce voice, is above the stoma. When the artificial airway is made, air doesn't go through the vocal cords, which results in voicelessness. (Frace 2010)

Historically tracheostomy was a surgical procedure in which surgeons created the cutting from the voice box and divided cartilage surrounding the trachea, this resulted in the abnormal narrowing of the voice box and high mortality. Until the early 20th-century Chevalier Jackson found this problem, since then the opening has been made from the second tracheal ring. Jackson's finding contributed to the lower risk of complications and the mortality rate, which was from 25% to only 1-2%. (Russell & Matta 2004) However, nowadays airway obstruction as one of the tracheostomy complications in critical care leads to death and brain damage. (NCEPOD 2014) and 50% of tracheotomy-related mortality is due to the displacement of the tracheostomy tube.(Cook et al. 2011) Thus, artificial airway created by tracheostomy doesn't allow inhaled air to be warmed, filtrated and humidified, so humidification plays an important role in nursing care. Hence, tracheotomy requires competent clinical skills and knowledge about all aspects of tracheostomy care. (Frace 2010)

Besides suffering from severe physical illness, patients with tracheotomy experience stress, anxiety and fear due to multiple reasons, such as inability to speak, mechanical ventilation, complex care pathway from ICU to the general ward, and then discharged from hospital to community, altered body image, etc. it has been found that those who don't receive preoperative education on tracheotomy experience significantly mental decline after the procedure (Everitt 2016b; Everitt 2016c)

Therefore, it is beneficial to know about tracheostomy and causes of anxiety among tracheotomy patients. Two contents will be explained in detail in this chapter. One is,

tracheotomy will be described in terms of its classification, reasons for tracheotomy, its advantages comparing with the endotracheal tube and its complications. (See fig. 1) The other one is, anxiety among tracheostomy patients in ICU related to the environment, ventilation, duration and critical disease, communicative obstacles, will be discussed as well.

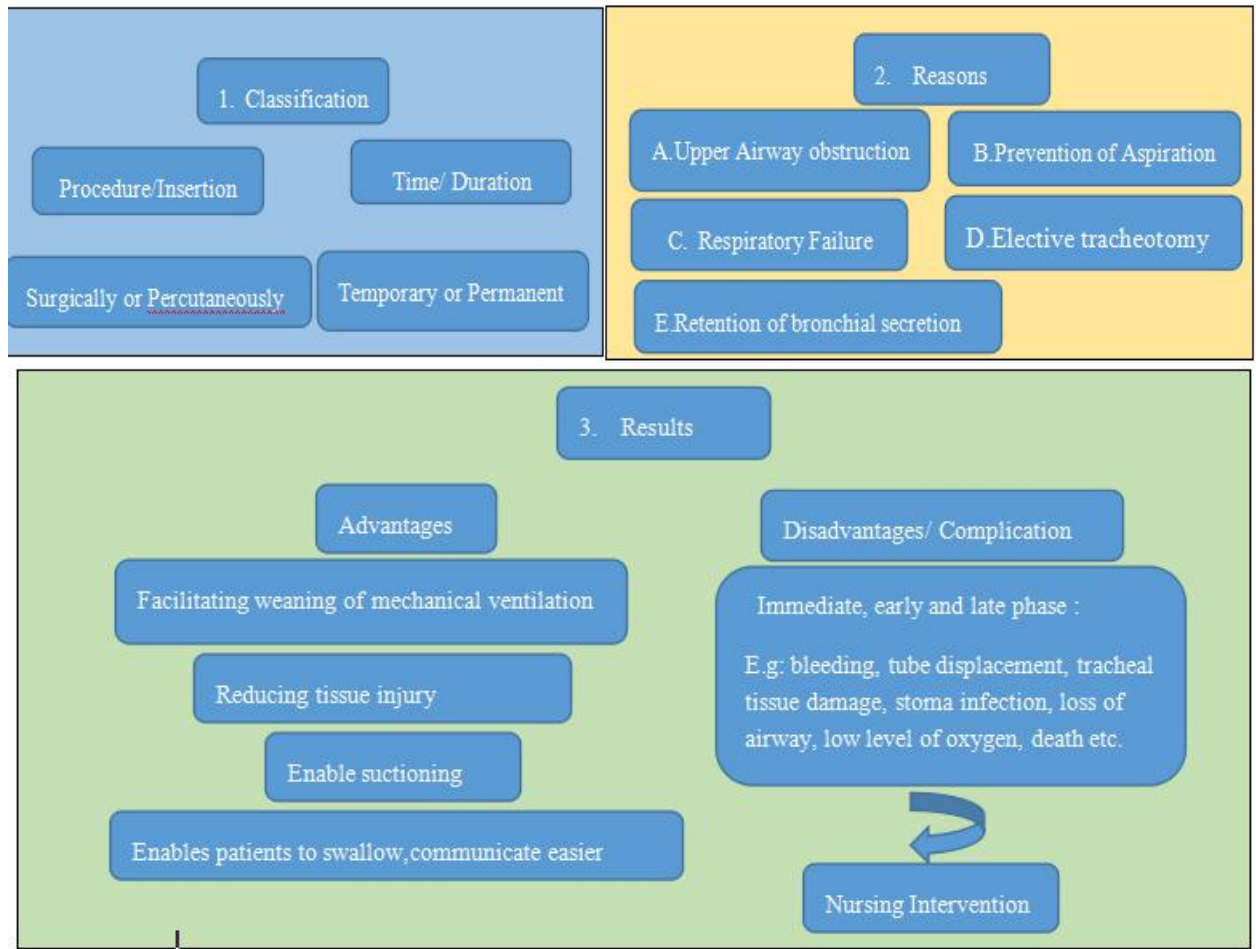


Figure 1. Content of tracheotomy

2.1 Tracheotomy

Tracheostomy can be classified according to procedure and duration. That is surgical or percutaneous tracheotomy; temporary or permanent tracheotomy. Surgically tracheotomy is done in the operation room, the incision is made from the tracheal ring into the trachea, then one tracheotomy tube is inserted into the trachea through the opening. Percutaneous tracheostomy is a procedure done in the intensive unit. One

needle is inserted from the neck into the trachea, a dilator makes the opening bigger to fit the tracheotomy tube. Different insertion requires nursing competence and in an emergency situation, nurses should know how to cope with the tube changing. (Everitt 2016a)

Generally, the incision of tracheostomy can be temporary or permanent. Different duration of incision affects the nursing plan. That is, temporary tracheostomy needs regular tracheostomy care, whereas permanent tracheostomy requires counseling and education about self-care besides regular nursing intervention. (Everitt 2016a) The impact of temporary and permanent tracheostomy on patients varies with each other. It will be discussed in the next part about anxiety. Temporary tracheostomy's incision generally closes by itself and later a scar will be on the neck, whereas permanent tracheostomy's incision exists all the time. Nowadays more patients are with temporary tracheostomies and tracheostomy care is mainly managed in the intensive care unit. (NCEPOD 2014)

Turning to the reasons for tracheostomy, they vary significantly from each other. For example, tracheostomy is made due to obstructed upper respiratory tract, retention of bronchial secretion. It is also needed when long-term mechanical ventilation is required and for inhibiting aspiration among those unconscious and paralyzed patients. (Hinkle& Cheever 2014) Also, it is for respiratory failure. Elective tracheostomy can facilitate respiration in some major head and neck surgery. (Russell& Matta 2004)

Regarding the pros and cons of tracheostomy, it can be discussed from two aspects: the roles of tracheotomy in ICU and the complications of tracheotomy. Tracheotomy is used as an alternative to the endotracheal tube in intensive care, because it provides comfort to patients, such as it allows them to move on the bed, enables them to swallow in a later phase and speaks with the help of a speaking valve. It also makes the weaning of mechanical ventilation easier and faster. On the other hand, the endotracheal tube has multiple side effect, for example, retention of secretion may result in respiratory tract infections and tissue damage. What's more, more sedative is needed for the discomfort caused by the endotracheal tube. (Russell & Matta 2004)

The complications of tracheostomy can be classified according to the different phases: immediate, early and late. (See table 1) Bleeding is very common, but it doesn't result in death normally. (Cheung & Napolitano 2014) Late complications may occur many years later after removing the tracheostomy tube. (Hinkle & Cheever 2014)

Table 1 Complications of tracheostomy (Cheung & Napolitano 2014)

Immediate	hemorrhage, damage to the trachea, failure of the procedure, Aspiration, air embolism, loss of airway, death, low level of oxygen, CO2 retention
Early	hemorrhage, tube displacement, collapsed lung, emphysema, stoma infection and ulceration, accidental removal of the tracheostomy tube, difficulty swallowing
Late	tracheal narrowing, granulation tissue, the collapse of the airway, pneumonia, aspiration, accidental removal of the tracheostomy tube and difficulty swallowing

2.2 Anxiety

Anxiety among tracheostomy patients results from a variety of factors related to severe illness and the duration of tracheostomy, mechanical ventilation, communicative impairment, and complex care pathway. The cause of anxiety among tracheotomy patients will be discussed in this part.

