THE EFFECTS OF PROVIDING INFORMATION AND INSTILLING REASSURANCE ON UNCERTAINTY IN WEANING FROM MECHANICAL VENTILATION

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Thesis
Entitled

PERCEIVED ANGINA AND EKG CHANGES OF PATIENTS WITH CORONARY ARTERY DISEASE UNDERGOING EXERCISE STRESS TESTS

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COMPARISON BETWEEN MOTOR DEVELOPMENT SCORES OBTAINED FROM PARENT QUESTIONNAIRE AND A MOTOR DEVELOPMENT ASSESSMENT

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THE EFFECTS OF PROVIDING INFORMATION AND INSTILLING REASSURANCE ON UNCERTAINTY IN WEANING FROM MECHANICAL VENTILATION

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ABSTRACT

Uncertainty is a feeling of a lack of confidence, insecurity in a threatening situation, and unfamiliarity which often occurs in the patients being weaned from mechanical ventilation because they feel insecure and lack confidence in breathing. A quasi-experimental pre-test–post-test design was used to examine the levels of uncertainty before and at two hours after weaning from mechanical ventilation. The design also aimed at determining the effects of providing information and instilling reassurance on uncertainty in the patients being weaned from mechanical ventilation. The sample included 40 patients admitted to the surgical intensive care units and medical intensive care units at the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province. The subjects were selected purposively and then assigned to the control group and the experimental group, each consisting of 20 patients. The control group received routine nursing care, whereas the experimental group received information and instilling reassurance. The instruments used for intervention consisted of providing information and instilling reassurance for weaning from mechanical ventilation. In addition, the instruments for data collection were composed of a demographic characteristics data form, the readiness for weaning assessment, and the uncertainty for weaning assessment. The data were analyzed by using frequency distribution, percentage, Chi-square, mean, standard deviation, paired t-test, and independent t-test.

The result from this study showed that before and at two hours after weaning from mechanical ventilation, most patients in both groups had moderate uncertainty. The patients who received the provided information and instilling reassurance had a lower mean score of uncertainty after the intervention ($p < .001$). Also after the intervention, the patients who received the provided information and instilling reassurance had a lower mean score of uncertainty than that of the patients who received only routine nursing care ($p < .001$).

The results suggest that nurses should provide information and instilling reassurance to reduce the uncertainty of patients being weaned from mechanical ventilation.

KEY WORDS: PROVIDING INFORMATION / INSTILLING REASSURANCE / UNCERTAINTY / WEANING FROM MECHANICAL VENTILATION

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ผลการให้ข้อมูลอย่างมีแบบแผนร่วมกับการเพิ่มความมั่นใจต่อความรู้สึกไม่แน่นอนในขณะหย่าเครื่องช่วยหายใจ (THE EFFECTS OF PROVIDING INFORMATION AND INSTILLING REASSURANCE ON UNCERTAINTY IN WEANING FROM MECHANICAL VENTILATION).

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บทคัดย่อ

ความรู้สึกไม่แน่นอนเป็นความรู้สึกไม่มั่นใจ ไม่ปลอดภัย ในสถานการณ์ที่คุกคามและไม่คุ้นเคยซึ่งเกิดได้ในผู้ป่วยที่หย่าเครื่องช่วยหายใจ เนื่องจากผู้ป่วยรู้สึกถึงความไม่ปลอดภัยและขาดความมั่นใจในการหายใจเอง การวิจัยกึ่งทดลองครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาระดับความรู้สึกไม่แน่นอนก่อนหย่าเครื่องช่วยหายใจและหลังหย่าเครื่องช่วยหายใจ กลุ่มตัวอย่างคือผู้ป่วยที่ได้รับการหย่าเครื่องช่วยหายใจด้วยวิธี T-piece ในหน่วยบำบัดพิเศษศัลยกรรมโรงพยาบาลสมเด็จพระปิ่นเกล้าและหน่วยบำบัดพิเศษศัลยกรรม และอายุรกรรมโรงพยาบาลสมเด็จพระนางเจ้าสิริกิติ์ จำนวน 40 ราย แบ่งเป็นกลุ่มควบคุมและกลุ่มทดลองกลุ่มละ 20 ราย กลุ่มควบคุมได้รับการพยาบาลตามปกติ ในขณะที่กลุ่มทดลองได้รับการให้ข้อมูลอย่างมีแบบแผน แผนการเพิ่มความมั่นใจ ในขณะหย่าเครื่องช่วยหายใจ ส่วนเครื่องมือในการรวบรวมข้อมูลประกอบด้วย แบบบันทึกข้อมูลส่วนบุคคล แบบประเมินความพร้อมก่อนการหย่าเครื่องช่วยหายใจ และแบบวัดความรู้สึกไม่แน่นอน วิเคราะห์ข้อมูลโดยใช้ค่าร้อยละ ไคว์สแคว์ ค่าเฉลี่ย ค่าเบี่ยงเบนมาตรฐาน และการทดสอบค่าที

ผลการศึกษาพบว่า ก่อนหย่าเครื่องช่วยหายใจและ 2 ชั่วโมงหลังหย่าเครื่องช่วยหายใจกลุ่มตัวอย่างทั้งสองกลุ่มมีความรู้สึกไม่แน่นอนในระดับปานกลาง ผู้ป่วยกลุ่มทดลองมีคะแนนเฉลี่ยความรู้สึกไม่แน่นอนหลังการทดลองต่ำกว่าก่อนการทดลอง ($p < .001$) และผู้ป่วยกลุ่มทดลองมีคะแนนเฉลี่ยความรู้สึกไม่แน่นอนหลังการทดลองต่ำกว่าผู้ป่วยที่ได้รับการพยาบาลตามปกติ ($p < .001$)

จากผลการศึกษามีข้อเสนอแนะคือ พยาบาลควรนำการให้ข้อมูลและการเพิ่มความมั่นใจไปใช้ในการพยาบาลเพื่อลดความรู้สึกไม่แน่นอนในผู้ป่วยที่หย่าเครื่องช่วยหายใจ

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CONTENTS

CONTENTS (continued)

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

Background and Significance of the Study

Weaning from mechanical ventilation is the gradual reduction process of ventilatory support and its replacement with spontaneous ventilation on patients who have respiratory failure or dyspnea, and are unable to maintain normal gas exchange (Noll, cited In Hartshorn, Lanborn & Noll, 1993: 132) because of reasons such as Acute Respiratory Distress Syndrome (ARDS), post cardiorespiratory arrest, drug overdose, and postoperative management including open heart, explore–lap (Hess, Hodgkin & Burton, 1991: 599; Tuntitham, 1999: 139). However, many complications can occur with the use of mechanical ventilation such as respiratory tract infection, pneumothorax, pneumomediastinum and emphysema which can be caused by the excessive ventilation pressure. Increased intrathoracic pressure can also decrease the venous return, which may lead to the deterioration of cardiac output and arterial blood pressure. It will have an impact on the increment of intracranial pressure as well. Furthermore, the mechanical ventilation is a cause of major distress for patients due to communication difficulties, feelings of isolation, insecurity, discomfort, sleeplessness, pain in the throat (from suctioning and the endotracheal tube), fear, frustration, and uncertainty (Crinner & Isac, 1995: 557; Logan & Jenny, 1997: 144; Blackwood, 2000; 149). Therefore, the principle of taking care of the patients with mechanical ventilation is to make them turn to spontaneous breathing, a simple matter of discontinuing ventilatory support, when the patients' condition has improved (Lessard & Brochard, 1996: 475) in order to avoid complications from using mechanical ventilation. Furthermore, it will help reduce the cost of patients, cost of care, and the length of hospital stay (Burn,1999).

The primary methods available for weaning are the T–piece, intermittent mandatory ventilation (IMV), pressure support ventilation (PSV), and mandatory minute ventilation (MMV). In Thailand, most commonly used weaning methods are

the T- piece and synchonized intermittent mandatory ventilation (SIMV) together with pressure support ventilation (PSV) (Pinyopornpanich, S., 1998: 99). When the T- piece method is used, the patient spontaneously breathes through the T-piece circuit depending on the patient's tolerance without mechanical ventilator. The advantage of the T- piece method is that it encourages the patient to increase the strength of the respiratory muscles (Noll, cited in Hartshorn, Lanborn & Noll, 1993: 143). SIMV, on the other hand, reflects a more gradual approach to withdrawal, with an increased amount of the patient's respiratory work. The advantage is a more gradual separation from mechanical ventilation than the T- piece method (Blackwood, 2000: 146-147). PSV decreases the work of breathing while increases the patient's ability to initiate spontaneous breathing efforts. Therefore, the choice of method depends on the readiness of the patients, and the method that makes it easier for the patient easier to breathe should be chosen (Blackwood, 2000: 147). However, the weaning method is less important on weaning success from mechanical ventilation than the readiness of patients (Palwatvichai, 1999: 374). Premature weaning may cause fatigue from the increased work against lung resistance. The increased cardiac workload on resumption of spontaneous breathing may also lead to altered myocardial perfusion and ischemia. As a result, weaning from mechanical ventilation can be unsuccessful (Vassilakopoulos, Roussos, & Zakynthinos, 1999: 46). Hurford & Favorito (1995) show that 6 of 17 long-term ventilator dependent patients who failed to wean from mechanical ventilation experienced electrocardiography (ECG) evidence of ischemia. Therefore, it is suggested that patients should have readiness that includes both physiological and psychological conditions before weaning (Scanlan, cited Scanlan, Spearman, & Sheldon, eds., 1995: 970 – 976).

Physiological readiness consists of being hemodynamically stable and free from factors that increase metabolic rate; having hematocrit of more than 25%, good nutritional status, normal electrolytes and acid–base balance, adequate sleep, absence of bowel problems, improved general body strength, improved chest roentgenogram; and free from factors that increase work of breathing; having maximal inspiratory pressure less than –20 cm.H_2O, maximal expiratory pressure greater than 30 cm.H_2O, and spontaneous tidal volume more than 5 ml. per kilogram of body weight. Also, the vital capacity of 10 to 15 ml. per kilogram is needed as well as a partial pressure of

arterial oxygen (PaO_2) more than 60 mmHg when the fraction of inspired oxygen (FiO_2) is less than 0.4. In addition, pH and partial pressure of carbon dioxide ($PaCO_2$) should be held within the normal range of 7.35 to 7.45, and 35 to 45 mmHg, respectively (Burn, 1994: 343). On the other hand, the psychological readiness is one of the most important parts to determine successful weaning because it is an intimate and complex relationship between the mind and the body. Psychological problems may cause further physical distresses such as increased airway resistance, work of breathing, and oxygen demand leading to weaning failure (Blackwood, 2000: 147). It is assumed that the patients with psychological readiness will have more successful weaning outcomes from mechanical ventilation. In particular, the patients who are undergoing weaning from mechanical ventilation by the T- piece method have to experience much more threatening situations as this method involves disconnecting from mechanical ventilation and replacing it with a T- piece connected to the endotracheal tube. The patients will then have spontaneous breathing without mechanical ventilation. As they see that the ventilator is removed, they often have to breathe spontaneously for some time through the rather narrow endotracheal tube. This means that the work of breathing is increased which may be frustrating for some patients. It has been found that many patients are afraid of being incapable to resume spontaneous breathing (Bergbom-Engberg & Haljamae, 1989: 1071). They may lack confidence in their breathing ability, fear having inability to control breathing without the ventilator, feel abandoned by the healthcare staff causing inability to speak or communicate, and may also misunderstand that the weaning process, to resulting in inability to predict what will happen (Kneble, 1989: A97; Criner & Isaac, 1995: 857-859; Wunderlich, Perry, Lavin, & Katz, 1999:4). This will lead to their feeling of insecurity during weaning. Wunderlich, Perry, Lavin, & Katz's study (1999) has reported that most of the patients feel extremely uncertain and stressed at some point during weaning from mechanical ventilation. Uncertainty will bring about stress. Uncertainty is one of the conditions producing a stress response (Mishel, 1981: 258). Stress occurs when the person is unable to resolve the uncertainty (Barron, 2000: 518). During stress, the adrenal medulla, which is functionally related to the sympathetic nervous system, secretes epinephrine and norepinephrine in response to sympathetic stimulation. The physiological responses are manifested by increase in

respiratory rate, heart rate, blood pressure, and oxygen consumption (Francesconi, Stokes, Banderet & Kowel, 1978: 1271-1274; Henneman,1989: 483). This may result in increased work of breathing and oxygen demand. A harmful cycle begins because stress may lead to tightness of the chest muscles, hyperventilation (Blackwood, 2000: 147), and panic leading to early fatigue and inadequate gas exchange. In addition, T–piece trial increases the work of breathing for the patient. It can be compared to the increased work of breathing required when snorkelling. This may be an excessive load for some patients and result in poor tolerance and failure of the trial (Esteban et al., 1997), all of which result in unsuccessful weaning.

According to a pilot study of the care during weaning in ten patients undergoing mechanical ventilation in the surgical intensive care unit (ICU) at the Somdej Prapinklao Hospital (Naval Medical Department), Bangkok, weaning by the T- piece method began when the physician treated the underlying problem leading to respiratory failure, the respiratory system had turned to normal condition, and the patients had physiological readiness for weaning. Then critical care nurse will explain to the patients the procedure for weaning and nursing care during the weaning period. However, there was no guideline for the weaning procedure. Since nursing activities were based on differences in knowledge, capability, and experience, weaning information and practice for individual patients could be varied. The researcher found that patients would receive different information regarding weaning, and some may not receive proper explanation or appropriate instruction. This may have another effect on patients' fear and lack of confidence in their breathing ability in the weaning process. Thus, it is one cause of the patients' feeling of uncertainty in weaning from mechanical ventilation. From the researcher's experience, some patients who had uncertainty or stress during weaning by the T-piece method became agitated and attempted to have self-extubation. Then, those patients would have to be reintubated and mechanical ventilation would have to be resumed. According to the statistics in the surgical intensive care unit of the Somdej Prapinklao Hospital (Naval Medical Department), Bangkok, from January to December, 2002, the percentages of reintubation ranged from 0.00 to 27.8 (Mean = 6.48; S.D. = 8.37). In addition, as regards the statistics of medical, surgical intensive care units of the Somdej Pranangchao Sirikit Hospital (Naval Medical Department), Chonburi Province, from

January to December, 2003, the percentages of reintubation ranged from 0.00 to 3.03 (Mean = 0.76; S.D. = 0.93), and from 0.00 to 4.40 (Mean = 1.03; S.D. = 1.23), respectively.

Several studies in reduction of uncertainty have been conducted. It has been found that providing information and an educational program will make patients realize what is going on and also be able to predict events and feel more confident, all of which can help patients minimize their uncertainty (Lemaire & Lenz, 1995; Galloway & Graydon, 1996; Deane & Degner, 1998). However, uncertainty during weaning from mechanical ventilation has not been examined. Thus, the researcher was interested in a study on this subject as a way to reduce uncertainty in the patients weaning from mechanical ventilation using the T-piece as a method of providing information and instilling reassurance during weaning from mechanical ventilation. The contents of information provided would be related to goals of weaning, process of weaning, activities during weaning, security and care during weaning, communication for aiding request and instilling of confidence in ability to breathe and care given by physicians and nurses before weaning. The researcher believed that providing information is a way to reduce the feeling of uncertainty by providing a clear viewpoint and understanding of the process of weaning so as to allow patients to make prediction about weaning from mechanical ventilation. This is because patients' contribution is their ability to make sense of and understand the weaning situation, so as to endure it and achieve goals (Blackwood, 2000: 147). Moreover, the researcher would be instilling reassurance related to providing reassurance, encouragement, activities during weaning, together with reports on the progress during weaning and instilling confidence in their ability to breathe to make patients become clear about the process and activity during weaning. Therefore, the feeling of uncertainty during weaning would be minimized (Wunderlich, Perry, Lavin & Katz, 1999:3). Thus, the researcher expected that the aforementioned method would make weaning more successful, as it is believed that the method which enables the patients to cope with their concerns and comfort them is essential to build up patients' trust, confidence, and the right attitude. All of these would lead to co-operation and collaboration between the nurse and the patient. Furthermore, it would minimize complications during weaning and reduce total cost of patients and the hospital.

Conceptual Framework

This research was conceptualized based on Mishel's theory of uncertainty in illness (Mishel, 1984, 1988). According to Mishel (1984, 1988), uncertainty is the inability to determine the meaning of illness-related events and occurs when insufficient cues prevent the person from adequately structuring or categorizing an event, thus inhibiting the person's ability to predict outcomes adequately. In such situations, the decision-maker is unable to assign definite values to objects and event or unable to accurately predict outcomes because sufficient cues are lacking (Mishel, 1988: 225). Unclear explanation or unfamiliarity with illness will lead to the feeling of uncertainty which comprises four factors as follows: ambiguity of illness cues, complexity related to cues about the treatment and the system of care, inconsistency related to information received, and unpredictability of illness outcome from illness and treatment cues. Persons need to have their ways to be able to effectively cope with uncertainty, causing the outcome of adaptation. Promoting information from nurses, provided in the providing information and instilling reassurance, reduces uncertainty by the ability to process information, increasing event familiarity, as well as predictability of illness outcome and treatment cues.

Patients perceive that mechanical ventilation will be completely disconnected and will then be replaced with a T- piece for the first time, which is such a threatening and unfamiliar situation. In spite of having received information, they still perceive ambiguity in the situation due to lack of confidence in their breathing ability, and fear of loss of security, inability to regulate breathing, and inability to predict what will happen during weaning. They may even fear that they may die. Uncertainty will then have an effect on stress. It is one of the conditions producing a stress response (Mishel, 1981). During stress, the adrenal medulla, which is functionally related to the sympathetic nervous system, secretes epinephrine and norepinephrine in response to sympathetic stimulation. The physiological responses are manifested by increased respiratory rate, heart rate, blood pressure, and oxygen consumption (Francesconi, Stokes, Banderet & Kowel,1978; Henneman,1989). This may result in increased work of breathing and oxygen demand. A harmful cycle begins because stress may lead to tightness of the chest muscles, hyperventilation (Blackwood, 2000: 147), and panic leading to early fatigue and inadequate gas

exchange, all of which result in unsuccessful weaning (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 969 - 976). Providing information and instilling reassurance in their ability to breathe will help patients understand the process of weaning as well as the method of asking for help if necessary. A proper activity during weaning will have an effect on psychological readiness and cooperation during weaning, reduce threatening feeling, and decrease stress. The result of reduced threatening feeling and decreased stress is a decrease in secretion of catecholamines. The amount of work the body has to perform during breathing decreases, and the following effects are decreased rate of respiration, heart rate, and blood pressure, which lead to the normal condition of the respiratory system. The patients will then have adequate pulmonary reserve to become ready for better weaning. Thus, this can bring about achievement in weaning. The conceptual framework is shown in Figure 1.

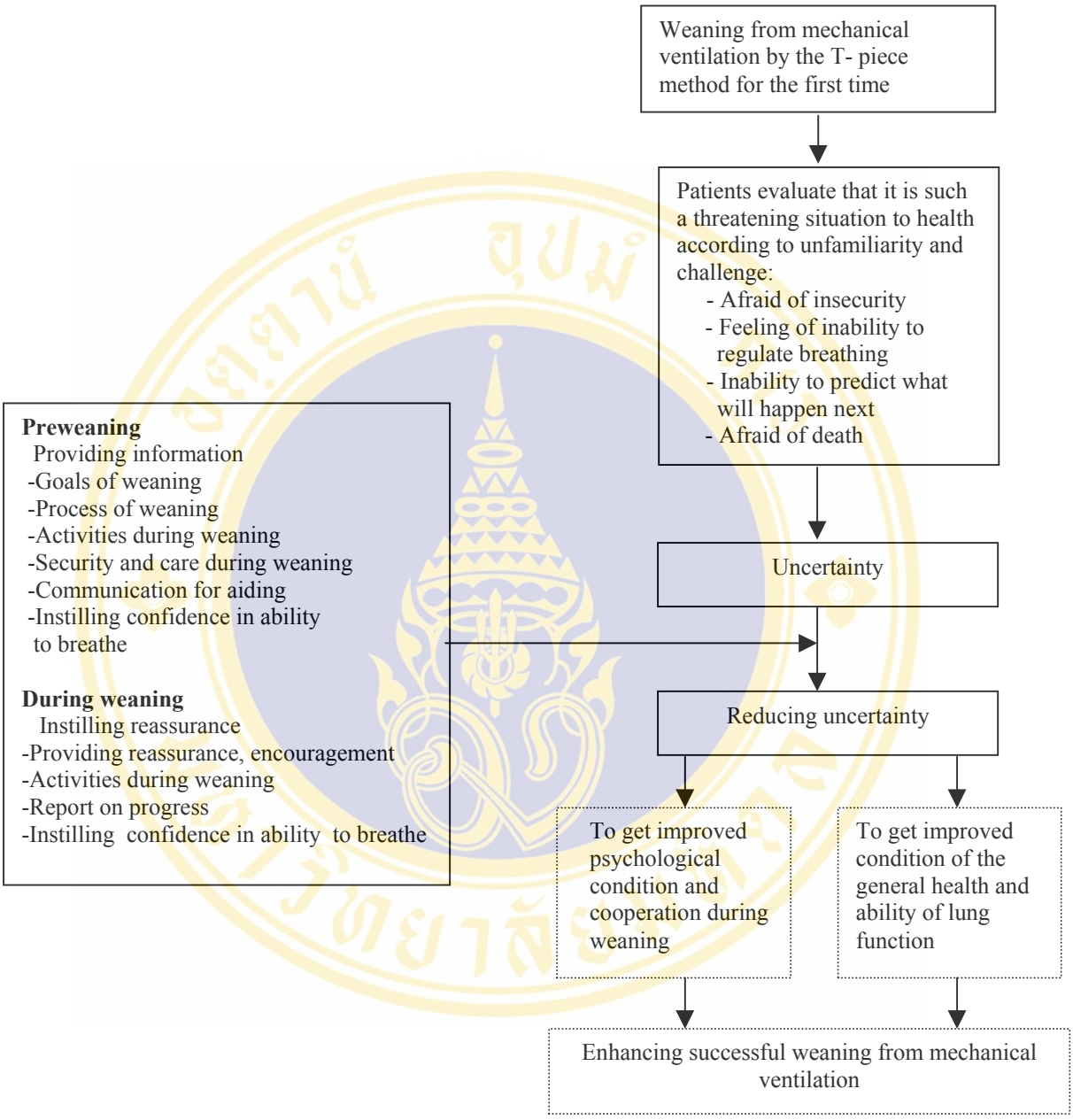


Figure 1 : Conceptual Framework

Research Questions

1. What is the uncertainty in patients who are weaning from mechanical ventilation?

2. Can providing information and instilling reassurance influence a decrease in uncertainty caused by weaning from mechanical ventilation?

Purposes of the Study

1. To study the level of uncertainty before and after the experiment of the patients who received providing information and instilling reassurance and the patients who have received routine nursing care.

2. To compare the level of uncertainty two hours after the experiment of the patients who received providing information and instilling reassurance and the patients who received routine nursing care.

Hypotheses

1. The mean score of uncertainty in the experimental group would be statistically decreased after providing information and instilling reassurance were preformed.

2. The mean scores of uncertainty after intervention between the control and experimental groups would different.

Scope of the Study

This quasi-experimental research focused on the effects of providing information and instilling reassurance on uncertainty in the patients undergoing weaning from mechanical ventilation and having physicians' order to begin weaning by the T- piece method and were admitted in the surgical intensive care unit at Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the surgical intensive care unit, the medical intensive care unit at the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province.

Definition of Terms

Providing information and instilling reassurance refer to nursing intervention that the researcher modified to follow the plan for providing information as knowledge to prepare the patients for weaning from mechanical ventilation. The process started before the patients began weaning by the T-piece method. Providing information and instilling reassurance included goals of weaning, process of weaning, activities during weaning, security and care during weaning, communication for aid request, report on progress, instilling confidence in ability to breathe, and reassurance and encouragement. The period before weaning lasted 20 minutes and it lasted 10 minutes during weaning. Patients received continuous care before weaning and two hours after weaning

Routine nursing care refers to nursing intervention regarding weaning from mechanical ventilation by the T- piece method used by the staff nurses in the surgical intensive care unit at Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the surgical intensive care unit, the medical intensive care unit at Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi. Province. Nursing interventions is conducted as team assignment, case method and sometimes as functional assignment. In the two hospitals mentioned above, routine nursing care include explaining the goal and the process of weaning, the activities during weaning, along with the communication for aiding request during weaning before the process begins.

Uncertainty in weaning from mechanical ventilation refers to patients' inability to determine the meaning of weaning from mechanical ventilation and ability to predict outcomes of weaning from mechanical ventilation by the T- piece method. Uncertainty can be assessed by the Uncertainty for Weaning Assessment modified from Mishel Uncertainty In Illness (MUIS) (Mishel,1990). Uncertainty consists of four factors including ambiguity of illness cues during weaning from mechanical ventilation, complexity related to cues about the treatment and the system of care during weaning from mechanical ventilation, inconsistency related to information received during weaning from mechanical ventilation, and unpredictability of illness outcomes during weaning from mechanical ventilation. Uncertainty was assessed before weaning and two hours after weaning in this study.

Readiness for weaning refers to the patients' readiness to wean from mechanical ventilation. It consists of readiness of general condition and the readiness of the respiratory system. Readiness for weaning was assessed by using an Assessment of Readiness for Weaning Form modified from Burn's weaning assessment program developed by Burns (1998).

Expected Outcomes and Benefits

1. The information obtained from the study will enable nurses to realize the uncertainty in patients weaning from mechanical ventilation.

2. The information obtained may be used as a guideline for the nursing practice and development of nursing care dealing with patients weaning from mechanical ventilation so that nurses can provide patients with better and more effective care which lead to more successful weaning outcomes.

CHAPTER 2
LITERATURE REVIEW

The literature review in this study includes the following topics:

- The concept of weaning from mechanical ventilation
- Patient readiness for weaning from mechanical ventilation
- Uncertainty
- Uncertainty of patients weaning from mechanical ventilation
- Role of nurses to reduce uncertainty in patient weaning from mechanical ventilation
- Providing information
- Instilling reassurance

The concept of weaning from mechanical ventilation

The American College of Chest Physicians Consensus Conference on Mechanical Ventilation has defined weaning as the gradual reduction of ventilatory support and its replacement with spontaneous ventilation (American College of Chest Physicians Consensus Conference, cited by Pierson, 1995: 230), and weaning from mechanical venilation has been the process of abruptly or gradually withdrawing ventilation support when the cause of the acute respiratory failure has been under resolution (Lessard & Brochard, 1996: 475). Furthermore, weaning from mechanical ventilation has represented the period of transition from total ventilatory support to spontaneous breathing (Mancebo, 1996: 1923).

The weaning process is described in terms of a transition with three phases as follows (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 969-986; Knebel, 1991: 321-330):

1. Preweaning phase

The preweaning phase is the assessment of the physiological and psychological readiness of the patients who the doctor has made decision for weaning. Physiological readiness involves underlying cause for mechanical ventilation resolved, hemodynamic stability, adequate level of consciousness, good nutrition status and hydration, correction of electrolyte and metabolic disorder, and adequate respiratory muscle strength and gas exchange (Knebel, 1991: 321-325; Noll, cited in Hartshorn, Lamborn, & Noll, 1993: 138; Lessard & Brochard, 1996, Blackwood, 2000: 146). Psychological readiness is related to calmness, relaxation, orientation, mental ease, and positive attitude (Noll, cited in Hartshorn, Lamborn, & Noll, 1993: 138; Blackwood, 2000: 146). All of the above are key factors in the success of the weaning process. Premature weaning may cause fatigue from the increased work against lung resistance. The increased cardiac workload on resumption of spontaneous breathing may also lead to altered myocardial perfusion and ischemia. As a result, weaning from mechanical ventilation can be unsuccessful (Vassilakopoulos, Roussos, & Zankyntinos, 1999: 46).

2. Weaning Phase

The weaning phase is selected as a withdrawal method. Upon completion of the preweaning phase (including resolution of major problems), the patient is considered ready for weaning. At this point, the actual weaning phase begins. During the weaning phase, a withdrawal method is selected and applied, and the patient is carefully monitored for response. Techniques of gradual withdrawal from mechanical ventilation are T-piece trial, intermittent mandatory ventilation (IMV), pressure support ventilation (PSV), and mandatory minute ventilation (MMV) (Scanlan, cited in Scanlan, Spearman, & Sheldon,1995: 977). A single rigid approach to weaning will not be appropriate for all patients. In Thailand, most of weaning methods involve the use of T-piece and synchonized intermittent mandatory ventilation (SIMV) with pressure support ventilation (PSV) (Pinyopornpanich, 1998: 99). An advantage of the T-piece method is that it encourages the patient to increase the strength of the respiratory muscle (Noll, cited in Hartshorn, Lanborn & Noll, 1993: 143). SIMV, on the other hand, reflects a more gradual approach to withdrawal with an increase in the amount of the patient's respiratory work. An advantage is a more

gradual separation from mechanical ventilation than the T-piece method (Blackwood, 2000: 146-147). PSV decreases the workload of breathing and increases the patient's ability to initiate spontaneous breathing efforts. It makes it easier for the patient to breathe (Blackwood, 2000:147). However, the weaning method has fewer effects on successful weaning from mechanical ventilation than patient readiness (Palwatvichai, 1999: 374). Selection of the weaning approach should be guided by sound knowledge of the relative advantage and disadvantage of each method, as related to the patient's underlying pathology and individual needs. The choice of weaning mode is probably less important than providing careful preliminary evaluation to determine patient readiness, and conducting observation once the withdrawal process has begun. The weaning phase is considered successful if the patient can sustain adequate spontaneous ventilation over time without major adverse effects (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995:984).

3. Extubation phase

This phase is the final stage of the weaning process. The patient is able to sustain adequate spontaneous ventilation without mechanical assistantce. After successfully withdrawing ventilatory support withdrawal, the goal is to remove the artificial airway (Scanlan, cited in Scanlan, Spearman, & Sheldon, eds.,1995: 985). For a patient to be extubated, not only does the patient need to be able to breathe spontaneously, but the patient also needs to be able to protect the airway, and be able to adequately clear secretions (Hess, Hodgkin & Burton, cited in Burton, Hodgkin & Ward, 1991: 621).

In summary, weaning is a process that encompasses three phases: preweaning, weaning, and extubation. When the weaning phase is not successful, patients do not progress to the extubation phase, and weaning failure occurs.

Patient readiness for weaning from mechanical ventilation

Weaning procedures are usually started only after a series of condition are fulfilled, which means the underlying disease process responsible for the acute respiratory failure and mechanical ventilation is cured. The patient must be in a good clinical condition, be psychologically stable, and be capable of spontaneous respiration (Lemaire, 1993: S69). Therefore, both physiological and psychological readiness is

very important and must begin before the patients disconnection from the ventilator occurs.

Physiological readiness

When weaning a patient from mechanical ventilation, the patient's general condition must be evaluated, and the problems must be resolved and improved. Also parameters indicating readiness to wean must be assessed. In this study, weaning indices has been adapted from Burns' Weaning Assessment Program because it is easy to use and the assessment can be completed in ten minutes. Besides, it is a holistic assessment incorporating physiological and psychological parameters (Burns, Burns, & Truwit, 1994: 343). The readiness for weaning assessment is as follows:

1. General Assessment

1.1 Cardiovascular and hemodynamic assessment. Adequatecardiovascular functions are needed in order to provide sufficient tissue perfusion and cellular gas exchange. Based on medical history and/or bedside assessment of hemodynamic performance, clinicians should also identify patients with poor left ventricular reserve who are being considered for withdrawal from ventilatory support. Among these patients, an abrupt transition to spontaneous breathing can actually worsen cardiovascular function. Thus, patients should have cardiovascular stability that consists of heart rate of 70-120 beats/min, systolic blood pressure of 90-180 mmHg, and no major arrhythmias present (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 972).