1. Anxiety associated with the duration of tracheotomy and critical disease

Tracheotomy is mostly used for supporting ventilation temporarily. For temporary tracheostomy patients, weaning of tracheostomy is necessary for them to restore respiratory function. However, in this process patients may experience extremely anxious and worries if they feel that they are unable to breathe after the removal of the tracheostomy tube. The weaning process may take days, weeks or even months. (Everitt 2016b) Therefore, preparation for weaning, suitable devices such as the appropriate selection of tube size and cooperation with other professional health providers determine if the weaning can proceed successfully. (Hinkle & Cheever 2014)

Permanent tracheostomy is generally for cancer of voice box or nasopharynx. People with permanent tracheotomy experience the changes in body image due to the existence of the tracheostomy tube, communicative obstacles due to the cuffed tube which speaking isn't allowed, and later on the speaking valve in the response of deflated tracheostomy tube is time-consuming to get used to. Such factors harm social life and mental health. (Everitt 2016c) Therefore, promoting community-based care is likely to be essential to promote quality of life for permanent tracheostomy patients and their families. ((Hinkle & Cheever 2014)

2. Anxiety associated with mechanical ventilation

In the intensive care weaning of mechanical ventilation is recommended after 14 days, tracheostomy could facilitate the weaning process. (Jaeger, Littlewood& Durbin 2002) However, weaning of mechanical ventilation brings anxiety due to respiratory problems and cardiac effects. After using long-term mechanical ventilation, patients' respiratory function hasn't recovered completely. At this moment, patients feel very weak and tired without any help from ventilators. Although tracheostomy can facilitate respiration, the respiratory muscle takes all the effects to breathe. Patients don't feel well after discontinuation of ventilation. Psychologically long-term ventilator dependence contributes to the difficulty of weaning because patients are afraid of losing respiratory function. Moreover, insufficient oxygen may make patients confused and patients' anxiety increases without prompt support for respiratory. (Gallimore 2007)

3. Anxiety associated with communicative impairment

Patients' physical condition, consciousness, and degree of responsiveness affect communication among patients and nurses in intensive care. However, it is not easy for nurses to evaluate if they really can interpret what nonverbal patients' need. Communicative obstacles among ventilated tracheotomy patients cause distress, anxiety, and frustration. On the other hand, they bring burden and challenge to nurses when patients are unable to express their needs verbally. (Happ et al. 2011)Patients in intensive care are critically ill and they cannot talk because the tracheostomy tube is cuffed at the beginning. (Grossbarch, Stanberg& chlan 2011) Additionally, insecurity and powerlessness may be experienced due to the lack of information, such as nurses

don't explain how the suctioning may be felt and why suctioning is needed, this brings anxiety due to the unpleasant feeling. (Baumgarten&Poulsen 2014).

4. Anxiety-related to the changes in the care environment

Permanent tracheostomy patients normally stay in the hospital for months and they are dependent on professionals' caring. When discharging home is planning, many patients are frightened and anxious about self-caring (Everitt 2016c) Furthermore, their families or relatives experience anxiety when caring for tracheotomy patients. It has been reported that 35% of tracheotomy patients after surgery for head and neck cancer have been readmitted to the hospital again related to anxiety and skill competence. (Loerzel et al. 2014)

3 THEORETICAL FRAMEWORK

In this part, Peplau's interpersonal relations theory will be used as the theoretical framework of the study. Four phases in the relationship between nurse and patient: Phase of orientation, identification, exploitation, and resolution; will be demonstrated according to the theory; in accordance of the four phases, it can be seen the roles of nurses: stranger, resource person, teaching person, leader, surrogate and counselor. Furthermore, Peplau classified levels of anxiety with four phases: mild, moderate, severe and panic, and their corresponding nursing interventions will be discussed as well.

3.1 Peplau's interpersonal relations theory

Four phases overlap each other in nurse-patient relationships. They are orientation, identification, exploitation, and resolution. The roles and responsibilities of the nurse in different phases will be demonstrated. During the four phases, the nurse plays a different role in the nurse-patient relationship, such as a resource person, providing information to help patients to understand the problem; a counselor, listening to the patient and his feelings about the health problem; a surrogate, considering patient's

authority and allow him to reorient the feeling; a technical expert, knowing how to skillfully manipulate medical devices. (Peplau 1991)

-Phases of nurse-patient relationships

(1) Phase of orientation

Seeking assistance plays an important role in this phase. The reason is that patient wants to get help from professionals for the health issues and some of them are lack of knowledge about their health problem. In other words, patients need education. The education can be identified as one method to help the patient to recognize and understand health problem, to help patients access to available professional service. Also, When the patient needs help, they feel anxious, a nurse can combine the energy arouse from anxiety with their need of help to identify, understand and face the problem positively. (Peplau 1991)

Generally, patients initially talk about their own opinion about their health problems or concerns, then the nurse will identify the gap between information provided by patient and professional knowledge. To some extent, problem identification and understanding are needed among the patient. (Peplau 1991)

Every patient has their way to seek assistance. Some of them can express their feeling, whereas others may be unable to express, nurses should enable to interpret patient's need and assist him to orient the health changes with the aids of other health professionals. In this process, the nurse should also motivate the patient to take the role of self-carer to cooperate with health carers in the treatment or subsequent actions related to the health problem. (Peplau 1991)

The provision of hospital service and limitation should be informed promptly to the patient in nursing because the accessibility to hospital service can bring a sense of security to the patient that some procedures will accommodate his needs or desire for health. On the other hand, The limitation can be regarded as a boundary between the patient and the health-care unit. The good impact of the limitation is that it brings a safe environment for patients. However, it plays a negative impact if the regulation results in anxiety among patients who need to be with their families. As mentioned, a sick person may experience helplessness or anxiety due to the worries about the disease. If the

family cannot visit due to the abrupt committee limitation, the patient may feel that they have lost support and been isolated in an unfamiliar environment, severe anxiety may appear. The nurse should give a safe environment in which the patient is accepted. It is also mentioned that nurses who provide care to the patient will minimize threatening of illness to security, to power, to dignity. (Peplau 1991)

(2) Phase of identification

When the patient starts to recognize and understand the situation associated with illness, he will identify with someone providing help to him. That is, some patients are willing to accept the help of nurses, whereas others don't want to be dependent on anyone who can provide help. Patients accepting nursing may experience less powerless and they identify themselves as one team member to solve the problem related to illness, they are optimistic and they trust nurses. However, it is not that easy for some patients to believe that they can be accepted by nurses at the beginning of the nurse-patient relationship. Their response to a new nurse is that they want to isolate themselves and don't want any assistance. At this stage, the nurse should found out new and beneficial ways, which can make the nurse-patient relationship closer. For example, basic care enables the nurse to talk with the patient, build a relationship with the patient, and develop the patient's feeling of being accepted. On the other hand, some patients may only dependent on help from others instead of making an effort by themselves. In other words, they are unable to cope with the crises or disease independently. This group of people needs an orientation phase again. (Peplau 1991)

The identification is also associated with what kinds of care provided at the previous experience. If one patient has experienced good caring, the preconception and expectation of the nurse have already been in the mind. However, it is very hard to recognize the patient's preconception for nurses. So it is very important to ask the patient's needs directly and provide professional knowledge to help patients deal with the illness. (Peplau 1991)

It is beneficial for the patient to identify with someone who can assist. The reason is that threatening of illness to security, power and to dignity can be minimized with the help of others. (Peplau 1991)

(3) Phase of exploitation

At this phase, patients have already obtained enough knowledge about accessible services and care. They will exploit what is beneficial to them with their view on the situation and the possibility to change the situation such as the next medical goal: discharging. Some of the patients may have more demands on caring, whereas others may be more independent to find a solution. Therefore, the phase of exploitation exists in conflicts. On one hand, patients are dependent due to critical disease, on the other hand, they need to make their efforts to be independent to recover. Therefore, the relationship between nurses and patients is becoming complex. When the demands of patients become more and time limits exist in the health care unit, nurses may experience that their health is challenged. When the patients' needs cannot be satisfied, they may experience repressions. (Peplau 1991)

(4) Phase of resolution

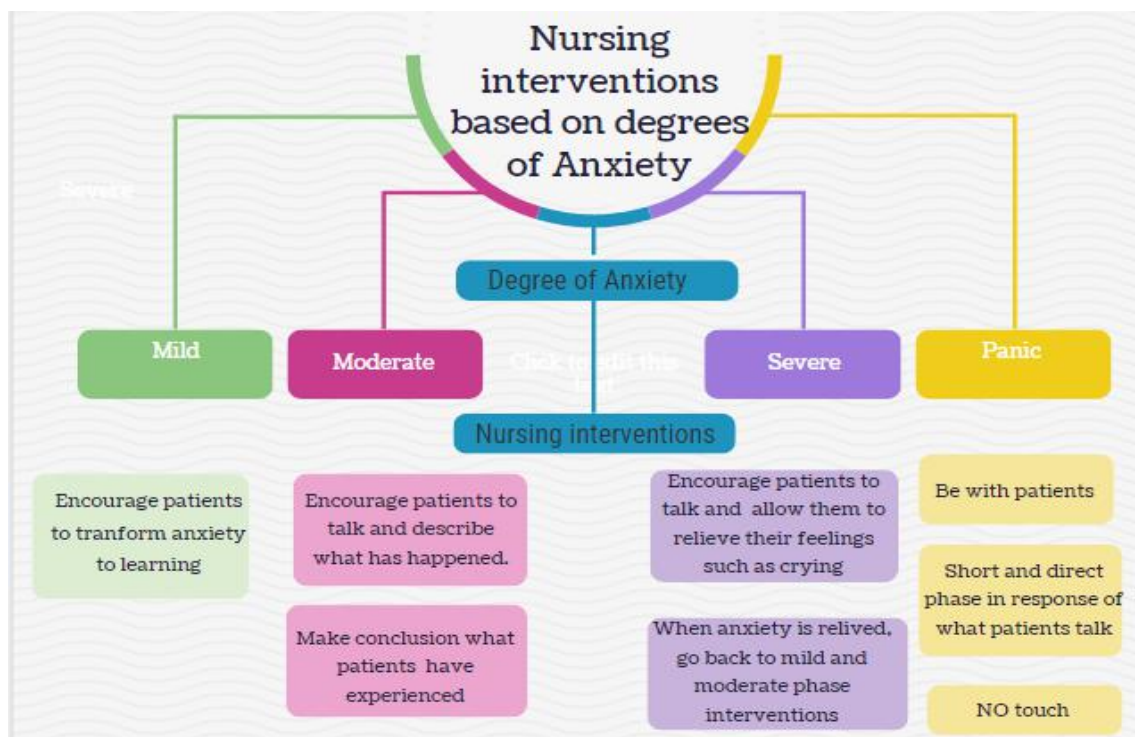
Resolution is the process of being independent. With a long period of stay in the hospital, the patient has recovered through medical or surgical treatment. Patient-nurse interpersonal relations have proceeded to the last step. Nurses encourage the patients to get out of bed, to go back to normal social activities. However, psychological dependency cannot be ignored at this phase, because psychologically patients may experience anxiety with a lack of support and caring. (Peplau 1991)

3.2 Nursing interventions for different levels of anxiety

In Peplau's theory, anxiety has classified as four levels: mild, moderate, severe and panic. Experiencing mild anxiety is common in daily life. They may feel stressful, but such kind of anxiety has a good impact on their behavior. Because it motivates them to seek solutions and their perceptive level increases. Learning ability has also enhanced. Turning to mild anxiety, the individual's perceptual field has decreased. They only focus on what makes them anxious, but not other things around them. They may experience such symptoms as increased muscular tension and restlessness. They need help from others to solve problems. People with severe anxiety are unable to concentrate on any task due to the limited attention, their attention can only be paid to a

few details. Their perceptive field decreased enormously. They may experience such physical symptoms as faster heartbeat, sleeping problem and headaches. Emotionally they may have such feelings as fear, worry, and confusion. They need help to relieve anxiety. Lastly, panic anxiety is very severe, people may feel losing self-control due to hallucinations, worries, fears and some irrational thoughts. Prolonged panic anxiety may threaten life. (Townsend 2015)

Peplau also described corresponding nursing intervention associated with different levels of anxiety. (see Fig. 2) In the mild phase, the role of the nurse is to help the patient to use the advantage of anxiety, that is, increased learning ability. In the moderate phase, the nurse should encourage the patient to talk about and describe what has happened to him or her, then the nurse concludes what the patient experience. In the severe phase, the nurse should moderate the anxiety by encouraging the patient to talk, allowing their relieving behavior such as crying or shouting. When the level of anxiety has reduced, the nurse can continue the intervention like the mild and moderate phase. In the panic phase, being with the patient is important. Short and direct phrases responding to what patient talk about is helpful to relieve their anxiety. Patients can feel that they are listened to and accompanied. Touching is not necessary for this phase due to their severe worries and fear. (Boyd,2008)



4 AIM AND RESEARCH QUESTIONS

◆ The aim of the study

There have been already a large number of researches highlighting competent clinical skills and describing how to take care of patients with tracheostomy clinically. Patients with tracheostomy experienced anxiety in ICU and anxiety led to difficult weaning, prolonged anxiety delayed healing and resulted in long-term depression and PTSD. However, there is limited study on alleviating anxiety for ICU patients with tracheostomy. The purpose of this study is to provide evidence-based knowledge to nursing students and nurses on how to alleviate anxiety among patients with tracheostomy patients in intensive care. The primary aim was to find out the strategies to relieve anxiety for tracheotomy patients in intensive care and the secondary aim was to find out barriers in the process of alleviating anxiety and how to overcome them.

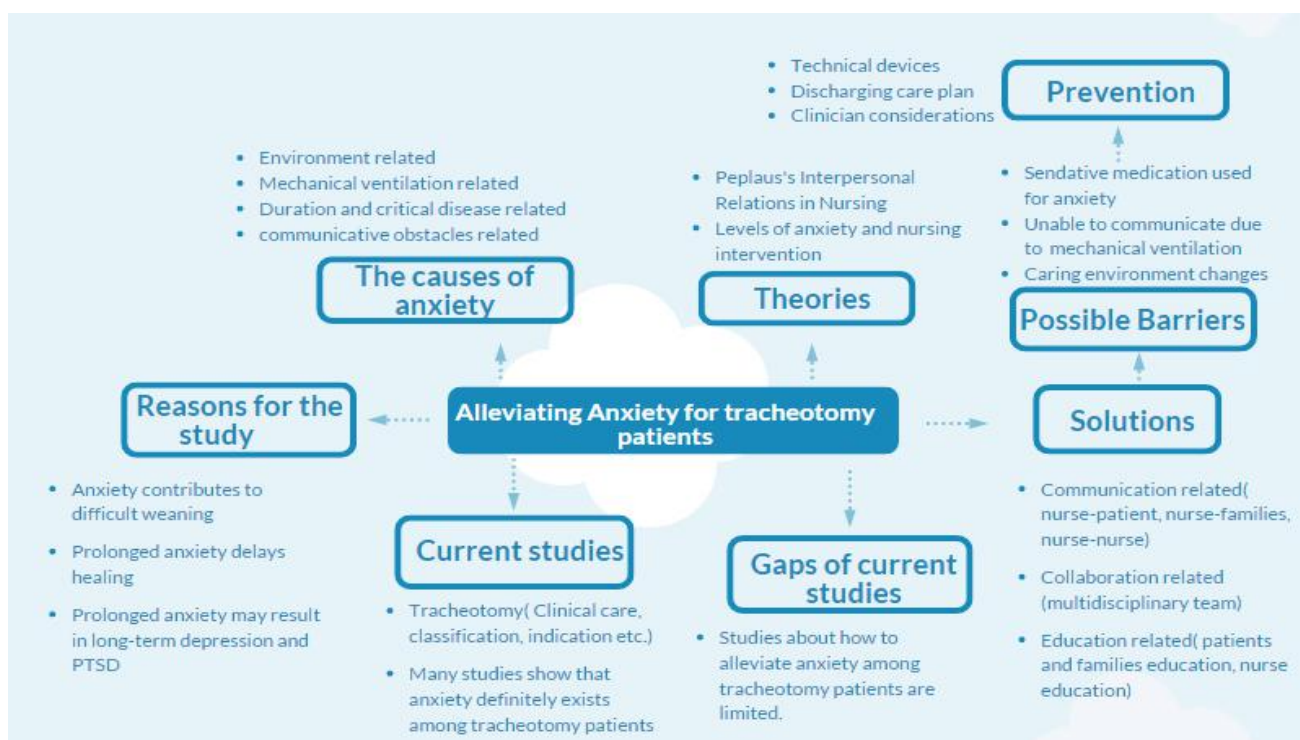
◆ The research questions

- What strategies there are to relieve anxiety among tracheostomy patients in ICU?
- What kinds of barriers are there and how to prevent them when caring for tracheostomy patients with anxiety?

5 METHODOLOGY

This study was conducted by a literature review inductively. The literature review is defined as the study in which the author firstly identifies the research questions, then tries to find out the answer to the research question from other studies, analyzes the information related to the research question, synthesizes own findings or develops a new comprehension lastly. It is important to keep in mind the duty of health care professionals: "be up to date with recent development recent developments and research that inform their practice". (Aveyard 2010)

This chapter will be divided into three parts: data collection, data analysis, ethical consideration. Firstly, information related to research subject has been gathered, identified and analyzed. Through gathering the existing knowledge, the author could find out what knowledge had already been studied, then could identify what gaps could be filled for further study. After reviewing the literature, the author found out the study gaps, then setting the research questions. For answering research questions, the author found out what the underlying factors could be and categorized them as solutions. Afterward, a mind map was designed for the study. (See Fig. 3)



5.1 Data collection

Data related to research questions were collected from databases including Academic Search Elite, CINAHL, MEDLINE, PubMed, Sager, Science Direct, Google Scholar and Google. When searching the articles, the researcher mainly used Academic Search Elite, CINAHL, MEDLINE. However, the researcher found that some articles were not accessible to the full text. So the researcher wrote down the articles' journal name, published year, volume and pages to search with other databases such as PubMed, Sager, Science Direct, Google Scholar and Google. In the appendix, it can be seen that some articles with full text were inaccessible from the first database, then using the second database was necessary to access the articles with full text.

When reading some books and articles related to tracheostomy, keywords were extracted from the content of reviewed articles and books. Later on, keywords were used as search words for the study. Keywords were: tracheotomy or tracheostomy, anxiety, mechanical ventilation, communication, multidisciplinary team, education, nursing interventions, intensive care.