1.2 Metabolic assessment. When patients have fever, infection, or inflammation, metabolic rate can be increased (Losririvet, cited in Jeasakul, Losririviat, & Vatanapa, 1998: 567-581). An increase of one degree celsius of body temperature causes 10% increase in oxygen consumption and carbon dioxide production. For readiness in weaning from mechanical ventilation, patients should be free from factors that increase metabolic rate such as seizures, sepsis, bacteremia, etc. This correlates with the study of Tahvanainen (1983, cited by Surapakpong, 1994: 24) which found that septicemia and fever are predictors for outcome of weaning.

1.3 Hematocrit. Transport of oxygen is affected by oxygen content. The oxygen content is reduced if anemia is present. Therefore assessing the

presence of low hemoglobin and hematocrit suggests the potential for weaning difficulties (Knebel,1991: 323) because it decreases oxygen carrying capacity (Hodgkin, Burton & Gray, cited in Burton & Hodgkin, 1991: 621). The literature review has pointed out that hemoglobin should not be lower than 10 gm/dl (Vorakitpokatorn, 1991: 202). However, this study will follow Burns' Weaning Assessment Program that limits hematocrit to more than 25%.

1.4 Fluid balance. Ideally, patients being considered for withdrawal of ventilation support should have an adequate renal output (equal to orexceeding 1000 ml/day). There should be neither inappropriate weight gain nor edema present, because it can disrupt pulmonary gas exchange (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 972). In contrast, dehydration can cause sticky secretions and airway obstruction, making weaning from mechanical ventilation impossible (Pranpukdee, cited in Hanucharunkul, 1998: 227).

1.5 Nutritonal status. Nutritonal repletion is an important aspect of optimizing ability to wean because it maintains respiratory muscle mass and contractile force. On the other hand, malnutrition causes decreased in respiration muscle strength and endurance (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 972; Stoller, 1991: 195). Most patients should receive a daily caloric intake between 1,500 and 2,000 calories to ensure expenditure and protein intake between 1 and 1.5 gm/kg/day (Pranpukdee, cited in Hanucharunkul, 1998: 221). High carbohydrate load can increase the respiratory quotient, raise carbon dioxide production, and precipitate acute hypercapnia respiratory failure. In addition, serum albumin is a widely used biochemical parameter of protein nutritional status in hospitalized patients. Patients should have a serum albumin between 3.3 and 4.5 gm/dl. Nutritional repletion is associated with enhanced weanability (Stoller, 1991: 195).

1.6 Electrolytes. The important electrolytes are controlled by numerous integrated physiologic control systems that regulate the exchange of ions between the plasma and intracellular fluid and their exchange between different tissues, such as the kidneys. Normal serum sodium should be between 135 and 145 mEq/L. Its function is to keep osmolarity of extracellular fluid and balance of fluid in the human body. If serum sodium is 125 mEq/L, it affects brain cells and results in

increased patients' weakness. If serum sodium level is below 125 mEq/L, the patient's condition will be worsened, and this may lead to further complications such as loss of consciousness, hypotension, and tachycardia. On the other hand, if serum sodium is higher than normal level, it may raise the central venous pressure and lead to pulmonary edema (Thongcharoen, cited in Aunnapilux, et al., 1997: 363-382) which is a major cause of unsuccessful weaning from mechanical ventilators.

Potassium. Normal serum potassium should be 3.5-5.5 mEq/L. Its function is to keep osmolarity of intracellular fluid. Hypokalemia can depress muscle cell and nerve cell function, fatigue of skeletal muscle leading to paralysis because of shortage of glycogen and charged electrocardiography (EKG). Hyperkalemia causes inhibition of muscle impulse, muscle fatigue, and paralysis, and hypoxemia and hypercapnia from slow breathing. If the potassium level is higher than 7 mEq/L, the EKG will be changed and cardiac arrest can occur (Thongcharoen, cited in Aunnapilux, et al., 1997: 363-382). All of the above show that electrolyte imbalance affects weaning from mechanical ventilation. Thus, key electrolyte concentrations should be within normal limits before weaning as follows: sodium 135-145 mEq/L, potassium 3.5-5.5 mEq/L, chloride 95-105 mEq/L, and bicarbonate 23-30 mMol/L.

1.7 Pain. Pain consists of four components. The affective component refers to the feelings and emotions such as anger, fear, depression, and anxiety. The behavioral component refers to the actions and posturing of a patient to express the pain and to control the pain. The cognitive component refers to the meanings, beliefs, and attitudes, about the pain that influence the patient's response to pain therapy. The sensory component is the recognition of the sensation as painful. Take the case of unrelieved acute pain, some of the effects of unrelieved pain include respiratory system and cardiovascular system. Respiratory system is caused by the reflex muscle spasms and muscle splinting leading to decreased tidal volume, vital capacity, functional residual capacity, and alveolar ventilation. Cardiovascular system causes sympathetic overactivity which leads to increased heart rate, blood pressure, and cardiac output (Wilkie, 1994: 133). The above are major causes of unsuccessful weaning from mechanical ventilation.

1.8 Sleep. It is shown that sleep deprivation can affect the respiratory system. Sleep deprivation has been demonstrated to decrease forced vital capacity; maximum voluntary ventilation; hypercapnia ventilatory response, by 20% to 24%; and hypoxic ventilatory response, by 29%. Therefore, sleep deprivation may contribute to both hypoventilation and respiratory muscle fatigue, which could adversely affect weaning from mechanical ventilation (Schwab, 1994: 689).

1.9 Bowel function. Diarrhea can affect electrolyte imbalances which can impair muscle function, whereas constipation can disrupt pulmonary gas exchange and increase discomfort. Both diarrhea and constipation can affect weaning outcome. These factors should be resolved before considering to begin withdrawing support (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 971).

1.10 Body strength. It is emphasized among weaning patients. During the preweaning phase, critical care nurses assist the patient with transfers, ambulation and coordination of breathing with activity. Ambulation including activities such as getting out of bed and sitting in chair and progressive activity program promotes overall muscle conditioning and respiratory muscle functioning (Weilitz, 1993: 39).

1.11 Chest roentgenogram. It is one of the indicators to identify whether the patient is ready to wean. If chest roentgenogram interpretation shows pulmonary infiltration, pneumonia, pneumothorax, pneumomediastenum, or pleural effusion, the patients must be treated before weaning from mechanical ventilation. When these event occur, decreased ventilation in the affected area of the lung creates areas of ventilation perfusion mismatching, and this can lead to failure in weaning (Knebel, 1991: 323).

2. Respiratory assessment

2.1 Gas flow and work of breathing

2.1.1 Respiratory rate. A respiratory rate of greater than 25 breaths per minute has been identified as a variable associated with failure to wean due to decreased respiratory muscle endurance. The respiratory rate can be increased with an increase in dead space ventilation, decreased alveolar ventilation, anxiety, fever, pain, and anemia. Respiratory alternans and paradoxical respiratory movement may be associated with respiratory muscle fatigue and increased work of

breathing (Weilitz, 1993: 34; Noll, cited in Hartshon & Lomborn, 1993, 111). The respiratory rate of the patient who is ready to wean from mechanical ventilator should be respiratory rate lower than 25 breaths/min, without dyspnea, and absence of accessory muscle use (Bridges, 1992: 17).

2.1.2 Breath sound. Adventitious breath sounds include crackles, rhonchi, wheezing, and pleural friction rubs. The presence of crackles usually indicates the presence of fluid in the alveoli and airway. Rhonchi is associated with inflammation, excess fluid, and excessive mucus, whereas wheeze is associated with brochoconstriction from bronchospasm, fluid, mucus, inflammatory by products, and obstructive lesion. A pleural friction rub is a grating sound that occurs in the presence inflammation of the pleura (Smeltzer & Bare, 1996: 447). These breath sounds are indicators that weaning may be unsuccessful.

2.1.3 Secretion. Sticky and excessive airway secretion can decrease ventilation and gas exchange with obstructed airway. Patients who have limited breathing reserve and an inability to clear secretion can lead to failure in weaning. Secretion management, such as airway clearance and chest percussion, is also nursing responsibilities before weaning (Knebel, 1991: 323).

2.1.4 Neuromuscular Disease. Neuromuscular diseases are composed of polyneuropathy, myopathy, Guillain-Barrie syndrome, Duchenne muscular dystrophy, and many others. One of the major problems in the management of patients with severe neurologic disease is the maintenance of adequate respiration. Inadequate respiration results either from inability to move air in and out of the lungs as a result of muscle weakness or from respiratory center abnormalities. These two causes of respiratory difficulty may coexist, in which both the respiratory center and the diaphragm and intercostal muscles may be involved. Neuromuscular weakness may also result in a diminished cough and decreased ability to eliminate bronchial secretions. As a result, pulmonary infections further complicates the patient's difficulty with respiration (Keltz, 1985: 934). Neuromuscular disorders can be associated with failure to wean from the ventilator (Maher & Rutledge, 1995: 138; Mancebo, 1996: 1925). Therefore, these patients must have adequate ventilatory muscle strength and endurance before weaning from mechanical ventilation.

2.1.5 Oral endotracheal tube or tracheostomy tube. Resistance to airflow also results in increasd work of breathing. Resistant is increased when the airway diameter is decreased or the rate of flow increases. Airway diameter can be decreased by the introduction of an endotracheal tube. As the internal diameter of the endotracheal tube becomes smaller, the work of breathing increases and is particularly pronounced at high minute ventilation (Bridges, 1992: 18). In Thailand, the average tube size is 7.0 to 7.5 mm in adult females and 7.5 to 8.0 mm in adult males (Kairtboonsri, Knoptumnuemchai & klongsusuk, cited in Kairtboonsri, & Charoenpan, 1992: 172).

2.2 Airway clearance

Cough is an indicator of upper airway function and is used for assessment of the patients ability of the upper airway to clear secretion (Fahey & Tobin, cited in Baum, et al., 1998: 966). Therefore, patients should be able to effectively cough before weaning from mechanical ventilation.

2.3 Respiratory muscle strength

2.3.1 Maximal inspiratory pressure (MIP, or PI_{max}) is an important bedside test to detect, and especially for ruling out, inspiratory muscle weakness. If the negative pressure force is more than –20 cmH_2O, mechanical ventilation is usually required because the patient lacks sufficient muscle strength for deep breathing or effective coughing (Smeltzer & Bare, 1996: 452). On the other hand, it the negative pressure force is less than –20 $cm.H_2O$, it is a good indicator of the patient's ability to take a deep breath (Weilitz, 1993: 85).

2.3.2 Maximal expiratory pressure (MEP or PE_{max}), a measure of expiratory muscle strength, can be measured in a very similar manner to the measurement of MIP. MEP is measured at total lung capacity (TLC), where the strength of expiratory muscle is optimal. MEP is less useful than MIP for assessing the need for mechanical ventilation. However, this study follows Burns' Weaning Assessment Program (Burn, 1999: 473) which has suggested that in order to predict outcome of weaning, MIP should be greater than 30 $cm.H_2O$.

2.4 Respiratory muscle endurance

2.4.1 Spontaneous tidal volume: The volume of each breath is referred to as the tidal volume. An instrument commonly used at the bedside to

measure volumes is the Wright spirometer. The tidal volume may vary from breath to breath. To make the measurement reliable, the volume of several breaths are measured, and the range of tidal volume together with the average tidal volume are noted. The normal tidal volume is approximately 8 to 10 ml. per kilogram of body weight (Smeltzer & Bare, 1996: 451). For a patient to be ready for weaning from mechanical ventilation, the tidal volume should be more than 5 ml per kilogram of body weight (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 373; Bunburapong, citeds in Satvorn & Wongsa, 2000: 146). It has been reported that patients with chronic obstructive pulmonary disease and tidal volume of less than 300 ml are more prone to weaning failure (Tobin & Yang, 1990).

2.4.2 Vital capacity: Vital capacity represents the patient's maximum expiratory reserve; it is determined by having the patient take a maximal inspiration followed by a maximal expiration. The exhaled volume is the vital capacity to prevent atelectasis and ensure that the patient is moving enough air for gas exchange; a vital capacity of 10 to 15 ml per kilogram is needed (Bridges, 1992: 15).

2.5 Aterial blood gas. Measurements of blood pH, arterial oxygen tension, and carbon arterial dioxide tension are obtained when patients with respiratory problems are managed for adjustment of respiratory therapy. The arterial oxygen tension (PaO_2) indicates the degree of oxygenation of the blood, and the arterial carbon dioxide tension ($PaCO_2$) indicates adequacy of alveolar ventilation. Arterial blood gas analysis aids in assessing the degree to which the lungs are able to provide adequate oxygen and remove carbon dioxide and the degree to which the kidneys are able to reabsorb or excrete bicarbonate to maintain body pH (Smeltzer & Bare, 1996: 452). Moreover, arterial blood gas levels are helpful if known prior to any weaning attempt. Although it is not helpful in predicting the success or failure of weaning, the results can identify patients with acute respiratory acidemia or alkalemia in whom weaning should not be attempted. The normal pH of arterial blood is 7.35-7.45, with the mean being 7.40. If the pH is less than 7.40, it is on the acid side of the mean. A pH less than 7.35 is called acidosis. If the pH is greater than 7.35, it is called alkalosis. The normal range for $PaCO_2$ is 35 to 45 mm, $PaCO_2$ baseline is approximately 40 mmHg. A $PaCO_2$ of greater than 45 mmHg defines respiratory acidosis, which is caused by alveolar hypoventilation. On the other hand, when it is

less than 35 mmHg, it defines respiratory alkalosis, which is caused by alveolar hyperventilation. Then the PaO_2 is a measure of the partial pressure of oxygen in arterial blood (Thelan et al., 1990: 404-405). A PaO_2 should be greater than 60 mm.Hg. On a fraction of inspired oxygen (FiO_2) of less than 0.4 (Scanlan, cited in Scanlan, Spearman, & Sheldon, 1995: 973; Lessard and Brochard, 1996: 475). Thus, these patients must have adequate ABG before weaning from mechanical ventilation.

Psychological readiness

Due to illness, a patient's emotional condition is inextricably linked with his or her physical condition. During weaning from mechanical ventilation, the psychological readiness is one of the most important parts in determining successful weaning (Blackwood, 2000: 147). Dependence on mechanical ventilation can be associated with feeling of nervousness, anxiety, fear, frustration, anger, depression, stress, and uncertainty (Knebel, 1989: A97; Wunderlich, Perry, Lavin & Katz, 1999: 8). Factors associated with etiologies of weaning failure are identified; and inadequate understanding of weaning process can be resulted from communication difficulties (Knebel, 1989: A97). Lack of confidence in the ability to breathe without the ventilator, feeling unable to regulate breathing, and feeling abandoned by the treatment staff can also precipitate weaning failure (Knebel, 1989: A97; Criner & Isaac, 1995: 861). Consequently, patients are not well prepared for their first weaning attempt and may feel depersonalized (Knebel, 1989: A97). Physical signs are associated with stress and anxiety (Scanlan, cited in Scanlan, Spearman, & Shedon, 1995: 976). If the patients are not properly prepared and informed, uncertainty and the inability to communicate this uncertainty will have an effect on stress. Psychological stress may also cause physiological conditions that increase heart rate, blood pressure, respiratory rate, and oxygen demand (White & Porth, 2000: 71). In addition, psychological anxiety and fear may cause further physical distress. This may result in increased airway resistance, work of breathing, and oxygen demand (Blackwood, 2000: 147). These signs lead to unsuccessful weaning (Scanlan, cited in Scanlan, Spearman, and Sheldon, 1995: 976). Thus, before weaning from the ventilation is attempted, critical care nurses should evaluate the level of uncertainty, stress, and impact that psychological variables such as fear, anger, depression, and anxiety may have on the

outcome of the weaning process. The psychological readiness in weaning from mechanical ventilation can be result from providing information, communication techniques, and things that patients can make sense of in the situation from understanding what will happen and being informed of progress. Moreover, instilling confidence is important. Assuring the patients of their ability to breathe can also help them become more confident (Vatanakitkrilert, 1998: 46; Blackwood, 2000: 147). The former needs to be treated with increasing levels of support, whereas the latter needs to be managed by reassurance and encouragement. Weaning strategies that incorporate careful attention to psychological needs can be helpful in getting patients off the ventilator (MacIntyre, 1995: 279).