Search terms were associated with keywords. Search techniques boolean operators (And, Or, Not), search terms can be seen as followed:

- ✧ anxiety **And** tracheotomy or tracheostomy **And** ICU or intensive care unit or critical care
- ✧ tracheotomy or tracheostomy **And** anxiety or stress or fear or worry **And** Communication
- ✧ tracheostomy or tracheotomy **And** communication **And** nursing interventions or nursing care **Not** pediatric or child or children or infant or adolescent
- ✧ tracheotomy or tracheostomy **And** multidisciplinary team **And** role or impact or influence **Not** pediatric or child or children or infant or adolescent
- ✧ tracheotomy or tracheostomy **And** anxiety **And** education **And** anxiety or stress or fear or worry **Not** pediatric or child or children or infant or adolescent

5.1.1 Inclusion and exclusion criteria

Peer-reviewed articles were included. However, there were not so many hits remained because the search words already limited the search scale. Firstly, the author read abstracts, then selected articles according to the content of abstract and subject terms, then read selected articles with the full-text version. If the results of hits were over 50, the author did such limiters as the year 2009-2020, peer-reviewed, English language. Pediatric or children or teenagers or adolescence were excluded because the study target consisted of merely adult patients. All the search databases, search words, search hits, inclusion and exclusion criteria were shown in the Appendix in detail. 11 articles were chosen related to research questions. The following table showed the search terms and corresponding hits found from a different database. (See Table 2)

Table 2. Search results from different database

Boolean Search Phase	Academic Search Elite	CINAHL	MEDLINE	PUBMED
anxiety And tracheotomy or tracheostomy And ICU or intensive care unit or critical care	8	15	23	27
tracheotomy or tracheostomy And anxiety or stress or fear or worry And Communication	7	15	25	33
tracheostomy or tracheotomy And communication And nursing interventions or nursing care Not pediatric or child or children or infant or adolescent	16	47	20	37
tracheotomy or tracheostomy And multidisciplinary team And role or impact or influence Not pediatric or child or children or infant or adolescent	13	36	8	6
tracheotomy or tracheostomy And anxiety And education And anxiety or stress or fear or worry Not pediatric or child or children or infant or adolescent	10	15	0	23
Final articles were chosen	4	5	1	1

5.2 Data analysis

According to Graneheim and Lundman(2004), a meaning unit means a collection of words, sentences or paragraphs with similar central meaning. Condensed meaning unit is the unit that still keeps the core of meaning unit, but it is shorter and simplified. The label of a meaning unit was defined as code, which is normally summarized as a simple word or sentence. Code enables researchers to find out new ideas from different aspects, but it is still associated with the context. A category gathers information with commonality. A category responds to " what" and sometimes it is sorted into various sub-categories. A theme responds to " How" and it is " a tread of an underlying meaning through condensed meaning units, codes, and categories”.

Turning to the process of data analysis, firstly the author summarized the content of all the studies gathered, read them clearly and described what the studies talked about according to their aims, methods, findings, and conclusions, then identified some other information, summarized all the information overall in one table. Secondly, the author compared and contrasted the key findings of each study through coding(words summarizing the main point), developing categories(similar codes grouped to make up categories), comparing the codes and categories(check and recheck the accuracy of codes and categories), scrutinizing codes and categories(combine each other and seek further information) Lastly, the author worked with the codes or categories unrelated (Aveyard 2010) The steps of data analysis can be seen in Figure 6.

Table 3 Steps of data analysis (Aveyard 2010)

Step 1: Summarize information through gathering, reading, describing and identifying
Step 2: Compare and contrast the key findings through coding, developing, comparing, rechecking and scrutinizing
Step 3: Work with the codes or categories unrelated

Analyzing data in this study consisted of other assistant work: Highlighting the important information with color when going through each article, taking notes next to the relevant information and then listed notes(Condensed Meaning Unit) in the table, creating codes and categories. In this process, reviewing, comparing the notes and original transcripts many times for ensuring all the information in the corresponding category. All the articles were summarized according to each title, aim, method/sampling and key findings(important information related to research questions). Then coding them and putting them into corresponding categories. (See Appendix)

5.3 Ethical consideration

According to the humanities and social and behavioral sciences, the ethical principles of research were summarized as " respecting the autonomy of research subjects, avoiding harm, and privacy and data protection." Consent should be given orally or in a written way by research subjects. No matter how old the research subjects are, their autonomy should be respected. Information about the study should be explained to research subjects. Avoiding harm mentally, financially and socially. Privacy and data protection is to “ find a balance between confidentiality and the openness of science”. It is closely associated with how the researcher gathers and analyzes the data. (National Advisory Board on Research Ethics 2009) Ethics are the principles for conducting a study. While collecting and analyzing data, ethics guide the researchers to avoid fabricate, falsify or misrepresent data. (Stichler 2014) Plagiarism indicates that using the ideas or words from other studies as owns without appropriate reference. (Aveyard 2010)

In this study, the author made efforts to report data, results, and methods honestly without any fabrication, falsification or misrepresentation. Also, a trustworthy database was used, such as Academic Search Elite, CINAHL, MEDLINE, PUBMED, SAGER and SCIENCE DIRECT. The author tried to avoid plagiarism by referencing all the information obtained from reviewed articles. In the end, Urkund will be applied to check plagiarism. Last but not least, the author kept in mind respecting copyrights and other forms of intellectual property.

6.FINDINGS

After data collection, the theme was defined according to research questions: alleviating anxiety among patients with tracheotomy and prevention of possible barriers. Then the author was looking for the underlying factors causing anxieties among tracheostomy patients, then analyzed the factors alleviating anxieties according to those causes. After analyzing all the information gathered through a literature review, the author categorized that communication, collaboration, and education played important roles in alleviating anxieties. Thus, there were still some different factors related, such as communication among nurses with patients and families, nurses with nurses, the collaboration of the multidisciplinary team, education among nurses or patients and families. All these factors were created as subcategories.

During analyzing the factors of anxiety alleviation, some barriers were found(categories). For example, non-evidence based sedative medication provided, mechanical ventilation contributing to voicelessness and changes in a caring environment. The corresponding prevention(subcategories) are that clinicians should take consideration into evidence-based interventions, technological devices for speech production and discharge plan for patients and families. (See Table 4)

Table 4 Illustration of Taxonomy

Theme	Relieving anxiety			Prevention of possible barriers		
Category	Communication-related to anxiety alleviation	Collaboration related to anxiety alleviation	Education related to anxiety alleviation	Sedative medication	Mechanical ventilation related to anxiety alleviation	Changes in a caring environment
Sub-category	Nurse with patients and families	Multidisciplinary team (MDT)	Patients and families education	Clinician's consideration	Technical devices	Discharging plan/ education
	Nurse with Nurse		Nursing education			
Unit of analysis	1,2,4,5	6,7,8	4,5,6,8,9,10	1	3, 4	1,8,10,11,

6.1 Communication related to anxiety alleviation

Verbal communication cannot be conducted generally among patients with tracheostomy in ICU as a result of cuff inflation, which prevents air from passing the vocal cords. (5) Patients with tracheostomies experience frustration, fear, anxiety, powerlessness, incompleteness, and restriction as a result of the loss of voice. (2, 4) Such feelings may bring out anger or even withdrawal if their needs are misinterpreted. (2) Prolonged anxiety harms healing and contributes to depression and post-traumatic stress disorder among those critically ill patients. (1) Despite those nonverbal communicative ways including gestures, nodding head, mouthing words, picture boards of common words or phrases have been used for accommodating patients' needs, they are time-consuming and health care providers need to put a lot of efforts. Also, patients with critically ill in ICU may need more than physical care. For instance, they may have the last willingness related to end-of-life or families, friends or caregivers. (5) At this point, effective communicative strategies are essential among patients and nurses. Furthermore, families should be included as caregivers for ICU patients, communication and education are important for them. Last but not least, the care plan for voiceless patients should be communicated among health care staff. (4,5)

Some patients with tracheostomies described that they didn't receive sufficient assistance, attention, explanation about procedures, or support from nurses as they desired. Communication seemed to be only one-sided other than double-sided. That is, nurses were so busy that they didn't have time to put effort into communicating with voiceless patients and sometimes even ignore them or pretended to understand what they meant. Such non-therapeutic communication made patients upset about whether their needs could be met. Also, their perception of how they were treated by others was affected by the inability to talk. That is, by recognizing the non-therapeutic communication with nurses, they had to accept it and be more patient to preserve the connection with nurses instead of being affected by nurses' behavior. However, they could realize the non-therapeutic care afterward. On the other hand, patients described more self-growth during the period of voicelessness and they became more patient. (1,2)

Turning to nurse interventions, nurses should not only focus on clinical care but also understand the suffering from the loss of voice among patients with tracheostomy. These patients need professional critical care and emotional support. Firstly, establishing a communication-friendly environment: setting proper lighting, closing the door, reducing noise, adjusting proximity and position, etc., it enables patients and families to listen to what the nurse talk and it allows the nurse to talk with the patient directly. Secondly, assessing functional ability including vision, hearing, muscle strength for writing, language for speaking and literacy. Thirdly, "yes/ no" questions facilitate nurses to understand the topic of what patients need. Fourthly, evaluating and confirming the nonverbal response of patients. The nurse can say that she observed that patient seemed to be angry, anxious or frightened. Then the nurse should try to find out why the patient has such feelings and give solutions. Lastly, consistent nursing care could facilitate communication among nurses and patients. Every individual has own communicative way, nurses should be encouraged to create new communicative strategies, a communication plan should be prepared with patients and their families, nurses should take note of communicative strategies and then communicate the care plan with other nursing staffs. (2,4,5)

6.2 Collaboration related to anxiety alleviation

The multidisciplinary team consisted of physiotherapists, speech and language therapists, specialist nursing staff, medical staff, psychologists and other allied health professionals. They are responsible for evaluating and treating patients with tracheostomy from the aspects of swallowing function, communicative method, tube choice, weaning process, and psychological well-being. According to The UK National Confidential Enquiry into Patient Outcome and Death(NCEPOD), the multidisciplinary team played an important role in tracheotomy care with better coordination and collaboration, which contributed to efficient patient care. That is, the number of patients with tracheotomy readmitted to ICU decreased, whereas the number of discharging from ICU to the general ward increased. (7,8)

Specialists and professionals being involved into assessing and treating patients was not the only reason to achieve the improvement of patient care, their consistent tracheotomy management according to the protocol(a guideline developed by the multidisciplinary team), and the implementation of the protocol when visiting tracheotomy patients weekly, increase decision-making efficiency. Besides, the weekly visit enabled the professionals to discuss and share approaches and meanwhile effective decisions can be made. (7)