Uncertainty

Uncertainty results from cognitive appraisal (Lazarus & Folkman, 1984) of an event for which the outcome is unclear or the cues are inadequate, unfamiliar, contradictory, or numerous (Budner, 1962; McIntosh, 1974, cited by Christman, 1990). Besides, uncertainty is defined as the inability to determine the meaning of illness-related events. It is a cognitive state created when the person cannot adequately structure or categorize an event because of the lack of sufficient cues (Mishel, 1988: 225). Furthermore, uncertainty occurs in a situation in which the decision-maker is unable to assign definite values to object and event and/or is unable to accurately predict outcomes (Mishel, 1984: 163; Mishel, 1988: 225).

According to Mishel (1988), factors within the person and characteristics of the stimuli influence the person's perception of illness-related events. When stimuli are perceived as uncertainty, the person is unable to subjectively evaluate the illness, treatment, and hospitalization events. Lack of a cognitive structure of the illness and related event hinders the person from adequately appraising the situation, thus influencing subsequent decision making. Events perceived as uncertain are appraised as threatening and necessitate coping with the uncertainty. Stress occurs when the person is unable to resolve the uncertainty. Individuals may experience uncertainty when the course of their disease or the efficacy of treatment for their disease is unpredictable. In illness experiences, uncertainty may arise if individuals are unable to discern a consistent pattern in the symptoms that they experience. The lack of

consistency makes it difficult for them to interpret what the symptoms signify about their physical health. Uncertainty also may arise if illness-related information is not provided or not understood. The lack of sufficient and/or comprehensible information makes it difficult for individuals to categorize or structure elements within their illness experience.

In the illness experience, uncertainty consists of four factors (Barron, 2000: 521):

(a) Ambiguity of illness cue,

(b) Complexity related to cues about the treatment and the system of care,

(c) Inconsistency related to information received, and

(d) Unpredictability of illness outcomes from illness and treatment cues.

The large model of uncertainty in illness is composed of four stages (Mishel & Braden, 1988: 98 cited by Mishel, 1988) that is (a) the antecedent generating uncertainty, (b) the appraisal of uncertainty as a danger or as an opportunity, (c) the coping effort to either reduce uncertainty appraised as a danger or maintain uncertainty appraised as an opportunity, and (d) the state of adaptation resulting from effective coping.

The uncertainty theory has been developed to explain the patients cognitively process illness-related stimuli and construct meaning for the illness event. The three major antecedents of uncertainty include stimuli frame, structure provider, and cognitive capacities (Deane & Degner, 1998: 119).

Stimuli frame refers to characteristics of the stimulus as perceived by the individual and consists of the following three components (Mishel, 1988: 225):

(a) symptom pattern refers to the degree to which symptoms present with sufficient consistency to be perceived as having a pattern or configuration;

(b) event familiarity refers to the environment as sufficiently novel; and,

(c) event congruency refers to consistency between the expected and the experienced in illness–related events.

Structure providers are the available resources for assistance with interpretation of the stimuli frame and include credible authority which refers to trust and confidence in the healthcare provider, social support which refers to availability of individuals for assistance, and education refers to the knowledge base on which

relevant cognitive maps are developed and used for comparison with current illness–treatment stimuli. Structure provider directly reduces uncertainty and indirectly reduces it through the stimuli frame component (Barron, 2000: 520).

Cognitive capacity refers to the ability to process information. This capacity includes the ability to attend to information. Pain, medication, nutrition, and perception that the environment is dangerous may influence the person's ability to attend to information (Mishel, 1988: 227, cited by Barron, 2000: 520).

Appraisal in uncertainty involves the processes of inference and illusion. Inferences refer to general beliefs about the self and one's interaction with the environment (Mishel, 1988: 225-226) and to the evaluation of uncertainty based on related situation from the past (Mishel, 1990: 256). Personality disposition, such as learned resourcefulness, sense of mastery, and locus of control, may affect the development of inferences (Mishel,1988: 225-226) by influencing perceptions and interpretations of current stimuli that are then encoded into memory. Illusions refer to beliefs arising from uncertainty and generally reflecting a positive outlook. Significant others and healthcare providers may help the person maintain hope by fostering illusions. Inferences and illusions result in appraisals of danger or opportunity. Mishel (1988) emphasizes the experience of uncertainty as neutral until it is appraised.

When uncertainty is appraised as a danger, coping is initiated to reduce the uncertainty and to manage the emotions through mobilizing and affect–management strategies. When uncertainty is appraised as an opportunity, coping is initiated to maintain uncertainty so as to sustain the belief in a positive outcome. Buffing methods are used to block the input of new stimuli that could alter the person's appraisal of uncertainty as an opportunity. Buffering strategies include avoidance, selective inattention to information, minimization of threatening information, and the reordering of priorities. Effective coping via buffering, mobilizing, affect–control strategies, or all three, promotes adaptation. Adaptation serves as the outcome to effective coping with uncertainty.

Lazarus & Folkman (1984) believe that how well a person copes with a stressful situation depends on the individual's appraisal of the situation. If there is uncertainty within the situation, the individual may find it difficult to understand what

is happening and may appraise the situation as stressful (Lazarus & Folkman, 1988: 309-317, cited by Galloway & Graydon, 1996: 113).

According to the aforementioned information, the researcher was interested in providing the patients with the information about weaning in order to infuse them with confidence, understanding, acceptance, and prepare them for an unfamiliar situation. The researcher planed to accomplish those goals by introducing herself followed by explaining their surroundings, nursing activities, the weaning process, and how to act in response to changes in their bodies and their surroundings. By using simple dictions, the information would be easy to understand and the patients' uncertainty would be reduced.

Uncertainty of patients weaning from mechanical ventilation

Weaning from mechanical ventilation by the T-piece method is physiologically and psychologically stressful. When patients perceive that ventilator support will be completely disconnected and is replaced with a T- piece for the first time, they may become threatened with separation from the ventilator and fearful of suffocation, and the patients may react with panic (Clark, 1986: 332), lack of confidence in breathing ability, inability to control breathing (Knebel, 1989; A97) especially when they are not properly prepared and informed (Blackwood, 2000; 147). This may make the patients have a tremendous amount of feeling of uncertainty and stress (Wunderlich, Perry, Labin, & Katz, 1999: 2) which will make weaning impossible.

Tobin & Yang (1990) explored psychological aspects of weaning and found that patients tended to have feelings of discomfort, frustration, anxiety, fear, anger, and uncertainty because they appraised the situation as threatening, with feeling of insecurity, and lack of confidence in breathing. Moreover, patients' frustration in dealing with their feelings of isolation and insecurity feeling may arise from patients' inability to communicate effectively with hospital staff and relatives.

Logan & Jenny (1997) studied patients' weaning experiences and found that mechanical ventilation and weaning are stressful and frightening situations, with tolerating pain, difficult communication, fear, frustration, and uncertainty. Lack of understanding of the situation, lack of knowledge and experience in the situation, physical setbacks, and ambiguous progress all increase the burden of endurance.

Blackwood (2000) and Logan & Jenny (1997) have pointed out that in weaning, undesirable events were described as sleeplessness, frightening situation, pain in the throat (from suction and the endotracheal tube), difficulty in communication, fear, frustration, and uncertainty.

Wunderlich, Perry, Labin, & Katz (1999) explored patients' perceptions of uncertainty and stress during weaning from mechanical ventilation. Patients may experience some uncertainty. In this study, most of the 19 subjects reported feelings of extreme uncertainty and stress at some point during this period. Furthermore, three subjects reported moderate feeling of uncertainty and stress. On the other hand, one subject perceived very little uncertainty, but still reported a moderate feeling of stress related to the inability to effectively communicate. However, one subject reported no feelings of uncertainty because he attributed this to a previous experience on ventilator.

Therefore, patients may have a tremendous amount of uncertainty and stress, so critical care nurses need to initiate appropriate coping strategies to circumvent patients' perceived threat to their well-being. Providing information is one way that critical care nurses can help patients minimize their uncertainty and stress during the weaning trial.

Role of nurses to reduce uncertainty in weaning from mechanical ventilation

Wunderlich, Perry, Labin, & Katz (1999) discovered that providing information is one way critical care nurses can help patients minimize their uncertainty and stress during the weaning trial. The methods of reducing patients' uncertainty of weaning from mechanical ventilation include:

1. Repeated explanation. The intensive care unit patients are subjected to stimulation from noise, equipment, environment and procedures, and they are also affected by sedatives and analgesics, so they may find it difficult to concentrate on and comprehend information. In this study about uncertainty, patients said they needed to hear the same information repeatedly to fully grasp what was happening. Several patients also reported that the critical care nurses, rather than explaining directly to the patients, should relay information to family members so they could repeat the information to the patient later (Marini, 1986: 281). Along with the

patients' understanding, the critical care nurses need to periodically evaluate the patients' understanding of the weaning process and determine if the patients need further explanation.

2 The nurses have to tell patients what is going on when undergoingweaning from mechanical ventilation because the patients do not know what to expert regarding the weaning process.

3. The nurses should create an avenue for two–way communication. Based on previous studies, patients' inability to verbally communicate can cause frustration and stress. If duration of mechanical ventilation is short, nurses can meet patients' basic needs with simple communication techniques such as lip-reading or yes-or-no questions (Fontaine, 1994: 697). However, if the patient has to be on the ventilator for an extended period, the critical care nurse can use another form of communication such as pencil and paper, wipe-off board, alphabet board, or computer-assisted communication to exchange more detailed messages. Each of these alternatives has advantages and disadvantages, and the nurses must assess the patients' capability to use one before implementing it.

4. Nurse should assess the need for restraints. Several subjects complained about the use of restraints. Three subjects believed that they were restrained simply because they were elderly. These comments have reinforced the importance of repeating explanations to minimize the chance of misconception. Other subjects expressed feelings of vulnerability when wrist restraints were used. Some of the subjects' suggestions to help alleviate these feelings were to give them freedom of movement while family members were visiting and to use restraints only while they were sleeping. Determining whether or not to restrain a patient can be a difficult decision for the nurse. Carefully assessing the need for restraints and repeatedly explaining their purpose can help prevent those patients' misconceptions. However, additional studies are needed on assessment tools to guide nurses on risk factors of unplanned extubations and on the type and timing of restraints.

5. A staff development session on stress during weaning should be conducted to investigate psychological variables that may influence the success or failure of the weaning attempt. Critical care nurses are in the best position to help the patients cope with stress and uncertainty. Critical care–nurse-managers need to design

staff-development sessions that address the possible negative effects stress and uncertainty may have on the outcome of the weaning process. All healthcare providers who have direct contact with patients should attend in order to promote an interdisciplinary approach to the psychosocial aspects of weaning. The sessions should include a review of interventions that help minimize patients' stress, such as providing information.

Blackwood (2000) has suggested that weaning from mechanical ventilation intensifies some of these factors as well as producing additional psychological factors. During weaning from mechanical ventilation, these events are described as sleeplessness, pain, difficulty in communication, fear, frustration, and uncertainty. Patients sought constant reassurance in the situation and described nurse' visible presence in the room as a major source of security. Things that increase the burden of endurance include lack of knowledge and experience, physical setback of unsuccessful trials, and ambiguous progress. In order to minimize this, patients tend to seek information, feedback on progress, comfort measures, and emotional support.

The literature review as stated above has shown that these can help reduce uncertainty. However, in this study, the researcher was interested in studying providing information and instilling reassurance in ability to breathe which increase psychological readiness to reduce uncertainty that may help patients successfully wean from mechanical ventilation. Providing information and instilling reassurance in ability to breathe will also be described.

Providing Information

Providing information is one way of reducing uncertainty in patients who have to confront a threatening situation from diseases and medical procedures. According to Mishel (1999), lack of information has been identified as a cause of uncertainty in acute and chronic illness. Uncertainty may also arise if illness-related information is not provided or not understood (Galloway & Graydon, 1996). Healthcare providers can directly reduce uncertainty and indirectly reduce it through the stimuli frame components (Barron, 2000: 520). Healthcare providers have been proposed to reduce uncertainty by providing information and promoting confidence in their clinical judgement (Mishel, 1997: 65). Credible authority, in the form of the nurse and

physician, strengthens the stimuli frame by providing information on the causes and consequences of symptoms (Mishel, 1988: 225). Healthcare providers also share information about the manifestations of the illness and the performance of the healthcare system, which enhances event familiarity (Mishel, 1988: 225).

In experiments to manage uncertainty, the most supportive findings are from education-related studies that provide information and build skills that are important in managing uncertainty (Mishel, 1997: 73-74). The most important source of information about the illness and treatment is the medical specialist or the physician who has primary role in reducing the patient's uncertainty and, if this information is viewed as useful, uncertainty can be reduced (Molleman, et al., 1986: 1-13).

Lyon & Rice (2000) have stated that uncertainty, as a situation factor, can either increase or decrease the intensity of perceived threat depending on how a person viewes situation. Situation factor arises from transaction between a person and his or her environment, and environmental variables include available information (accuracy and clarity), constraints, and tangible resources. There is evidence that uncertainty is positively correlated with appraisal of danger, and information is one factor that leads a person to appraise a similar situation as nonthreatening or as a challenge.

Neumorus studies have indicated that providing information could reduce uncertainty level. In a study on managing uncertainty and managing anxiety, 148 cancer patients reported that contact with experts was the most effective means of reducing uncertainty, while the support of the home environment and fellow patients helped reduce anxiety (Molleman, et al., 1984: 475-480).

Lemaire & Lenz (1995) conducted one group pre-test post-test design to assess knowledge, perceived knowledge and perceived level of uncertainty before and following an educational program about menopause. The subjects were 177 women attending an educational program on menopause and midlife health at a suburban medical center. These results indicated that the level of uncertainty about menopause after receiving an educational program was significantly lower than that before receiving the information ($p < 0.0005$).

Galloway & Graydon (1996) conducted a study to identify the relationships between uncertainty, system distress, and discharge information needs in individuals after a colon resection of cancer. This is a prospective nonexperimental correlation

design whose subjects were 40 patients of colon cancer from three hospitals in a large city in central Canada. This study found that patients had moderate level of uncertainty and moderate number of discharge information needs. Also, an increase in uncertainty was significantly associated with an increase in discharge information needs.

Wunderlich, Perry, Labin, & Katz (1999) explored patients' perceptions of uncertainty and stress during weaning from mechanical ventilation. The subjects were 19 patients, and the study used a retrospective exploratory approach to examine uncertainty and stress during weaning from mechanical ventilator. The results revealed that providing information by critical care nurses and other healthcare workers was helpful in minimizing patients' uncertainty and stress during weaning from mechanical ventilation.

Instilling reassurance

Reassurance is an attempt to communicate with people who are worried, distressed or anxious with the intervention aiming at inducting them to predict that are safe or safer than they presently believe or fear (Teasdale 1992, cited by Teasdale, 1995: 79) and a technique for handling anxiety when it refers to a purposeful, skilled therapeutic move in interpersonal relationship (Teasdale, 1995: 79). Moreover, it may also be defined more narrowly as "the use of reassuring verbalisms, which merely represent an attempt by the therapist to do magic with language, and is usually a matter of the therapist's reassuring himself rather than the patient" (Sullivan, 1954 cited by Teasdale,1995). Similarly, the definition was used by Hays & Larsen (1963), Balint (1964) and Nurse (1980), cited by Teasdale, (1995) when they argued that reassuring interventions tend to deny patients the opportunity to express their emotions.

Instilling reassurance is providing information in order that the patients develop physiological and psychological readiness for weaning. Patients will be assured that they will not be left alone and may be returned to the ventilator at their request. Comfort in terms of informing, reassuring, and trusting will also be provided (Logan & Jenny, 1997: 143). This in turn leads to co-operation and collaboration between the nurse and the patient (Blackwood, 2000: 148). Instilling reassurance by

repetition of information given is an important process of providing information which leads to a practice to increase confidence in the patients' respiratory work regarding the practice during weaning, report on progress during weaning, and instilling of confidence in ability to breathe. In the opinion, it is important that patients practice during weaning regarding deep breathing which helps transport air into alveoli in greater amounts than normal inspiration (Logan & Jenny, 1997: 143; Knebel, 1991, 322-324). This practice increases the lung expansion and the efficiency in the gaseous exchanges between the cells and their fluid medium. Thus, nurses need to inform the patient that deep breathing is highly important to prevent complications in the remaining lung. Moreover, cough efficiency is essential to maintain efficient airway and its dependent alveoli because they help move tracheobronchial secretion out of the lung and assist with re-expanding of the lung. As a result, patients have decreased work of breathing which leads to the normal function of the respiration system and adequate gas exchange. Furthermore, reports on progress help the patients predict what is going on in the future (Wunderlich, Perry, Labin, and Katz ,1999: 4). Patients' contribution is their ability to make sense of and understand the situation, to endure it and to achieve goals (Blackwood, 2000: 148). Finally, instilling of confidence in ability to breathe is assuring the patients of their ability to breathe which can also help them feel more confident (Kaplan, et al., 1984: 322-242, cited by Vatanakitkrilert, 1998: 46). Therefore, all of these techniques can help patients minimize their uncertainty during the weaning process and enhance successful weaning among the patients undergoing weaning from mechanical ventilation.

In conclusion, the review of literature indicates that patients who require mechanical ventilation and will be replaced with the T-piece for the first time may see it as a threatening and unfamiliar situation therefore leading to uncertainty. Uncertainty will hamper the ability to appropriately appraise a threatening situation. In other words, an inaccurate perception of an illness can prevent patients from determining the weaning of event, from assigning values to object and events, and predicting illness outcomes correctly. This can create patients' inability to obtain a clear picture of the threatening event. This may have another effect on patient such as fear, lack of confidence in their breathing ability, and the inability to predict what will happen next in the weaning process. Some patients who are weaning by the T- piece

method became agitated and attempted to have self-extubation. This may underline possible barriers to a successful weaning. Providing information and instilling reassurance will establish confidence, understanding, and acceptance in patients. It will also prepare them for an unfamiliar situation, enabling them to predict the outcome of the process as close to the reality as possible. Therefore, the critical care nurses should prepare patients for psychological readiness before weaning in order to reduce uncertainty by providing information and instilling reassurance. Hopefully, that knowledge and understanding about the caring of patients who are weaning from mechanical ventilation will further develop. This will definitely help to improve the quality of care of patients during weaning from mechanical ventilation.

CHAPTER 3
METHODOLOGY

Research Design

A quasi-experimental two groups pre-test and post-test design was used to examine the levels of uncertainty before and two hours after weaning from mechanical ventilation and to determine the effects of providing information and instilling reassurance on uncertainty in the patients weaning from mechanical ventilation.

Population and sampling

The target population in this study were the patients undergoing mechanical ventilation and had a doctor's order to begin weaning by the T- piece method which was unlimited to the mode and the type of mechanical ventilation. They were admitted into the surgical intensive care unit at the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the surgical intensive care unit and the medical intensive care unit, at the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province.

Purposive sampling was used to select the sample from the population. The number of patients in the control group was 20, and the number of the patients in the experimental group was also 20. The control group received routine nursing care, while the experimental group received of providing information and instilling of reassurance. In other words, if the control and experimental groups were in the same unit, they would find different nursing cares between the groups.

The characteristics of the patients who were eligible for inclusion in the study were as follows:

1. Being between 15 and 75 years of age;
2. Undergoing mechanical ventilation for the first time and for no less than six hours;

3. Weaning from the mechanical ventilation by the T-piece method for the first time;

4. Being conscious and alert;

5. Being able to communicate nonverbally and having no hearing problem; and,

6. Having the score of readiness for weaning assessment equal to or higher than 17.

Setting

This study took place at the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok. It is the medical center with 750 beds and a teaching center for nursing students from the Royal Thai Naval Nursing College. The researcher selected the surgical intensive care unit because it can serve over 80% of the patients undergoing mechanical ventilation. There are seven beds in the surgical intensive care unit. In addition, the second research site, the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province, is a medical center with 420 beds. This hospital comprises two units which are surgical intensive care unit and medical intensive care unit. There are also eight beds in both intensive care units serving over 90.6% and 83.6% of the patients with mechanical ventilation, respectively. In addition, all three units had a similar nurse to patient ratio (1:1), environment, physician, nurses' experience, and the weaning method employed. The similarity of the weaning method includes: giving information before the patients begin weaning by T-piece method with explanation regarding goals of weaning, process of weaning, activities during weaning, and security and care during weaning. Furthermore, those naval hospitals also share the same quality assurance (QA). The Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, has already been certified under the control of ISO 9001 and the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province, has also developed to meet the standard of hospital accreditation (H.A.).

Instrumentation

The research instruments of this study were composed of two parts:

1. The instruments for the intervention

1.1 Plan for providing information before weaning from mechanical ventilation. The researcher created this composition through researching texts, journals, literature reviews, and interviewing the patients after extubation. This plan included: 1) goal of weaning, 2) process of weaning, 3) activity during weaning 4) security and care during weaning 5) communication for aiding request, and 6) instilling of confidence in the ability to breathe. (See Appendix C.)

1.2 Plan for instilling reassurance. For this plan, the researcher created it with the same composition as the plan for providing information. It included: reassurance, encouragement, report on progress, and instilling of confidence in ability to breathe during weaning from mechanical ventilation. (See Appendix D.)

2. The instruments for data collection :

2.1 Demographic characteristics of the patients weaning from mechanical ventilation: These included sex, age, level of education, cause of use for mechanical ventilation, type of operation, duration of mechanical ventilation, and mode of mechanical ventilation before weaning.

2.2 The readiness for weaning assessment (Burn, 1998). (See Appendix E). This instrument was modified from the Burns Weaning Assessment Program created by Burns. This was translated into the Thai language by Wipapat Sungkhaw (2001) and back-translated into the English language by Punchalee Wasanasomsithi. It was used to assess the readiness of the patients for weaning from mechanical ventilation. The readiness for weaning assessment included 24 physiologic variables with the factors classified into general conditions and respiratory assessment categories. The general assessment included cardiovascular and hemodynamic assessment, metabolic assessment, hematocrit, fluid balance, nutritional status, electrolyte, pain, sleep, bowel function, body strength, and chest roentgenogram. The respiratory assessment categories were broken into subcategories of gas flow and work of breathing, airway clearance, endurance, and gas exchange. Assessment factors were scored as follows: “yes” (criteria met), “no” (criteria not met), or “not assessed” (data not available or not obtainable). The answer

"yes" was identical to the point of 1, while the answers "no" and "not assessed" were identical to the point of 0. The weaning score that was more than or equal to 17 points referred to readiness for weaning from mechanical ventilation.

2.3 The uncertainty for weaning assessment: This instrument was modified from Mishel's Uncertainty in Illness Scale (MUIS) (1990) (See Appendix E). It was used to assess the uncertainty in the patients weaning from mechanical ventilation. This instrument was a Likert type and self–administered instrument, consisting of 20 items. Each item have been weighed with scores of 1 to 4 ranging from "strongly disagree" to "strongly agree." Uncertainty consisted of four-score factors:

2.3.1 Ambiguity of illness cues, including 5 items: 1, 2, 3, 4, and 5. Scores for ambiguity ranged from 5 to 20.

2.3.2 Complexity related to cues about the treatment and the system of care, including 4 items: 6, 7, 8, and 9. Scores for complexity ranged from 4 to 16.

2.3.3 Inconsistency related to information received, including 6 items: 10, 11, 12, 13, 14, and 15. Scores for inconsistency ranged from 6 to 24.

2.3.4 Unpredictability of illness outcomes from illness and treatment cues, including 5 items: 16, 17, 18, 19, and 20. Scores for unpredictability ranged from 5 to 20.

The negative items were items 1, 2, 3, 4, 5, 9, 16, and 17, and the positive items were items 6, 7, 8, 10, 11, 12, 13, 14, 15, 18, 19, and 20.

The scoring weights were shown as follows:

	Negative items	Positive items
Strongly Agree	4	1
Agree	3	2
Disagree	2	3
Strongly Disagree	1	4

The lowest and highest possible scores ranged from 20 to 80 and were divided into three levels. Interpretation of the scores are illustrated as follows:

Score 60.00-80.00 points	high level of uncertainty
Score 40.00-59.99 points	moderate level of uncertainty
Score 20.00-39.99 points	low level of uncertainty

Validity and reliability of the instruments

1. Plan for providing information before weaning from mechanical ventilation. This plan was developed by the researcher and subsequently validated by five experts: three nurse instructors who had expertise in nursing care of patients undergoing mechanical ventilation and two nurses, who were experts in nursing care of patients undergoing mechanical ventilation.

After the experts had given comments and suggestion to the increase validity, the researcher had revised the plan accordingly. The researcher tried out the plan of providing information before weaning from mechanical ventilation with ten patients who had similar condition as the study sample. During the pilot study, the researcher looked for the reaction of the patients toward their dialects and understanding. Final revision had been made to this plan before it was used with the subjects of the study.

2. Plan for instilling reassurance: The researcher submitted this plan to the same experts who evaluated the plan for providing information before weaning from mechanical ventilation to check for the precision of the plan. A pilot study was carried out with the same ten patients who received the plan for providing information before weaning from mechanical ventilation in order to check the possibility of application.

3. The readiness for weaning assessment: The researcher used the Thai language instrument (Wipapat Sungkhaw, 2001). It was performed on ten patients who were weaning from mechanical ventilation. It was found that the interrater reliability was 0.92. In this study, the researcher tested for interrater reliability of two nurses with ten patients who had the similar condition as the sample in assessing and recording the same subjects at the same time. The reliability was 0.92.

4. The uncertainty for weaning assessment: The content validity was approved by the following five experts: two nurses who were experts in caring of patients undergoing mechanical ventilation, three nursing instructors who were experts in caring of patients undergoing mechanical ventilation. For the first time, it was performed on ten patients who were weaning from mechanical ventilation, and the Cronbach's alpha was used to test the reliability. The reliability was 0.68. Thus, the researcher revised the sentences and used the Cronbach's alpha to test for the

reliability again. As for the second round, it was performed on ten patients, and the reliability was 0.82.

After the plan was experimented with 40 patients, Cronbach's alpha was used to test the reliability which was finally equal to 0.87.

Data collection

The researcher requested for a permission to collect data from the Faculty of Gradute Studies, Mahidol University, and sent the letter to the Director of Somdej Prapinklao Hospital, (Naval Medical Department) Bangkok, and the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province. After receiving the approval, the researcher met the chief of Medical Division, the supervisor nurse, and head nurse to explain the objectives and procedures of the research. Data collection was conducted in the following steps:

1. At 06.00 am, the researcher surveyed the patients undergoing mechanical ventilation, patients' charts and doctors' order of weaning from mechanical ventilation at the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok on Saturdays and Sundays, and at the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province, on weekdays.

2. The researcher assessed and selected using the purposive sampling without ramdomization because of ethical concern. In other words, if patients in both groups were admitted to the same unit and at the same time, they would find different nursing care among the group. The researcher first started data collection from 20 patients in the control group and continued until was completed. After that, data collection would be conducted in the experimental group.

3. The researcher performed the research process and collected data from each group, as shown in Table 1, but both groups were assessed for the readiness for weaning from mechanical ventilation, and their scores had to be equal to or more than 17, as shown in Table 1.

Table 1: The process of data collection in the control group and the experimental group

Control group	Experimental group
As soon as the patients had the doctor's order to wean from mechanical ventilation by the T-piece method: 1. The researcher recorded demographic data and the information of weaning ventilation from the patients' chart 2. The researcher assessed readiness for weaning (the score ≥ 17) 3. The researcher assessed uncertainty for weaning (1st assessment) 4. After that, the patients received **routine nursing care** before weaning from mechanical ventilation including team assignment, case method and sometime functional method. The content of the information consisted of: • Goal of weaning • Process of weaning • Activity during weaning • Communication for aiding request 5. Weaning by the T-piece method	As soon as the patients had the doctor's order to wean from mechanical ventilation by the T-piece method: 1. The researcher have recorded demographic data and the information of weaning ventilation from the patients' chart 2. The researcher assessed readiness for weaning (the score ≥ 17) 3. The researcher assessed uncertainty for weaning (1st assessment) 4. After that, the patients received providing information and instilling reassurance before and after weaning from mechanical ventilation. Patients received a continuous care **before weaning** took place for approximately 20 minutes consisting of the contents related to: • Goal of weaning • Process of weaning • Activity during weaning • Security and care during weaning • Communication for aiding request • Instilling confidence in ability to breathe 5. Weaning by the T-piece method 6. **During weaning** the **1st visit** at one hour later, the patients received providing information and instilling reassurance for approximately ten minutes consisting of the contents related to:

Control group	Experimental group
	• Instilling reassurance and encouragement • Activity during weaning • Report on progress • Instilling confidence in ability to breathe 7. **During weaning** the **2nd visit** at one later, the patients received providing information and instilling reassurance for approximately ten minutes consisting of the contents related to: • Instilling reassurance and encouragement • Activity during weaning • Report on progress • Instilling confidence in ability to breathe
6. Two hours after weaning by the T-piece method, the researcher assessed the uncertainty for weaning (2nd assessment).	8. At two hours after weaning by the T-piece method, the researcher assessed the uncertainty for weaning (2nd assessment).

Protection of human subjects

As clinical issues in this study were deemed are crucial, any identifying names and characteristics of the patients that might affect them would not be revealed. An informed consent for the record was obtained and confidentiality was strictly maintained to protect the patients' identification and information. A list of names and written records was destroyed after data analysis was completed.