6.3 Education related to anxiety alleviation

More efforts should also be made for educating the patient's families. For example, educating the patients' families on the tracheostomy tube, mechanical ventilation, and nonverbal communicative methods. Also, families played an important role in caring for patients in intensive care, because they understand the patients deeply and they can bring comfort with a familiar voice and touch. When discharging from hospital, families started to take the role of carers as patients. However, over half of these carers didn't feel that they were ready for tracheostomy care. (5, 6,8)

Anxiety among tracheotomy caregivers was discussed as well. One T-cares program was implemented for caregivers to develop their skills to manage artificial airway through instructional video. In this program, caregivers were educated on airway anatomy, tracheostomy tube, suctioning, stoma care, changing the ties, cleaning cannula, prepare for an emergency, tube reinsertion, self-care. Furthermore, they had the opportunity to perform the task under the observation of professionals. They can also discuss their concerns and fears in the group. (9)

Education program on dealing with clinical tracheotomy care and emergency conducted by the multidisciplinary team develop the nursing competence of tracheostomy care in the general ward. Thus, education acknowledged the nurses, so that they would have confidence in taking care of patients with a tracheotomy. Education to patients' families is essential as well because families started to take the role of carers as patients were discharged from the hospital. However, over half of these carers didn't feel that they were ready for tracheostomy care. (6,8)

6.4 Preventing possible barriers

Mechanical ventilation and inability to speak are fundamental causes of anxiety among ICU patients with a tracheotomy. Anxiety results in pain aggravation and prolonging weaning from mechanical ventilation. Meanwhile, the anxiety experienced by patients may make families and health care professionals feel stressful and frustrated. (3)

Weakness, bad positioning to speak, poor sentence intelligibility were communicative barriers. Besides, improper tracheotomy tube, physical impairment for manipulating speech technical devices, vocal cord pathology, complicate devices can also include communicative barriers. It is common to use mouthing words, but it is hard to understand and misinterpretation occurs. Impaired mobile function hinders patients writing or using communicative devices. Other new methods may be hard to cope with when patients experience physical and psychological stress. (3)

It is challenging for some patients creation with a tracheotomy tube depends on the amount of air supplied reaching the vocal cords, tracheostomy tube(diameter, length, and type), whether it is ventilator dependent, whether it is fully or partially ventilated. Generally, cuff deflation is used for ventilated patients with tracheostomy in ICU to gain the speech. However, some patients are unable to stand cuff deflation because of secretion problems. Those who cannot tolerate cuff deflation can use available devices include talking tracheostomy tubes(controlling airflow through a port), cuffed tracheostomy tubes(opening on one side of the tube, allows air to move through tube and up through vocal cords.) and the Blom tracheotomy tube system(2 valves controlling airflow) (3,4)

More and more patients in ICU received sedation after tracheostomy placement. Clinicians assume that tracheotomy can bring comfort. By contrast, more patients receive sedative medication without clinical reason. Clinician's evidence-based interventions and supportive methods are needed and more consideration into how to alleviate anxiety should be taken. (10)

Nurses as primary caregivers should support, educate and counsel patients and their families when they meet environment changes of care. Such changes can be defined as a

transition. In ICU, patients experience several transitions: physical and psychological transition, discharge from ICU to the general ward or other hospital or community. Physical transition is the changes of health status, the psychological transition can be seen from the fluctuation of levels of anxiety, this can be caused by individual personality, clinical conditions, mechanical ventilation, memories of prior experience. Discharging from ICU can lead to anxiety if there is not any discharging plan implemented, especially before discharging from the hospital. Patients and caregivers should receive a checklist of supplies, their tracheotomy care, and knowledge should be accessed, home care instruction manual should be given and knowledge about emergency should be discussed. Providing a chance for patients and caregivers to practice suctioning and reinsertion of the tube. When patients were discharged from the hospital, families started to take the role of carers. However, over half of these carers didn't feel that they are ready for tracheostomy care, hence, the multidisciplinary team should also consider family education. (1,8,10,11)

7. DISCUSSION

The findings of the study, comparison with other studies, theoretical framework, supporting patients with a permanent tracheotomy, strengths and limitations will be discussed in this part.

7.1 Discussion of findings

Patients with tracheostomies need not only physical care such as positioning and suctioning but also emotional support, especially when patients are voiceless due to mechanical ventilation. Effective communicative strategies are essential for caring for voiceless patients with a tracheotomy. The multidisciplinary team assesses patients' swallowing function, communicative method, tube selection, weaning, and psychological statement and then implement treatment collaboratively and consistently. Moreover, the multidisciplinary team takes the responsibility of educating general ward nurses and support patients and their caregivers when they have been discharged. The inevitable situation causing anxiety exists, such as caring environment changes when patients are transferred from ICU to the general ward or discharged from hospital, such

anxiety can be relieved by implementing a discharging plan. Communicative impairment as a result of mechanical ventilation can be resolved by cuff deflation and some special tracheotomy tubes. Lastly, Increasing number of patients were given to sedative medication without any evidence-based research, it is highly recommended that clinician should consider some other support or interventions to patients instead of merely medication.

7.2 Comparisons with other studies

Comparing with other literature, Kollef et al(1998) recommended guidelines and protocols designed for sedation, because the sedative medication may result in prolonged mechanical ventilation. Also, Kress et al(2000) indicated that controlling the amount of sedative medication used shortens the duration of mechanical ventilation and intensive care stay. In other words, sedation influence the effect of tracheostomy on the weaning of mechanical ventilation. Happ (2016) indicated that very limited research has studied communication devices for clinical assessment and consultation with ICU mechanical ventilated patients with a tracheotomy. In this study, communication devices such as talking tracheostomy tubes, cuffed tracheostomy tubes and Blom tracheotomy tube systems have been found that they are beneficial for voiceless tracheotomy patients. Lastly, the author has noticed that education on tracheotomy patients is mostly for children's parents, but not for adult patients' caregivers. There are limited researches on how to care for caregivers of tracheostomy patients. Karla et al. (2014) investigated the level of anxiety among stroke patients' caregivers, the result showed that education on simple nursing care can relieve anxiety among caregivers and improve quality of life for patients and their families. However, this finding still needs to be investigated if it is beneficial among tracheotomy patients' caregivers.

7.3 Discussion of the theoretical framework

Peplau's interpersonal theory is used as the theoretical framework for this study. In the four phases of the relationship between nurse and patient: orientation, identification, exploitation and resolution, it can be seen that education plays an important role in helping patients to recognize and understand health problems, through which nurses can

transfer anxiety to positive energy as self-orientation. In the finding, self-growth was reported by some voiceless patients. Moreover, nurses should interpret patients' needs when patients cannot communicate verbally. Patients in ICU are critically ill and they have to be dependent on nursing care, families are supportive and take the role of one of the carers in intensive care. So education for patients' families is important as well.

Being dependent on others who provide care may lead to powerlessness if the patients don't accept nursing or trust in nurses. This may result from previous experience. If one patient doesn't get good caring, the preconception and expectation of the nurse have already been formed. In the finding, non-therapeutic care can be noticed after recognizing and accepting it. Previous care gives patients preconceptions about following nursing care. Communication is essential because it is hard to recognize patients' preconceptions. Asking directly about the patient's needs and providing knowledge to help are more effective. It was found that being persistent to get patient's points can reduce the feeling of dependency.

In the exploitation phase, patients want more and more due to the desire of recovering, it contrasts time limits existing in the health care unit. This explains that insufficient assistance, attention, explanation about procedures, or support from nurses were reported.

In the resolution phase, psychological dependency leads to anxiety if there isn't enough support and caring. Changing a caring environment from ICU to the general ward or being discharged from the hospital may result in anxiety. So the role of nurses in this phase is to motivate patients to go back to normal life. This is the reason that the discharging plan should be made on time.

Turning to the nursing interventions related to different levels of anxiety, therapeutic communication through motivating self-orientation, listening to patients and corresponding to what they say are the keys to alleviate anxiety. For ventilated patients with tracheostomy in ICU, it may not so easy to communicate verbally at the beginning. However, when they can communicate with the assistance of technical device, such interventions can certainly alleviate anxiety.

7.4 Discussion of supporting patients with permanent tracheotomy

People with permanent tracheotomy experience physical transition like changes in body image due to the existence of a tracheostomy tube and communicative obstacles due to the cuffed tube and speaking valve. Such factors hurt psychological well-being. Also, permanent tracheotomy care requires more education and support from nurses comparing with temporary tracheostomy care.(Everitt 2016b; Everitt 2016c) Additionally, the number of patients with permanent tracheotomy admitted to the hospital again accounted for 35% as a result of anxiety and incompetent skills. (Loerzel et al. 2014)

The multidisciplinary team should maintain consistent care and support for permanent tracheostomy patients and their families. Thus, the T-care program is advisable for educating them and practice skills with the observation of professionals. Also, it is recommended that permanent tracheotomy patients should take the psychological assessment before and after surgery and meet other patients with a permanent tracheostomy who can share the experience and opinion on the importance of a tracheostomy tube. (Everitt 2016c)

7.5 Limitations and strengths

This study is based on previous study information, which was all peer-reviewed articles from trustworthy database. Avoiding bias was also taken into consideration. While collecting and analyzing data, the author examined the others' research and own research carefully and critically. The selected articles were also oriented to research questions. They provided the researches with a variety of knowledge to understand the suffering of ventilated patients with a tracheotomy and the importance to improve nurse-patient communication including nonverbal interpretation. In the open discussion of the thesis work, the author kept an open mind to criticism and new ideas.