Data Analysis

The data were analyzed as follows:

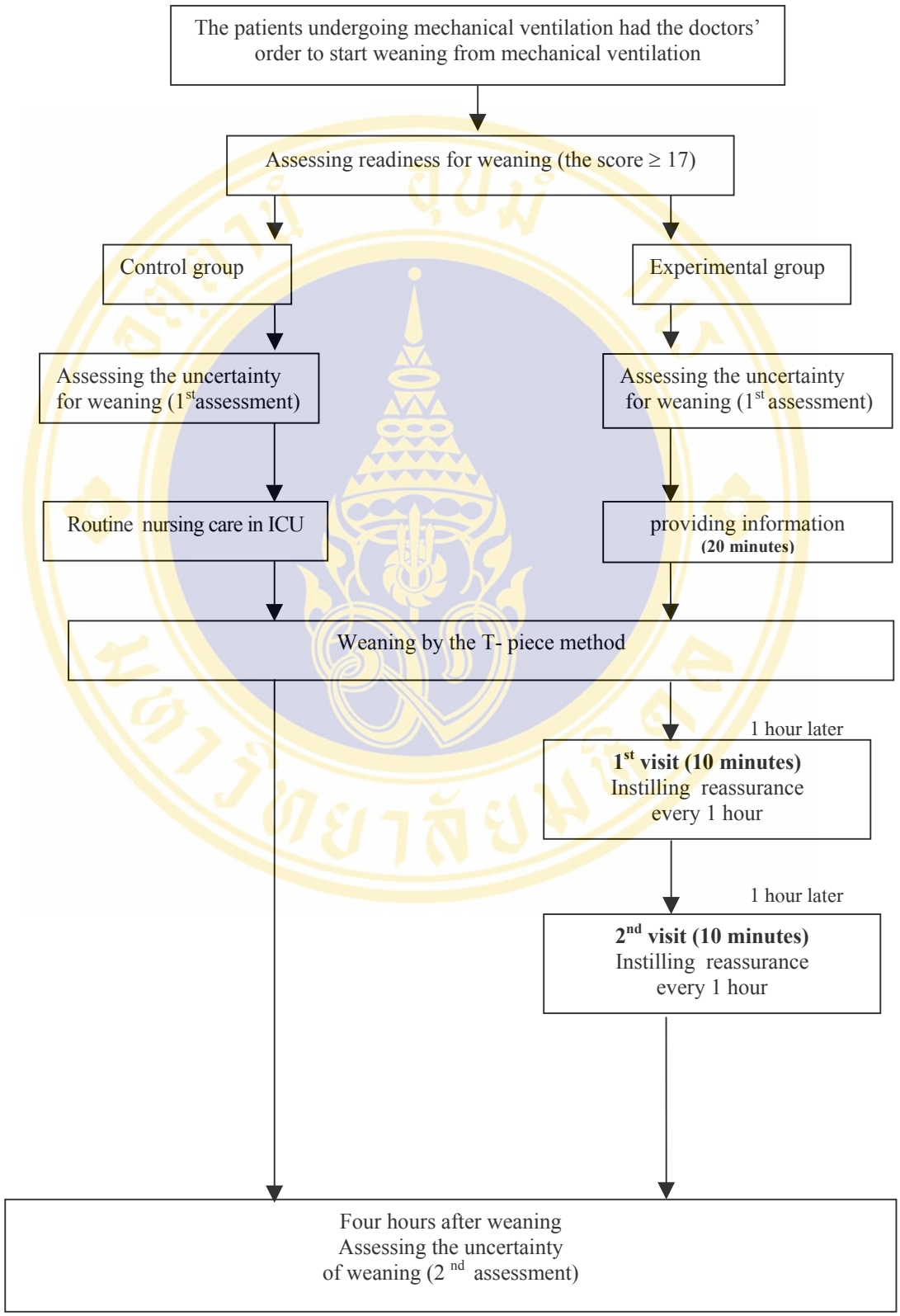
1. Descriptive statistics was conducted to test compare the demographic characteristics and the levels of uncertainty of the patients weaning from mechanical ventilation.

2. Chi-square test was conducted to test for the difference of mean scores of the demographic characteristics between the control group and the experimental group.

3. Paired t-test was conducted to examine the difference of the mean scores of uncertainty before and after the intervention in the control group and the experimental group.

4. Independent t-test was conducted to examine the difference of the mean scores of uncertainty before and after the intervention between the control group and the experimental group.

Figure 2: The process of collecting data



CHAPTER 4
RESULTS

This study was a quasi-experimental pre-test-post-test design which was conducted to examine the effect of providing information and instilling reassurance on uncertainty in weaning from mechanical ventilation. The subjects in this study were 40 patients undergoing mechanical ventilation and had a physician's order to begin weaning by the T-piece method. The total number of subjects was divided into the control and the experimental groups each of which consisted of 20 members. The subjects were composed of 24 patients from the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and 16 patients from the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province. The control group received routine nursing care, while the experimental group obtained providing information and instilling reassurance. The data collection was conducted from March 2003 to December 2003. The results of the study are presented in the tables in the following sequence:

Part 1: Demographic characteristics of the sample.

Part 2: Result of the comparison of mean scores of readiness of weaning before the intervention between the experimental and control groups

Part 3: Result of the analysis of the levels of uncertainty before and two hours after weaning from mechanical ventilation in the experimental group and the control group

Part 4: Result of the analysis of the factors of uncertainty before and two hours after weaning from mechanical ventilation in the experimental group and the control group

Part 5: Result of the comparison of the mean scores of uncertainty before and after the intervention within the experimental group and the control group

Part 6: Result of the comparison of the mean scores of uncertainty before and after the intervention between the experimental and control groups

Part 7: Demographic characteristics of the sample in the experimental group after the intervention

Part 1: Demographic characteristics of the sample.

Table 2: Number, percentage, and Chi-square test classified by sex, age, level of education, and cause of use of mechanical ventilation (non-operation) in the experimental group and the control group (n=40)

Characteristics	Experimental group (n=20)		Control group (n=20)		χ^2
	Number	%	Number	%	
Gender					.311^{ns}
Male	15	75	12	60	
Female	5	25	8	40	
Age (years)					.659^{ns}
16-30	5	25	2	10	
31-45	7	35	9	45	
46-60	7	35	8	40	
61-80	1	5	1	5	
Level of education					.338^{ns}
Elementary school	8	40	10	50	
High school	4	20	7	35	
Certificate	6	30	2	10	
					.153^{ns}
Cause of use of mechanical ventilation					
• **Non - operation**					
Abdominal disease	13	65.00	7	35.00	
Respiratory disease	2	10.00	-	-	
Cardiovascular disease	4	20.00	9	45.00	
Chest trauma	1	5.00	2	10.00	
Chronic renal failure	-	-	1	5.00	
Malaria	-	-	1	5.00	

ns = non-significant; P > .05

Table 3: Number, percentage, and Chi-square test classified by cause of use of mechanical ventilation (operation), duration of use of mechanical ventilation, mode of mechanical ventilation before weaning, and the scores of readiness for weaning in the experimental group and the control group (n=40)

Characteristics	Experimental group (n=20)		Control group (n=20)		χ^2
	Number	%	Number	%	
• **Operation**					.664 ns
Abdominal operation	10	50.00	7	35.00	
Chest operation	1	5.00	2	10.00	
Neck operation	1	5.00	1	5.00	
Pericardial operation	1	5.00	-	-	
Duration of use of mechanical ventilation (days)					.244 ns
1-3	15	75	10	50	
4-6	4	20	7	35	
7-9	1	5	3	15	
Mode of mechanical ventilation before weaning					.562 ns
PSV	3	15	1	5	
SIMV AND PSV	5	25	5	25	
CPAP AND PSV	12	60	14	70	
The scores of readiness for weaning (points)					.256 ns
17	3	15	6	30	
> 17	17	85	14	70	

ns = non-significant; P > .05

Table 2 and Table 3 display frequency, percentage, and demographic data of the patients. As shown in the tables, most patients were male, constituting 75% of the experimental group, and 60% of the patients in the control group. The largest group of patients ranged in age from 31 to 45 years (35% and 45% of the experimental group and the control group, respectively). Forty percent of the patients in the experimental group finished elementary school, whereas half of the patients in the control group

(50%) had elementary school. Most patients in the non–operation group had abdominal disease, constituting 65% in the experimental group, while 45% of the patients in the control group were cardiovascular disease. Abdominal operation was the most common cause of the use of mechanical ventilation (50% and 35% of the experimental group and the control group, respectively). Moreover, half of the patients in the control group(50%) were non-operation. The majority of the patients in both groups used mechanical ventilation between one and three days (75% of the experimental group and 50% of the control group, respectively). Also, more than a half of the patients in both groups (60% and 70% of the experimental group and the control group, respectively) used CPAP and PSV. Almost all of the patients in both groups had the scores of readiness for weaning more than 17 points. Finally, comparisons of the demographic characteristics of the patients between groups using Chi-square test revealed that there were no statistically significant differences between both groups.

Part 2: Result of comparison of the mean scores of the readiness of weaning before the intervention between the experimental and control groups (n=40)

Table 4: Comparison of the mean scores of readiness of weaning before the intervention between the experimental and control groups by using statistical independent t-test (n=40)

Readiness for weaning	Mean	S.D.	t
The control group	20.35	1.63	8.90^{ns}
The experimental group	20.75	1.77	

ns = non-significant; P > .05

Table 4 shows that the mean scores of readiness for weaning before the intervention in both groups were not statistically significantly different (P > .05).

Part 3: Result of the analysis of levels of uncertainty before and two hours after weaning from mechanical ventilation in the experimental group and the control group

Table 5: Number and percentage of levels of uncertainty before and two hours after weaning from mechanical ventilation in the experimental group and the control group (n=40)

Group	Level of uncertainty		
	Mild Number (%)	Moderate Number (%)	High Number (%)
Experimental group			
- before weaning	-	17(85)	3(15)
- 2 hours after weaning	15(75)	5(25)	-
Control group			
-before weaning	-	20(100)	-
-2 hours after weaning	-	19(95)	1(5)

Table 5 shows that before weaning from mechanical ventilation by the T-piece method, more than half of the patients in the experimental group had moderate uncertainty. High uncertainty was found to rank second, making up another 15%. On the other hand, all of the subjects in the control group had moderate uncertainty constituting 100%. Two hours after weaning from mechanical ventilation, three quarters of the patients in the experimental group (75%) had mild uncertainty, followed by moderate uncertainty (25%). In contrast, almost all of the patients in the control group had moderate uncertainty, making up 95%, and one of them had high uncertainty.

Part 4: Result of analysis of the factors of uncertainty before and two hours after weaning from mechanical ventilation in the experimental group and the control group

Table 6: Mean and standard deviation of factors of uncertainty level scores between before and after intervention in the experimental group and the control group (n=40)

Uncertainty Factor	Before				After			
	Control Group		Experimental Group		Control Group		Experimental Group	
	Mean	S.D	Mean.	S.D.	Mean	S.D.	Mean	S.D.
1. Ambiguity of illness cues	14.00	2.36	15.30	2.08	13.40	2.30	9.65	2.60
2. Complexity related to cues about the treatment and the system of care	8.20	1.40	7.85	1.46	8.30	1.63	6.15	0.99
3. Inconsistency related to information received	15.10	1.97	15.90	2.83	14.80	2.24	10.50	2.61
4.Unpredictability of illness outcome from illness and treatment cues	12.05	2.21	13.60	2.30	12.35	2.28	9.15	2.72
Total	49.35	7.94	52.65	8.67	48.85	8.45	35.81	8.92

Table 6 indicates that after the intervention the mean scores of the experimental group which were complexity related to cues about the treatment and the system of care was the lowest (6.15). There was an increase in the mean score of uncertainty in the control group in the item of unpredictability of illness outcome from illness and treatment cues (Mean = 12.35; S.D. = 2.28), followed by the item of complexity related to cues about the treatment and the system of care which was found to rank second (Mean = 8.30; S.D. = 1.63). In addition, the lowest mean score was complexity related to cues about the treatment and the system of care (Mean = 8.30; S.D. = 1.63).

Part 5: Result of comparison of the mean scores of uncertainty before and after the intervention within the experimental group and the control group

Table 7: Comparison of the mean scores of uncertainty before and after the intervention within the experimental group and the control group using statistical paired t-test (n = 40)

Group	n	Mean	S.D.	t
Experimental group				
-before the intervention	20	52.50	6.33	
				8.957^{***}
-after the intervention	20	36.40	6.30	
Control group				
-before the intervention	20	49.75	4.18	
				$.418^{ns}$
-after the intervention	20	49.40	5.14	

$^{***}p<.001$, ns = non-significant; $p > .05$

Table 7 illustrates that before and after the intervention, the mean scores of uncertainty in the experimental group was 52.50 and 36.40, and the standard deviations were 6.33 and 6.30. Uncertainty after the intervention was significantly lower than that before the intervention ($p < 001$). On the other hand, the mean score of uncertainty before the intervention in the control group was 49.75, and the score became 49.40 after two hours, so there was no statistically significant difference ($p > .05$).

Part 6: Result of comparison of the mean scores of uncertainty before and after the intervention between the experimental and control groups

Table 8: Comparison of the mean scores of uncertainty before the intervention between the experimental group and control groups using statistical independent t-test (n = 40)

Group	n	Mean	S.D.	t
Experimental group	20	52.50	6.33	1.622^{ns}
Control group	20	49.75	4.18	

ns = non-significant; p > .05

Table 8 shows that the mean scores of uncertainty in the experimental group and the control group were 52.50 and 49.75, respectively. The mean scores of uncertainty between the experimental group and the control group were different, but the difference was not statistically significant (p > .05).

Table 9: Comparison of the mean scores of uncertainty after the intervention between the experimental and control groups using statistical independent t-test (n = 40)

Group	n	Mean	S.D.	t
Experimental group	20	36.40	6.30	-7.146^{***}
Control group	20	49.40	5.14	

$^{***}P < .001$

Table 9 illustrates that after the intervention, the mean score of uncertainty in the experimental group was 36.40, while the mean score in the control was 49.40. Therefore, when the t-test independent sample was calculated, the mean score of uncertainty of the experimental group was significantly lower than that of the control group (p < .001).

Part 7: Demographic characteristics of the sample in the experimental group after the intervention

Table 10: Number and percentage classified by opinions after the intervention in the experimental group

Opinion	Experimental group (N = 20)	
	Number	%
1. Understanding of the process of weaning	7	35
2. Security/confidence	6	30
3. Satisfaction	7	35
Total	20	100

Table 10 displays frequency and percentage of opinions after the intervention in the experimental group. It was shown that the number of the patients who understanding of the process of weaning was nearly equal to that of the patients who were secure and had confidence in weaning.

Table 11: Number and percentage classified by causes of loss cases in the experimental group

Causes of loss	Experimental group (N = 20)	
	Number	%
1. Lack of status in questioning	5	50
2. Need of rest	3	20
3. Exhaustion	2	30
Total	10	100

Table 11 indicates that lack of status in questioning patients accounted for half of all the total loss of patients in the experimental group.

CHAPTER 5
DISCUSSION

The purpose of this study was to evaluate the effects of providing information and instilling reassurance on uncertainty in weaning from mechanical ventilation. In this study, findings were discussed in relation to the purposes of the study. They were presented for in three parts as follows:

Part I : The level of uncertainty before and after the experiment in the patients who received providing information and instilling reassurance and the patients who received routine nursing care.

Part II : Discussion related to purpose 1 of the study: To study the level of uncertainty before and after the intervention in the patients who received providing information and instilling reassurance and the patients who received routine nursing care.

Part III : Discussion related to purpose 2 of the study: To compare the level of uncertainty at two hours after the intervention between the patients who received providing information and instilling reassurance and the patients who received routine nursing care.

Part I: To study the level of uncertainty before and after the experiment of the patients who received providing information and instilling reassurance and the patients who received routine nursing care

1.1 The levels of uncertainty before weaning from mechanical ventilation

The result regarding levels of uncertainty is shown in Table 5. It indicates that before weaning from mechanical ventilation with T-piece, moderate uncertainty was reported in almost all patients in both groups (85% and 95% of the experimental group and the control group, respectively). High uncertainty was found to rank second (15% and 5% of the experimental group and the control group, respectively)

In general, the patients from which mechanical ventilation would be completely disconnected and be replaced with T-piece for the first time felt that once the ventilator was removed, they would lack confidence in their breathing ability, fear having inability to control breathing without the ventilation, and have the inability to predict what would happen (Criner & Isac, 1995: 857-859; Wunderlich, Perry, Lavin, & Katz, 1999: 4). Therefore, uncertainty increases in this period.

In this study, in most of the patients, uncertainty was considered rather moderate than severe. One possible explanation is that many patients (50% of the experimental group and 35% of the control group) received mechanical ventilation after abdominal operation (Table 3). Information in particular coping strategies had also been demonstrated to help increase their resistance to stressors (Zimmer, 1983: 282). Providing information in the preoperative period can reduce uncertainty and stress. Healthcare providers have been proposed to reduce uncertainty by providing information and promoting confidence. Thus, it is possible that at the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province, surgical patients should receive preoperative instruction, including how long they will be intubated and how the machine will make them unable to speak from healthcare providers, as well as intervention about pain intensity, distress, and physical complications. In this study, most of the patients in both groups used CPAP and PSV (Table 3); CPAP and PSV decreases the workload of breathing and increases the patients' ability to initiate spontaneous breathing efforts.

This preoperative instruction is considered to be an effective technique to decrease uncertainty about treatment possibilities and give patients ability to predict what will happen. Therefore, surgical patients tend to have more positive experience and less emotional distress during mechanical ventilation than medical patients. Although in this study, most patients received mechanical ventilation after abdominal operation, either upper or lower abdominal operation, all of them had the score of readiness for weaning equal to or higher than 17 points, and their readiness for weaning before the intervention was not significantly different ($t = .890$; $P>.05$) (Table 3) between the experiment group and the control group which indicated the patients' readiness for weaning. This finding indicated that the scores of readiness for

weaning did not influence the uncertainty level. Therefore, it did not affect lung expansion and could enhance their senses of self-confidence to breathe, which in turn resulted in decreased uncertainty during weaning from mechanical ventilation. Another possible reason is that most of the patients received short-term mechanical ventilation. The duration of use of the ventilator was one to three days in 75% of the experimental group and 50% of the control group (Table 2). Criner & Issac (1995: 859) point out that the patients with prolonged mechanical ventilation will have a feeling of anxiety or fear during mechanical ventilation, and stressful or unpleasant feeling. This finding is inconsistent with a previous study of Ausuk (1995: 40) which indicated that the patients using a ventilator for more than five days will be worried and lack confidence to breathe more than those with a shorter period of use.

1.2 The level of uncertainty after weaning from mechanical ventilation

The result regarding the levels of uncertainty is shown in Table 4. It points out that one-quarter of the patients in the experimental group (25%) had moderate uncertainty, while most of the control group (95%) had moderate uncertainty. Only one patient had high level of uncertainty. It may be because the patients received providing information and instilling reassurance before and during weaning. Therefore, levels of uncertainty did not increase. In the control group, most of the patients had moderate uncertainty, while one patient had high uncertainty. In this study, the patients in the experimental group received information and instilling reassurance continuously every hour for two hours which had an effect on psychological readiness and cooperation during weaning, reduced threatening feeling, and decreased stress and fear. Furthermore, the patients' concerns and comfort were essential in building up patients' trust and confidence and developing the right attitude to reduce uncertainty.

Part II: Discussion related to purpose 1 of the study: To study the level of uncertainty before and after the experiment of the patients who received providing information and instilling reassurance and the patients who received routine nursing care

Hypothesis 1: The mean score of uncertainty in the experimental group will be statistically significantly decreased after providing information and instilling reassurance are performed.

The mean scores of uncertainty between before and after the intervention in the experimental group showed statistically significant difference (P<.001) (Table 6). The data also showed that the patients in this study had the mean score of uncertainty of 52.50 (S.D. = 6.33) before the intervention and 36.40 (S.D. = 6.30) after the intervention. This finding indicated that the mean uncertainty scores were decreased after the patients had received the intervention. After having considered these four factors of uncertainty, it was found that the mean scores of uncertainty were decreased dramatically (Table 6).

According to Mishel (1984, 1988), uncertainty is an explanation for the cognitive processing and construction of meaning in illness and related events for which the outcome is unclear, ambiguous, and complex in the systems, events, or situations being experienced, with inadequate information. Patients perceive that mechanical ventilation will completely be disconnected and will then be replaced with a T-piece for the first time. Because they do not have previous weaning experience, they misunderstand that it is such a threatening and unfamiliar situation. Situation factor arises from the transaction between persons and his or her environment. They may lack confidence in this breathing ability, fear having inability to control breathing without the ventilator, feel abandoned by the healthcare staff causing inability to speak or communicate, and may also misunderstand the weaning process (Kneble, 1989: A97; Criner & Isaac, 1995: 857-859). Healthcare providers can directly reduce uncertainty and indirectly reduce it through the stimuli frame component (Barron, 2000: 520). They can also share information about manifestations of the illness and the performance of the healthcare system, which enhances event familiarity (Mishel, 1988: 225). Information is only a factor leading to appraisal of a similar situation as non- threatening or as a challenge, and patients' contributions are their ability to make

sense of and understand the situation, to endure it, and to achieve goals. This is because information is thought to reduce uncertainty by providing a framework to help restructure the meaning and context of the situation through increasing knowledge.

In this study, the patients in the experimental group who received providing information and instilling reassurance started the program with providing information including goals of weaning, process of weaning, activities during weaning, security and care during weaning, communication for aids during weaning, and instilling confidence in ability to breathe. The researcher provided the information by applying a flip chart. Then, pictures were shown in order to familiarize the subjects with weaning. Consequently, the patients would better be able to accurately understand and appraise the situation and to effectively increase ability to make a decision, solve the problem, and accurately predict outcomes. According to Mishel (1988), providing information and credible authority via the establishment of trusting relationships with healthcare providers have the potential to reduce uncertainty. This is consistent with previous studies conducted by Wunderlich, Perry, Labin & Katy (1999) which revealed that providing information by critical care nurses and other healthcare workers was helpful in minimizing patients' uncertainty and stress during weaning from mechanical ventilation. Furthermore, the study of Lamaire, & Lenz (1995) has indicated that the level of uncertainty about menopause after receiving an education program was significantly lower than that before receiving the information.

The present study combined instilling reassurance during weaning including reassured and encouraged patients with activities during weaning, report on progress, and instilling confidence in ability to breathe. During weaning from mechanical ventilation with the T-piece method, the patients felt extremely uncertain and stressful, or in some respects, felt abandoned by the treatment staff. Moreover, the patients in the intensive care unit generally had to endure noise, equipment, environment, and procedures, and they are also affected by sedatives and analgesics, so they may find it difficult to concentrate on and comprehend information. Thus, patients who receive repeated advice or information will have improved relationships with nurses. Patients could express their feelings by using communication techniques such as lip-reading or pencil and paper, all of which considered a method to decrease

uncertainty (Wunderlich, Perry, Labin & Katy: 1999) because they enhance relative feeling of self confidence and positive aspects of their situation. Although Orlinsky et al. (1994, cited in Sylvie, Nancy, Francois, 2002: 492) reviewed studies of psychotherapy and found that reassurance encouragement was not very powerful in changing psychological outcomes, it was concluded that reassurance and encouragement can be used safely because none of the studies reviewed provided evidence that it could be harmful. This result disagrees with this conclusion. In this study, the researcher found that instilling reassurance was linked to a significant decrease in uncertainty in the experimental, the one group. In the interview, after extubation, one patient with the moderate scores before and at two hours after weaning was male. The duration of using ventilator was three days and the score of readiness for weaning was 22 points. He was 45 years old. The cause of mechanical ventilator was respiration. The score of uncertainty before weaning was 49 points. He said, "I'm afraid and lonely during weaning and I felt secure after you had explained about the process of weaning." He also said, "thank you for your information." After the intervention, the score of uncertainty was 41. Consequently, providing information and instilling reassurance tended to decrease uncertainty of the experimental group.

Part III: Discussion related to purpose 3 of the study: To compare the level of uncertainty two hours after the experiment of the patients who received providing information and instilling reassurance and the patients who received routine nursing care

Hypothesis 2: The mean scores of uncertainty after the intervention between the control and experimental groups will be different.

The result revealed that the uncertainty between the patients in the experimental group, who received providing information and instilling reassurance, and the patients who received routine nursing care was significantly different ($P<.01$), as shown in Table 8. Therefore, the second hypothesis of this study was supported.

When considering the four factors of uncertainty between the control group and the experimental groups was found that the mean scores of uncertainty after intervention in the control group were 13.40, 8.30, 14.80, and 12.35, and the standard

deviations were 2.30, 1.63, 2.24, and 2.28, respectively. In addition, the mean scores of uncertainty in the experimental group were 9.65, 6.15, 10.50, and 9.15, and the standard deviations were 2.60, 0.99, 2.61, and 2.72, respectively. It is obvious that the mean scores and standard deviations of uncertainty decreased in every factor (Table 6).

When considering in detail each item of the four factors of uncertainty after the intervention, the finding were as follows:

Factor I: **Ambiguity of illness cues**

In the control group, it was found that the highest mean score was found in the item 4,"Weaning process is too complex to figure out" (Mean = 3.10; S.D. = 0.72), followed by item 3 " Because of the unpredictability of weaning, I cannot plan for the future" (Mean = 2.90, S.D. = 0.85). These may cause patients to still perceive ambiguity in the situation, fear of death, be unable to predict what would happen during weaning, and feel vulnerable and alone. In short, patients felt extremely uncertain. According to Lazarus & Folkman, how well a person copes with a stressful situation depends on the individual's appraisal of the situation; the individual may find it difficult to understand what is happening and may appraise the situation as stressful. Things that increase the burden of endurance which refers to situation or events patients have to bear without having control are physical setbacks of unsuccessful trials and ambiguous progress. This may result in increased work of breathing, oxygen demand, tightness of the chest muscles, hyperventilation leading to early fatigue and inadequate gas exchange, all of which result in unsuccessful weaning (Blackwood, 2000: 147)

In the experimental group, the mean score of uncertainty of every item of decreased after the intervention (Appendix F). The patients received information about weaning from mechanical ventilation before and during weaning. The control of providing information would be related to goals of weaning, process of weaning, activity during weaning, security and care during weaning, communication for aiding requests, and instilling of confidence in ability to breathe. The contents were divided into six topics which took about 20 minutes. In addition, the researcher provided information together with the use of a flip chart and demonstration. The picture and demonstration made patients became interested and understand the information in

detail. Moreover, the researcher repeated the information and reassured the patients during the first visit (one hour after weaning) and the second visit (one hour later), and the patients received instilling of reassurance for approximately ten minutes consisting of the contents related to: instilling reassurance, encouragement, report on progress, and instilling of confidence in ability to breathe. Instilling reassurance was an the appropriate and suitable method for the development of knowledge, enabling the patients to assess the situations accurately and supporting the patients in developing their understanding of what the event was. The information given should be specific data, precise and easy, helping the patients in weaning to develop their knowledge about what is happening so as to assess the situation accurately.

Factor II: Complexity related to cues about the treatment and the symptom of care

When considering each item of complexity related to cues about the treatment and the system of care, it was found that the highest mean score was found in item 9 "The weaning process I am receiving has a known probability of success" (Mean = 2.90; S.D. = 0.45), followed by item 6 "When I have tried, I understand what this means about my condition" (Mean = 2.2; S.D. = 0.77). The possible underlying reasons as follows:

When weaning from mechanical ventilation by the T-piece method patients may have a lack of confidence in their breathing ability, fear having inability to control breathing without the ventilation, or feel abandoned by the healthcare staff. According to Blackwood (2000), the relationship between nurses and patients in ICU can be close. Nurses are in continued close contact with patients. In this study, the patients in the control group received usual information about weaning, but there was no guideline. Since nursing activities are based on differences in knowledge, capability, and experience, weaning information and practice from individual patients can be varied such as process of weaning, patients' readiness of general condition, the readiness of the respiratory system, and physical symptoms. Patients would receive different information regarding weaning and some may not receive proper explanation or inappropriate instruction. This would result in complexity in the symptom which may lead to a lack of confidence in ability to breathe. Hence, the highest mean scores

of level of uncertainty in complexity related to cues about the treatment and the system of care found in items 9 and 6.

In the experimental group, the mean scores of uncertainty of every item decrease after the intervention (Appendix F). The researcher gave reassurance by building up relationships with the patients with encouragement and cares with sympathy, by staying with them and being supportive and reassuring and using nonverbal skills, such as direct eye contact with the patients and touching them, with continuous follow-ups to further provide information about process of weaning and symptoms during weaning such as fatigue, exhausted and tired. Similarly, patients stressed the need for truthful information regarding their physical status, with the content and language easily understood with clear meaning.

This method enabled the experimental group to understand the problem of weaning, they felt warm and confident in success of weaning which helped establish a trusting and good relationship between the researcher and patients. All of which decreased uncertainty and increased confidence in weaning.

Factor III: **Inconsistency related to information received**

When considering each item of inconsistency related to the information received, it was found that the highest mean score was found in item 13 “Because of the treatment, what I can do and cannot do keeps changing” (Mean = 3.10; S.D. = 0.55) followed by item 10 “I have a lot of questions about weaning” (Mean = 2.90; S.D. = 0.79) These finding could be to explained further as follows:

The patients in the control group received usual information before weaning. However, there was no guideline for the weaning procedure. Since nursing activities are based on difference in knowledge, capability, and experience, this study showed responses to specific items in the uncertainty scale that uncertainty was attributable not only to the inconsistency and unpredictability of present and anticipated symptoms of weaning, but also to the lack of clarity and comprehensibility of information received from healthcare providers such as activities during weaning. Some patients incorrectly practiced it at the first time. Moreover, during weaning patients may receive providing information and instilling reassurance from the researcher. However, this information might not be enough to decrease their

uncertainty resulting from weaning. Similarly, Galloway & Graydon maintain that uncertainty may also arise if illness related information is not provided or not understood. The lack of sufficient and comprehensible information makes it difficult for individuals to categorize or structure elements with their illness experience.

In the experimental group, mean score of uncertainty of every item decreased after the intervention (Appendix F). The researcher provided information and instilled reassurance in patients during weaning related to activities during weaning such as deep breathing, which helped transport air into alveoli in greater amounts than normal inspiration and the efficiency in the gaseous exchanges to prevent complication in the remaining lung, and cough efficiency which helped move tracheobronchial secretion out of the lung. The researcher also gave opportunity to express freely their worries and doubts every hour. Therefore, repeatedly giving explanation until patients express understanding can help prevent patients' misconceptions leading to decrease uncertainty (Wunderlich, Perry, Labin & Katy, 1999)

Factor IV: Unpredictability of illness outcome from illness and treatment cues

In the control group, the highest mean score was found in item 17 "It is difficult to determine how long I can care for myself." The second highest mean score was found in item18 "I can't generally predict the extubation."

In the control group, the patients were unable to predict the process of weaning adequately. It may be due to the fact that uncertain situations were stressful because they could not recognize clearly what would happen in the future. Their satisfaction was illustrated in their responses such as "I could not imagine the situation by myself about communication" and "I was afraid of having no voice." These showed that explanation of the event was impossible became the patients did not receive adequate assistance they needed leading to uncertainty.

In the experimental group, the researcher provided information telling patients what was going on when they underwent weaning from mechanical ventilation, because the patients did know what to expect regarding the weaning process and progress in weaning every hour such as ability to speak and eat after extubation. Thus, it gave the experimental group opportunity to receive accurate understanding

and knowledge, to develop the ability to predict unknown events in advance, and to create a warm secure and feeling, confidence, and pride to themselves. This is consistent with the idea of Blackwood, (2000: 149) who claims that the perception of progress during weaning enhances positive feelings and hope about weaning.

CHAPTER 6
CONCLUSION

This study was a quasi-experimental pre-test-post-test design to examine the level of uncertainty before and two hours after weaning from mechanical ventilation and to determine the effects of providing information and instilling reassurance on uncertainty in weaning from mechanical ventilation. The subjects in the study were 40 patients weaning from mechanical ventilation with the T-piece method and were divided into the control and experimental groups with 20 patients in each group. The control group received routine nursing care and the experimental group received providing information and instilling reassurance. All 40 patients weaning from mechanical ventilation entered into the study while they were hospitalized at the intensive care unit of Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi Province. Data collection was conducted from March 2003 to December 2003.

The subjects were selected by a purposive sampling basis according to the inclusion criteria but they were not randomized because of ethical concern. In other words, if the patients in the both groups were admitted to at the same time, they would find different nursing cares among the groups. The researcher first started data collection from 20 patients of the control group and then moved on to experimental group.

The instruments of this study included: 1) The research instruments used in the intervention which were the plan for providing information before weaning from mechanical ventilation, a flip chart that illustrated with six pictures, and the plan for reassurance program established by the researcher, 2) the research data collection instruments consisting of a demographic characteristics form, the readiness for weaning assessment, and the uncertainty for weaning assessment.

The research proceeded in the following steps:

1. The subjects were selected according to the selection criteria. They were asked to participate in the study, and the consent form was signed.