The limitations are that articles related to study questions are limited, especially the care before tracheotomy for preventing anxiety. In some articles information were

overlapped and some of them were conducted by literature review, quantitative research for tracheostomy patients are limited, the reason may be due to that these group of patients cannot communicate verbally in intensive care unit. Furthermore, from the geographic aspect, all the articles were in English, most research was studied in England, the USA or Australia. The author lives in Finland and is planning to work in Finland, so the regulations and instructions of tracheostomy care are partly different from other countries.

8. CONCLUSION

The purpose of this study was led by the research questions aimed at finding out the strategies to relieve anxiety for tracheotomy patients in intensive care and overcome barriers in the process of alleviating anxiety. Articles related to research questions were limited. Underlying factors such as communication impairment, mechanical ventilation, weaning process and changes of a caring environment, duration and critical disease cause anxieties among tracheotomy patients. Findings of the study can be summarized that communication, collaboration, and education are essential in relieving anxiety. Effective communication consists of establishing a communication-friendly environment, assessing functional ability, using "yes/no" questions, evaluating and confirming nonverbal response of patients, maintaining consistent nursing care, planning communicative methods with patients and their families and communicating care plans with other nursing staffs. Turning to education, families are supportive and take the role of one of the carers in intensive care and they take the role of caregivers as well when patients are discharged from hospital. Supporting them to manage artificial airway under the observation of professionals and discussing with them about their concerns and fears is essential. The multidisciplinary team plays an important role in caring for tracheotomy patients with better coordination and collaboration. The multidisciplinary team also develops the nursing competence of tracheotomy care by education. Mechanical ventilation and inability to speak are the fundamental cause of anxiety among tracheotomy patients. Cuff deflation is used for gaining speech for tracheotomy patients, but some patients are not tolerant cuff deflation. Cuff deflation intolerance is one of the barriers in the process of anxiety alleviation. It has been found that some special tube enables patients to speak. What's more, the increasing number of

patients with tracheotomy is given sedative medication. By contrast, tracheostomy is reported as providing comfort to patients. Sedative medication is classified as one barrier in the process of anxiety alleviation as well. Because clinician hasn't taken evidence-based intervention to support patients. Lastly, changes in a caring environment may lead to anxiety. Discharging from ICU can lead to anxiety if there is not any discharging plan implemented, especially before discharging from the hospital. Patients and caregivers should receive a checklist of supplies, their tracheotomy care, and knowledge should be accessed, home care instruction manual should be given and knowledge about emergency should be discussed.

8.1 Recommendations for further studies

This study conducted a literature review to find out how to alleviate anxiety among patients with tracheostomy. After reviewing a large number of researches, the author noticed that many articles highlighted the importance of competent nursing skills such as suctioning, stoma care, emergency care, etc. In these articles, it was mentioned that patients with tracheotomy experienced anxiety, which is related to feelings of powerlessness, fear, uncertainty about the future, impaired communication, mechanical ventilation, and altered body image. However, there was a knowledge gap in nursing interventions to alleviate anxiety. It is highly recommended that more quantitative research will be conducted to investigate the levels of anxiety among tracheostomy patients and the strategies implemented to relieve anxiety from different aspects, such as preoperative and post-operative education, nursing awareness of anxiety and the empathy for those who lost the voice due to illness. Clinicians need to apply more beneficial support such as cooperation with multidisciplinary professionals and consider available speaking devices instead of only providing sedative medication.

REFERENCES

Aveyard H., 2010, *Doing a Literature Review in Health and Social Care: A practical guide*, 2nd. edition, Berkshire: McGraw-Hill Companies

Baumgarten M., Poulsen I.(2015) Patients' experiences of being mechanically ventilated in an ICU: a qualitative metasynthesis. *Scandinavian Journal of Caring Science*. [Online]Available from <https://onlinelibrary.wiley.com/doi/abs/10.1111/scs.12177> [Accessed 15th.February 2020]

Boyd M. A., 2008, *Psychiatric Nursing: Contemporary Practice*, 4th ed. , Philadelphia: Lippincott Williams &Wilki p.406

Cheung N.H., Napolitano L.M. (2014) Tracheostomy: Epidemiology, Indications, Timing, Technique, and Outcomes. *Respiratory Care*. [Online] 59(6) ,895-919. Available from <http://rc.rcjournal.com/content/59/6/895.full#T2> [Accessed 20th February 2020].

Cook T.M., Woodall N., Harper J., Bengner J.(2011) Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 2: Intensive Care and Emergency Departments. *BJA British Journal of Anaesthesia*[Online] 106(5), 632-642 Available from PUBMED [Accessed 15th. March 2020]

Ethical principles of research in the humanities and social and behavioral sciences and proposals for ethical review (2009) National Advisory Board on Research Ethics, Helsinki.[Online] Available from <https://arcada.itslearning.com/ContentArea/ContentArea.aspx?LocationID=6842&LocationType=1> [Accessed 20th March 2020]

Everitt E. (2016a) Caring for patients with a tracheostomy. *Nursing Times*. [Online]112(19),16-20.Available from <https://www.nursingtimes.net/clinical->

[archive/respiratory-clinical-archive/tracheostomy-1-caring-for-patients-with-a-tracheostomy-09-05-2016/](https://www.nursingtimes.net/clinical-archive/respiratory-clinical-archive/tracheostomy-1-caring-for-patients-with-a-tracheostomy-09-05-2016/) [Accessed 20th. January 2020]

Everitt E.(2016b) Managing the weaning of a temporary tracheostomy. Nursing Times. [Online]112(20),17-19.Available from <https://www.nursingtimes.net/clinical-archive/respiratory-clinical-archive/tracheostomy-2-managing-the-weaning-of-a-temporary-tracheostomy-16-05-2016/> [Accessed 20th. January 2020]

Everitt E. (2016c) Care of patients with permanent tracheostomy. Nursing Times.[Online]112(21),20-22.Available from <https://www.nursingtimes.net/clinical-archive/respiratory-clinical-archive/tracheostomy-3-care-of-patients-with-permanent-tracheostomy-23-05-2016/> [Accessed 20th. January 2020]

Everitt E. (2016d) Supporting patients following a laryngectomy. Nursing Times.[Online]112(Online 1),6-8.Available from <https://www.nursingtimes.net/clinical-archive/respiratory-clinical-archive/tracheostomy-4-supporting-patients-following-a-laryngectomy-30-05-2016/> [Accessed 20th. January 2020]

Frace M.A.(2010) Tracheostomy care on the medical-surgical unit.Medsurg Nursing. [Online] 19(1), 58-61. Available from Academic Search Elite. [Accessed 10th. March 2020]

Gallimore D.(2007)Caring for patients after mechanical ventilation: Part1: Physical and psychological effects. Nursing Times. [Online] 103(11) ,28-29.Available from <https://www.nursingtimes.net/clinical-archive/critical-care/caring-for-patients-after-mechanical-ventilation-part-1-physical-and-p>[Accessed 20th. January 2020]

Graneheim U. H. & Lundman B. (2004) Qualitative Content Analysis in Nursing Research: Concepts, Procedures and Measures to Achieve Trustworthiness. Nurse Education Today.24(2),105-112

Grossbarch I., Stanberg S., Chlan L.(2011) Promoting Effective Communication for Patients Receiving Mechanical Ventilation. Critical Care Nurse [Online] 31(3): 46-61 Database: CINAHL [Accessed 25th. January 2020]

Happ M.B. (2016) The power and Importance of Accommodation for Communication

Impairment in the Intensive Care Unit. *Annals of the American Thoracic Society*.13(8)1215-1216

Happ M.B., Garrett K., Thomas D.D., Tate J., George E., Houze M., Radtke J., Sereika S. (2011) Nurse-patient Communication Interactions in the Intensive care Unit. 20(2) 28-40

Hinkle, J.L., Cheever, K.H.(2014)*Brunner&Suddarth's Textbook of Medical-Surgical Nursing*, 13th ed. Philadelphia: Wolters Kluwer, pp506-536

Jaeger J.M., Littlewood K.A., Durbin C.G.(2002) The role of tracheostomy in weaning from mechanical ventilation. *Respiratory Care*. [Online] 47(4), 469, Available from <http://www.rcjournal.com/contents/04.02/04.02.0469.cfm> [Accessed 29th March 2020].

Kalra L., Evans A., Perez I., Melbourn A. Patel A. (2004)Training carers of stroke patients: randomized controlled trial [Online]328(1009) Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC406319/>, [Accessed 25th March 2020]

Kollef M.H., Levy N.T., Ahrens T.S., Schaiff R., Prentice D., Sherman G.(1998). The use of continuous i.v.sendation is associated with prolongation of mechanical ventilation. *Chest*.114(2), 541-548

Kress JP, Pohlman AS, O'Connor MF, Hall JB.(2000) Daily interruption of sedative infusions in critically ill patients undergoing mechanical ventilation. *N Engl J Med*.342,1471–1477

National Confidential Enquiry into Patient Outcome and Death (2014) On the Right Trach?: A review of the care received by patients who underwent a tracheostomy.[Online]Available from https://www.ncepod.org.uk/2014report1/downloads/OnTheRightTrach_Summary.pdf [Accessed 31st. January 2020]

Peplau H.E. (1991) *Interpersonal Relations in Nursing: A conceptual Frame of Reference for Psychodynamic Nursing*, New York: Springer Publishing Company

Reviewing the Literature: A Short Guide for Research Students. The University of Queensland [Online]<https://my.uq.edu.au/files/11020/guide-literature-review-research-students.pdf> [Accessed 20th February 2020]

Russell C. & Matta B. (2004) Tracheostomy: A Multiprofessional HANDBOOK, New York: Cambridge University Press, pp29-59

Stichler, F.J. (2014) The Ethics of Research Writing and Publication. Health Environments Research & Design Journal. [Online] 8(1) 15-19 Available at: <http://journals.sagepub.com/doi/pdf/10.1177/193758671400800103> [Accessed 20th March 2020].

Townsend M.C. (2015) Psychiatric Mental Health Nursing: Concepts of Care in Evidence-Based Practice, 8th. Ed, Philadelphia: F. A. Davis Company, pp10-36

APPENDICES

List of articles:

-Search words: Anxiety **And** tracheotomy or tracheostomy **And** ICU or intensive care unit or critical care Database used: Academic Search Elite, CINAHL, MEDLINE

Limits: Peer-reviewed Journal Hits: 34 articles

1. Breckenridge, Stephanie J.; Chlan, Linda; Savik, Kay (2014) Impact of Tracheostomy Placement on Anxiety in Mechanically Ventilated Adult ICU Patients. Heart & Lung (HEART LUNG), 43(5), 392-398, articles from CINAHL, Full text is available from Pubmed. accessed on 25.2.2020

Search words: tracheotomy or tracheostomy **And** anxiety or stress or fear or worry **And** Communication Database used: Academic Search Elite, CINAHL, MEDLINE,

Limits: Peer-reviewed Journal Hits: 34 articles

2. Carroll S.M.(2007) Silent, slow lifeworld: the communication experience of nonvocal ventilated patients. Qualitative Health Research, 17(9), 1165-1177,

Database: CINAHL Full text available through database Sage Accessed on 25.02.2020

3. Rose L., Istamboulian L., Smith OM., Silencieux S., Cuthbertson BH., Amaral ACK, Fraser I., Grey J., Dale C.(2018) Feasibility of the electrolarynx for enabling communication in the chronically critically ill: The EECCHO study.Journal Of Critical Care, Vol. 47, 109-113. Database: Medline, Full text available in Science Direct. Accessed on 25.02.2020

-Search words: tracheostomy or tracheotomy **And** communication **And** nursing interventions or nursing care **Not** pediatric or child or children or infant or adolescent,

Database used: Academic Search Elite, CINAHL, MEDLINE

First limiters: Peer-reviewed article Hits: 83

Second limiters: 2009-2020, peer-reviewed, English language, Full-text Hits: 28

4. Morris, Linda L.(2015)Restoring Speech to Tracheostomy Patients, 35(6), 13-28

Database: Academic Search Elite Accessed on 25.02.2020

5. Grossbarch I., Stanberg S., Chlan L.(2011) Promoting Effective Communication for Patients Receiving Mechanical Ventilation(2011) Critical Care Nurse.31(3): 46-61

Database: CINAHL Accessed on 25.02.2020

-Search words: tracheotomy or tracheostomy **And** multidisciplinary team **And** role or impact or influence **Not** pediatric or child or children or infant or adolescent

The Database used: Academic Search Elite, CINAHL, MEDLINE Limiters: Peer-reviewed Journals Hits: 46

6. Cetto R., Arora A., Hettige R., Nel M., Benjamin L., Gomez C.M.H., Oldfield W.L.G., Narula A.A.(2011) Improving tracheostomy care: a prospective study of the multidisciplinary approach. Clinical Otolaryngology, 36 (5), 482-488

Database: Academic Search Elite Accessed on 25.2.2020

7. Mitchell R., Parker V., Giles M.(2013) An interprofessional team approach to tracheostomy care: A mixed-method investigation into the mechanisms explaining tracheostomy team effectiveness, International Journal of Nursing Studies, 50(4): 536-542 Database: CINAHL Full text available from Science Direct

Accessed on 25.02.2020

-Search words: tracheotomy or tracheostomy **And** multidisciplinary team **And** role or impact or influence **Not** pediatric or child or children or infant or adolescent

The database used: PubMed Limiters: Free full text, 10 years, English Hits: 6

8. Bonvento B., Wallace S., Lynch J., Coe B., McGrath B.A.(2017) Role of the multidisciplinary team in the care of the tracheostomy patient. Journal of Multidisciplinary Healthcare, 2017(10),391-398 Accessed on 2.2.2020

-Search words: tracheotomy or tracheostomy **And** education **And** anxiety or stress or fear or worry **Not** pediatric or child or children or infant or adolescent Database used:

Academic Search Elite, CINAHL, MEDLINE,

Limiters: Peer-reviewed Journals Hits: 21

9. Loerzel V.W., Crosby W.W., Reising E., Sole M. L.(2014) Developing the Tracheostomy Care Anxiety Relief Through Education and Support (T-CARES) Program, Clinical Journal of Oncology Nursing,18(5) Database: Academic Search Elite Accessed on 2.2.2020

10. Morris L.L., Whitmer A., McIntosh.E.(2013) Tracheostomy care and complications in the intensive care unit. Critical Care Nurse, 33(5) Database: Academic Search Elite Accessed on 9.3.2020

11. Goossens E., Hildenson D., Moons P.(2012) Coaching through transition: A challenge for critical care nurse, Australian College of Critical Care Nurses,25,1-2 Database: CINAHL Accessed on 9.3.2020

Title	Design(qual/quant/MM), Sample/Method	Aim	Key Findings or arguments
1. Impact of <u>Tracheostomy</u> Placement on Anxiety in Mechanically Ventilated Adult ICU Patients	<p>Secondary analysis of existing data from a large parent study.</p> <p>Sample of the study: 125 patients from 12 ICU between 2006-2011</p> <p>Method for measuring anxiety: <u>VAS-A</u></p>	<p>-To determine if self-reported anxiety levels decreased after <u>tracheostomy</u> placement in ICU patients receiving Mechanical ventilation(MV).</p> <p>-To evaluate anxiety with and without <u>tracheostomy</u></p>	<p>Condensed Meaning Unit:</p> <p>(1) <u>Trache</u> doesn't alleviate anxiety</p> <p>(2) Reasons for <u>trache</u> in ICU: facilitate weaning from MV or long-term MV needed</p> <p>(3) Anxiety is related to feelings of powerlessness, fear, uncertainty about future, impaired communication, MV and altered body image. Consequence: difficult weaning, long-term depression and PTSD. MV contributes to Voicelessness</p> <p>(4) Clinicians assume <u>trache</u> bring comfort, but more patients receive sedative med without clinical reason. Clinician's evidence based interventions needed</p> <p>(5) Levels of anxiety fluctuated--- individual personality, clinical conditions, MV, memories of prior encounters.</p> <p>(6) Patients felt that they didn't received sufficient assistance, attention, explanation about procedures, or support from nurses as they desired--- Patients' feeling</p> <p>Codes: (new info.)</p> <p>Reasons for <u>trache</u>(2), Reasons and consequence of anxiety(3), Increasing <u>Sedative med</u>(4), <u>reasons of fluctuation of anxiety</u>(5), <u>insufficient care</u>(6),</p>
2. Silent, slow <u>lifeworld</u> : the communication experience of nonvocal ventilated patients	<p><u>Quan.</u> Interpretive phenomenological approach and thematic analysis.</p> <p>Interview conducted by choosing mouth words and <u>audiotaped</u>.</p> <p>Target group: 19 participants. Most are nonvocal for 24h a day.</p> <p>Theoretical Framework: <u>Interpersonal</u> relations theory</p>	<p>To understand the reality of being voiceless</p>	<p>Condensed Meaning Unit:</p> <p>(1) feelings of incompleteness, powerlessness, uncertainty, frustration and restriction</p> <p>(2) Nonverbal communication assumes time and great effort. contrasted with the busy nursing schedule. More one-sided communication.</p> <p>(3) Voicelessness affects patients verbally and perceptively(how they are treated)</p> <p>(4) Self-growth, realization about " take care of " the nurses</p> <p>(5) Weakness and lying in a supine position often impeded the ability to write.</p> <p>(6) Non-therapeutic communication: patients become upset, but they justify and minimize the negative effect. Realization of non-therapeutic care happens afterwards. (be ignored, no time to concentrate on, pretend to understand)</p> <p>(7) Being persistent about getting their points across decreased feeling of dependency because participants could ensure that their wishes were known.</p> <p>(8) Consistent and reliable nursing care is appreciated. Consistent staff would facilitate more effective communication. Concentration on the part of the nurse was the key to effective <u>lipsreading</u>.</p> <p>Codes:</p> <p>Feelings and experience of voicelessness(1,3,4,5), <u>barriers related to environment</u>(2), non-therapeutic communication(6), therapeutic communication(7,8)</p>

3. Feasibility of the <u>electrolarynx</u> for enabling communication in the chronically critically ill: The EECCHO study	MM Included 24 <u>tracheostomized</u> adults from 3 units in two years following commands, reading English, and mouthing words. Anxiety, ease, and satisfaction with communication were measured before and after using <u>electrolarynx</u> . Interview explored barriers.	To assess feasibility of producing intelligible and comprehensible speech with an <u>electrolarynx</u> , measure anxiety, communication ease, and satisfaction before and after <u>electrolarynx</u> training and identify barriers.	<p>(1) Inability to speak result in anxiety, which aggravates pain and inhibits weaning from MV.</p> <p>(2) Patient's family and health care providers also experience stress and <u>frustration</u>.</p> <p>(3) Inability to tolerate cuff deflation is because of secretion issues.</p> <p>(4) Mouthing words leads to misinterpretation. Impaired mobile function hinder patients writing or using communicative devices. Other new methods may be hard to cope with when patients experience physical and psychological stress.</p> <p>(5) <u>Electrolarynx</u> cannot sufficiently meet communicative needs. (requires seeing the patients' face and conducting lipreading. Communication satisfaction remains unchanged, using mechanical ventilation makes patients feel being dependent on health providers.)</p> <p>(6) Weakness, bad positioning to speak, poor sentence intelligibility were communicative barriers. (7) improper <u>tracheostomy</u> tube, physical impairment for manual closure of air port, vocal cord pathology, complicate devices can also included as communicative barriers to <u>electrolarynx</u> use.</p> <p>Codes: Anxiety and pain (1) Feeling of patients' family and health carer (2) Cuff deflation (3) <u>communicative barriers</u> (4,6,7) <u>Feasibility of electrolarynx</u> (5)</p>
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4. Restoring Speech to <u>Tracheostomy</u> Patients	Qual Literature review	<p>-Identify the potential effects of the inability to communicate for <u>tracheostomy</u> patient with a <u>tracheostomy</u></p> <p>-Examine methods to restore <u>phonation</u> for patients with a <u>tracheostomy</u></p> <p>-Discuss the role of critical care nurses in restoring <u>phonation</u>.</p>	<p>Condensed Meaning Unit:</p> <p>(1) Feelings of frustration, fear, anxiety and powerlessness related to the loss of voice among <u>trache</u> patients.</p> <p>(2) Sound creation with <u>trache</u> depends on adequate air flow, tracheostomy tube (diameter, length, type), whether with or without MV, whether partially or fully ventilated.</p> <p>(3) Restoring speech for MV dependent depends on cuff deflation tolerance. Without cuff deflation tolerance, some available devices (talking tracheostomy tube, cuffed <u>fenestrated</u> tracheostomy tubes, <u>Blom</u> tracheostomy tube system) can facilitate speech.</p> <p>(4) Coordination of the interdisciplinary team is essential to achieve voice restoration.</p> <p>Nurses should focus on the tasks associated with care but also have knowledge that patient with tracheotomies can struggle with loss of voice. Patients need a way to communicate their feelings as well as their physical and emotional needs.</p> <p>Codes: Feelings of <u>trache</u> patients (1), factors affecting sound creation (2), <u>available devices</u> (3), the roles of interdisciplinary team (4), nurses' knowledge (5)</p>
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5. Promoting Effective Communication for Patients Receiving Mechanical Ventilation	Qual. Literature review	To promote effective communication between patients receiving mechanical ventilation, health care staff and patients' family members.	<p>(1) Cuff inflation inhibits verbal communication among patients with trache in ICU.</p> <p>(2) The communicative methods in ICU: gestures, head nods, mouthing words, writing, letter/ picture boards, lists of common words or phrases tailored to meet individual patient's needs and high-tech alternative communication devices</p> <p>(3) Besides physical care, communication is essential for those who want to make end-of-life decision and final wishes</p> <p>(4) More time should be put into effort to patients and their families(Detailed information about tracheotomy tube, the reason of inability to speak, alternative methods to communicate, education to families and patients how to communicate, some educational pamphlet about tracheotomy tube, ventilator)</p> <p>(5) Families should be included as caregivers when patients are in ICU.</p> <p>(6) Communication strategies: Establish a communication-friendly environment, Assess functional skills that affect communication, anticipate patient's needs, facilitate lipreading, educate the patient, the family and staff about communication strategies</p> <p>Codes:</p> <p>Cuff inflation(1) Alternative communicative methods(2) the importance of communication(3) Patient and Family education (4) Families as a carer (5) Communication strategies (6)</p>
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6. Improving tracheostomy care: a prospective study of multidisciplinary approach	MM Sample: 102 patients with tracheostomy within 19-month pre-intervention cohort and 95 patients in the 19-month post-intervention cohort within 38 months	-To deliver tools to guide and improve tracheostomy care and thus reduce the number of tracheostomy-related clinical incidents.	<p>(1) Multidisciplinary team facilitated weaning of tracheotomy tube and reduced the number of tracheostomy-related clinical incidents. A dedicated tracheostomy service reduce the period of stay in intensive care.</p> <p>(2) Tracheotomy care bundle checklist including humidification, tube patency, safety equipment, cuff, dressing, weaning plan documented and care plan documented; the education programme on dealing with routine care and emergency to ward nurses conducted by multidisciplinary team; both of them develop the nursing competence of tracheotomy care in general ward. Checklist provided a clear way what should be documented and be focused on. Education programme acknowledged the nurses and enabled ward nurses be confident in taking care of tracheostomy patients.</p> <p>Codes:</p> <p>The function of multidisciplinary team(1) Bundle checklist(2) Nursing education (2)</p>
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7. An <u>interprofessional team approach to tracheostomy care</u> : A mixed-method investigation into the mechanisms explaining <u>tracheostomy team effectiveness</u>	MM Sample: 7 interviews were taken with <u>tracheostomy team members</u> including clinical nurse consultants, a physiotherapist, a speech pathologist, a <u>dietician</u> , a social worker and medical officer	-To identify and understand mechanisms through which <u>interprofessional tracheostomy teams</u> generate positive effects	<p>(1) Development and implementation of <u>tracheostomy protocol</u> improved patient care. Consistent <u>tracheostomy management</u> according to the protocol reduced ICU readmission.</p> <p>(2) Weekly visit those <u>tracheostomy patients</u> realize the implementation of <u>tracheostomy protocol</u> and increase decision-making efficiency.</p> <p>(3) Through sharing and discussing approaches among different professionals in weekly visit, clinically -effective decision can be made</p> <p>(4) The collaboration of <u>interprofessional tracheostomy team</u> contributed to efficient patient care. That is, Readmission to ICU decreased and <u>Tranfering</u> to general ward increased.</p> <p>Codes: <u>Tracheotomy protocol implementation and development</u> (1,3) <u>Consistent tracheostomy management</u> (2) <u>Collaboration of team</u> (4)</p>
8. Role of the multidisciplinary team in the care of the <u>tracheostomy patient</u>	Qual Method: Reviewing the roles of the <u>multidisciplinary team</u> (MDT) members in caring <u>tracheostomy patients</u>	To outlines the potential benefits of a coordinated multidisciplinary approach for the patients, their families an the health care systems	<p>(1) Problem with <u>tracheostomies</u>: A review of more than 23,000 North American inpatient records 80% patients with <u>tracheostomy</u> survived to discharge, with as few as 60% surviving if there were significant <u>comorbidities</u>. Similar figures exist for the UK and Europe</p> <p>(2) The UK national Confidential Enquiry into Patient Outcome and Death(NCEPOD) found the importance of MDT. Better coordination and collaboration between specialties and professions affects the quality of care. "The goal of <u>tracheostomy care</u> is to provide a safe environment for management of the patients."</p> <p>(3) Multidisciplinary team consisted of physiotherapists, speech and language therapists, specialist nursing staff, medical staff, psychologists and other allied health professionals. They are responsible for evaluating and treating patients with <u>tracheostomy</u> from the aspects of swallowing function, communicative method, tube choice, weaning process and psychological well-being.</p> <p>When patients was discharged from hospital, families started to take the role as carers. However, over half of these carers didn't feel that they are ready for <u>tracheostomy care</u>, hence, <u>multidisciplinary team</u> should also consider family education.</p> <p>Codes: <u>Problems with tracheostomies</u>(1), <u>benefits of MDT</u> (2) <u>Roles of MDT</u>(3) <u>Family education</u>(4)</p>

9. Developing the Tracheostomy Care Anxiety Relief Through Education and Support (T-CARES) Program	MM 11 Adult caregivers who would be responsible for providing tracheostomy care to a patient with head and neck cancer after discharge, were involved in the T-CARES pilot study	-to describe the development of the t-cares intervention program designed to reduce anxiety and improve skill competence of caregivers of patients being discharged home with a new tracheotomy -to describe T-cares pilot study and outcomes related to anxiety and skill competence	(1) caregivers were educated through this programme on airway anatomy, tracheotomy tube, suctioning, stoma care, changing the ties, cleaning cannula, prepare for emergency, tube reinsertion, self-care. (2) The programme is a video lasting 1 hour and highlights the importance of self-care for caregivers (3) they had opportunity to perform the task under the observation of professionals. They can also discuss their concerns and fears in group. Codes: Education on families
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10. Tracheostomy care and complications in the intensive care unit	Qual It is designated for CNE credits.	-to describe postoperative care of patients with a new tracheostomy - to describe the assessment and emergency interventions for patients with tracheostomy	(1) Patients and caregivers should be taught how to perform basic care of tracheotomy (2) It is recommended that possible patient and family education should start before the tracheostomy is conducted. (3) Before discharge, patients and caregivers should receive checklist of supplies, their tracheotomy care and knowledge should be accessed, home care instruction manual should be given and knowledge about emergency should be discussed. Providing chance for patients and caregivers to practice suctioning and reinsertion of the tube. Codes: Patient and family education before discharging (1, 2, 3)
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11. Coaching through transition: A challenge for critical care nurses	Qual	-to identify four types of transition: health/illness transitions, developmental transition, situational transition and organizational transition.	(1) Nurses as primary caregivers should support, educate and counsel patients and their families when they meet environment changes of caring. Such changes can be defined as transition. (2) Patients in ICU experience health/illness transitions, transfer from ICU to general ward or to other hospital or community. (3) Nurses' professional development is related to situation transition (4) New policies and practice refer to organizational transition, which affect nursing care. Codes: changes of caring environment (1)(2)(3)(4)
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