2. Before the intervention, the patients in the both groups completed the uncertainty weaning assessment. Those in the experimental group were provided with information and were trained before weaning from mechanical ventilation with the T-piece method by the researcher. During the weaning period, they were encouraged to perform the reassurance every one hour. The patients in the control group received routine nursing care before and after weaning. Two hours after weaning from mechanical ventilation, the patients in both groups were reevaluated with the uncertainty weaning assessment.

3. The data were analyzed in term of demographic characteristics and levels of uncertainty by descriptive analysis including frequency and percentage. Chi-square test was also used to analyze difference in demographic characteristics between the experimental group and the control group, and the difference in the mean scores of readiness for weaning and factors of uncertainty in the control group and the experimental group. In addition paired t-test was used to determine the differences between the mean score of uncertainty before and after the intervention within groups. Finally, the difference in the mean scores of uncertainty before and after the intervention between groups were analyzed by using t-test independent samples. The following conclusions are based on the finds of this study as follows:

3.1 Before weaning from mechanical ventilation by the T-piece method (before the intervention), most of the patients in both groups had moderate uncertainty (85% of the experimental group and 100% of the control group), with only three patients having high uncertainty. Two hours after weaning from mechanical ventilation (after the intervention), 75% of the patients in the experimental group had mild uncertainty, while 25% of them had moderate uncertainty. In the control group, on the other hand, the patients who had moderate uncertainty constituted 95%, however, only one patient had severe uncertainty.

3.2 The patients who received providing information and instilling reassurance had the mean scores of uncertainty after intervention lower than those before the intervention ($p < .001$).

3.3 After the intervention, the patients who recieved providing information and instilling reassurance had the mean scores of uncertainty lower than those of the patients who recieved the routine nursing care ($p < .001$).

Implications and Recommendations

Implication and Application of Research Findings

Most of the patients experienced uncertainty during weaning from mechanical ventilation with the T-piece method. Nurses, therefore, need to assist them to alleviate their uncertainty. There are many strategies to reduce the uncertainty of the patients, such as providing information and reassurance. This study has demonstrated that providing information and reassurance is an effective nursing intervention to reduce the uncertainty of the the uncertainty patients. The applications of these finding are as follows:

1. Nurses should also establish confidence and trust with the patients by paying more attention and listening to their opinion and by showing compassion, sympathies and understanding though providing information and reassurance. Nurses need to be highly alert on uncertainty of patients undergoing weaning from mechanical ventilation and should also be concerned about understanding the patients' of the situation, encouraging them to endure it to achieve goal and develop right attitudes. Nurses should also accept patients as individual persons with special needs.

2. Nurses should be taught how to provide effective nursing interventions such as providing information and instilling reassurance to prepare the patients before and during weaning. This intervention helps them to reduce uncertainty.

3. Research results should be transformed into a guideline of nursing care plan and nursing practice for weaning patients as it can improve the quality of nursing care.

4. Academic training for staff in nursing care for weaning patients should be organized to develop nurses' knowledge and conceptual thoughts with uniform pattern in nursing practice.

5. Apart from nurses, providing information and instilling reassurance should involve multidisciplinary collaboration which reflects a holistic assessment of patients based not only on their clinical status, but also their emotional status and their individuality.

Implications for Further Studies

The findings of the present study provide considerations for nursing practice as follows:

1. Future studies should consider measuring the physical effects of the patients such as heart rate, blood pressure changes before and after providing information and reassurance.

2. The experience of patients during weaning from mechanical ventilation should be examined, because information on how they feel and what kind of help they may need during this period is crucial in order to develop more effective nursing care in the future.

3. Studies should be carried out to measure and compare the satisfaction of the patients who receive the intervention and those who receive only routine nursing care.

4. Future studies should experiment with applying this program differently.

Limitation of the study

1. Some extraneous factors were difficult to control. During the data collection period, the patients may have received other care from other staff, such as physicians, nurses, or medical or nursing students. These cares may have included either emotional or information support which may have affected the patients. In addition, environment; various medical interventions such as physical therapy, feeding, medical administration; and meeting and talking with visitors or relatives were not strictly controlled during the weaning period. Accordingly, was possible that one or more of these factors may have influenced the uncertainty of both groups.

2. The study was undertaken in a unique setting at the intensive care unit of the Somdej Prapinklao Hospital, (Naval Medical Department), Bangkok, and the Somdej Pranangchao Sirikit Hospital, (Naval Medical Department), Chonburi

Province. The results of this study may not be generalized to patients receiving treatment and undergoing weaning other settings.

3. In this study, the researcher was a person who conducted the intervention and also collected the data; therefore, the bias in measurement may have occurred and became a threat to internal validity.

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APPENDIX A

List of Experts

LIST OF EXPERTS

There are five experts who have validated the content of research instrument. There are :

1. Assoc. Prof. Prakong Intarasombat
   Department of Medical Nursing, Faculty of Medicine
   Ramathibody Hospital, Mahidol University.
2. Asst. Prof. Dr. Suporn Danaidutsadeekul
   Department of Surgical Nursing, Faculty of Nursing,
   Mahidol University.
3. Miss Suporn Lilitham
   Head nurse of post-operative intensive care unit
   Faculty of Medicine, Siriraj Hospital, Mahidol University.
4. Commander Patchanok Jitsuwan
   Nurse Expertise and Registered nurse
   Division of Medical Nursing, Nursing Department
   Somdej Prapinklao Hospital. (Naval Medical Department)
5. Commander Krongtip Jun-in
   Nurse Expertise and Registered nurse
   Division of Surgical Nursing, Nursing Department
   Somdej Prapinklao Hospital. (Naval Medical Department)

APPENDIX B

Consent Information Form

คำชี้แจงสำหรับผู้ป่วย และการคุ้มครองสิทธิของผู้ป่วย (สำหรับกลุ่มทดลอง)

ดิฉันชื่อ เรือเอกหญิง รุจี พลางวรรณ เป็นนักศึกษาหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาการพยาบาลผู้ใหญ่ คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล กำลังทำวิทยานิพนธ์เรื่อง “ผลการให้ข้อมูลอย่างมีแบบแผนร่วมกับการเพิ่มความมั่นใจต่อความรู้สึกไม่แน่นอนในการหย่าเครื่องช่วยหายใจ” ข้อมูลที่ได้จากการศึกษาครั้งนี้ จะเป็นประโยชน์ในการให้การพยาบาลแก่ผู้ป่วยที่เลิกใช้เครื่องช่วยหายใจ ที่เหมาะสมต่อไป

สำหรับขั้นตอนในการวิจัยคือ เมื่อแพทย์ให้ท่านเลิกใช้เครื่องช่วยหายใจ ดิฉันมีความประสงค์ จะขอความร่วมมือจากท่าน ในการตอบแบบสอบถามที่ใช้ในการวิจัย ซึ่งเป็นแบบประเมินความรู้สึกไม่แน่นอน ก่อนการเลิกใช้เครื่องช่วยหายใจ โดยมีข้อคำถามทั้งหมด 20 ข้อ หลังจากนั้น ดิฉันจะให้คำแนะนำ เกี่ยวกับขั้นตอน ในการเลิกใช้เครื่องช่วยหายใจ การปฏิบัติตัวในขณะเลิกใช้เครื่องช่วยหายใจ และในระหว่างการเลิกใช้เครื่องช่วยหายใจ ดิฉันจะเข้าไปเยี่ยมท่าน หากท่านมีข้อสงสัยเกี่ยวกับการเลิกใช้เครื่องช่วยหายใจ ท่านสามารถซักถามข้อสงสัยของท่านได้ และเมื่อท่านเลิกใช้เครื่องช่วยหายใจครบ 2 ชั่วโมง ดิฉันจะรบกวนให้ท่าน ตอบแบบสอบถามความรู้สึกไม่แน่นอนชุดเดิมอีกครั้ง ข้อมูลทั้งหมดที่ท่านตอบ จะถูกเก็บไว้เป็นความลับ และไม่มีผลกระทบใด ๆ ต่อตัวท่าน แต่จะเป็นประโยชน์ต่อผู้ป่วยอื่น ๆ โดยส่วนรวม ท่านมีสิทธิ ที่จะตอบรับหรือปฏิเสธ การเข้าร่วมการวิจัยครั้งนี้ ได้ตามความสมัครใจ โดยไม่มีผลต่อการรักษา และบริการใด ๆ ที่ท่านจะได้รับ หรือเมื่อเข้าร่วมในการวิจัยแล้วท่านเกิดเปลี่ยนใจไม่ต้องการที่จะเข้าร่วมการวิจัยต่อไป ท่านก็สามารถยกเลิกการเข้าร่วมการวิจัยได้เช่นกัน ในระหว่างขั้นตอนการวิจัย ถ้าท่านมีอาการเหนื่อยหอบ หรืออาการผิดปกติเกิดขึ้น ดิฉัน จะหยุดการดำเนินการวิจัยทันที และให้การพยาบาลเบื้องต้น ร่วมทั้งแจ้งแพทย์และพยาบาล ประจำตึกเพื่อทำการรักษาต่อไป

ถ้าท่านยินดีเข้าร่วมการวิจัยและได้ทราบรายละเอียดของการวิจัย ดังที่ได้อธิบายไว้ข้างต้น มีความเข้าใจและสมัครใจเข้าร่วมการศึกษาครั้งนี้ โปรดเซ็นชื่อ ลงในแบบยินยอมเข้าร่วมการวิจัย

ขอบคุณทุกท่านที่ให้ความร่วมมือ
เรือเอกหญิง รุจี พลางวรรณ

ลายเซ็น.....
ผู้เข้าร่วมการศึกษา

การพิทักสิทธิ์ของกลุ่มตัวอย่าง (กลุ่มควบคุม)

ดิฉันชื่อ เรือเอกหญิง รุจี พลางวรรณ เป็นนักศึกษาหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาการพยาบาลผู้ใหญ่ คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล กำลังทำวิทยานิพนธ์เรื่อง “ผลการให้ข้อมูลอย่างมีแบบแผนร่วมกับการเพิ่มความมั่นใจต่อความรู้สึกไม่แน่นอนในการหย่าเครื่องช่วยหายใจ” ข้อมูลที่ได้จากการศึกษาครั้งนี้ จะเป็นประโยชน์ในการให้การพยาบาลแก่ผู้ป่วยที่เลิกใช้เครื่องช่วยหายใจ ที่เหมาะสมต่อไป

สำหรับขั้นตอนในการวิจัยคือ เมื่อแพทย์ให้ท่านเลิกใช้เครื่องช่วยหายใจ ดิฉันมีความประสงค์ จะขอความร่วมมือจากท่าน ในการตอบแบบสอบถามที่ใช้ในการวิจัย ซึ่งเป็นแบบประเมินความรู้สึกไม่แน่นอน ก่อนการเลิกใช้เครื่องช่วยหายใจ โดยมีข้อคำถามทั้งหมด 20 ข้อ และเมื่อท่านเลิกใช้เครื่องช่วยหายใจครบ 2 ชั่วโมง ดิฉันจะรบกวนให้ท่าน ตอบแบบสอบถาม ความรู้สึกไม่แน่นอน ชุดเดิมอีกครั้ง ข้อมูลทั้งหมดที่ท่านตอบ จะถูกเก็บไว้เป็นความลับ และไม่มีผลกระทบใด ๆ ต่อตัวท่าน แต่จะเป็นประโยชน์ต่อผู้ป่วยอื่น ๆ โดยส่วนรวม ท่านมีสิทธิ ที่จะตอบรับหรือปฏิเสธ การเข้าร่วมการวิจัยครั้งนี้ ได้ตามความสมัครใจ โดยไม่มีผลต่อการรักษา และบริการใด ๆ ที่ท่านจะได้รับ หรือเมื่อเข้าร่วมในการวิจัยแล้วท่านเกิดเปลี่ยนใจไม่ต้องการที่จะเข้าร่วมการวิจัยต่อไป ท่านก็สามารถยกเลิก การเข้าร่วมการวิจัยได้เช่นกัน ในระหว่างขั้นตอนการวิจัย ถ้าท่านมีอาการเหนื่อยหอบ หรืออาการผิดปกติเกิดขึ้น ดิฉัน จะหยุดการดำเนินการวิจัยทันที และให้การพยาบาลเบื้องต้น รวมทั้งแจ้งแพทย์และพยาบาล ประจำตึกเพื่อ ทำการรักษาต่อไป

ถ้าท่านยินดีเข้าร่วมการวิจัยและได้ทราบรายละเอียดของการวิจัย ดังที่ได้อธิบายไว้ข้างต้น มีความเข้าใจและสมัครใจเข้าร่วมการศึกษาครั้งนี้ โปรดเซ็นชื่อ ลงในแบบยินยอมเข้าร่วมการวิจัย

ขอบคุณทุกท่านที่ให้ความร่วมมือ

เรือเอกหญิง รุจี พลางวรรณ

ลายเซ็น.....

ผู้เข้าร่วมการศึกษา

APPENDIX C

Plan for Providing Information

แผนการให้ข้อมูลอย่างมีแบบแผนของผู้ป่วยก่อนการหย่าเครื่องช่วยหายใจ

กลุ่มเป้าหมาย	ผู้ป่วยที่ได้รับการพิจารณาให้หย่าเครื่องช่วยหายใจด้วย T-piece เป็นครั้งแรก
สถานที่	หน่วยบำบัดพิเศษศัลยกรรม โรงพยาบาลสมเด็จพระปิ่นเกล้า ไอซียูศัลยกรรม ไอซียูอายุรกรรม โรงพยาบาลสมเด็จพระนางเจ้าสิริกิติ์
วิธีการ	สอนที่ข้างเตียงแบบรายบุคคล
ระยะเวลา	20 นาที
ผู้สอน	เรือเอกหญิง รุจี พลางวรรณ
วัตถุประสงค์	เพื่อให้ผู้ป่วยมีความเข้าใจเกี่ยวกับวัตถุประสงค์ในการหย่าเครื่องช่วยหายใจ ขั้นตอนในการหย่าเครื่องช่วยหายใจ การปฏิบัติตัวในขณะหย่าเครื่องช่วยหายใจ ความปลอดภัยและการดูแลที่จะได้รับ การติดต่อสื่อสารขอความช่วยเหลือ การสร้างความมั่นใจ ซึ่งจะทำให้ผู้ป่วยลดความรู้สึกไม่แน่นอนระหว่างหย่าเครื่องช่วยหายใจ

วัตถุประสงค์	เนื้อหา	กิจกรรมการสอน	สื่อการสอน	การประเมินผล
1. ผู้ป่วยทราบถึงวัตถุประสงค์ของการหย่าเครื่องช่วยหายใจ	**บทนำ** เครื่องช่วยหายใจเป็นเครื่องมือสำหรับช่วยเหลือผู้ป่วยที่มีปัญหาของระบบหายใจที่เกิดจากระบบหายใจล้มเหลว และไม่สามารถหายใจได้เอง หรือหายใจได้ไม่เพียงพอ ดังนั้นเมื่อสภาพร่างกายและการหายใจของผู้ป่วยดีขึ้น เช่น มีการหายใจเข้า-ออก สม่ำเสมอ จังหวะการเต้นของชีพจร ความดันโลหิตอยู่ในระดับปกติ คลื่นไฟฟ้าหัวใจปกติ ไม่มีการติดเชื้อ และผลเลือดต่าง ๆ ปกติ แพทย์จะพิจารณาเลิกใช้เครื่องช่วยหายใจทีละน้อย จนสามารถหายใจได้เองโดยไม่ใช้เครื่องช่วยหายใจ เพื่อให้ผู้ป่วยสามารถดำเนินชีวิตได้อย่างปกติ การหย่าเครื่องช่วยหายใจ คือ การลดการช่วยหายใจในผู้ป่วยที่ต้องใช้เครื่องช่วยหายใจจนผู้ป่วยสามารถกลับมาหายใจได้เอง หรือหยุดใช้เครื่องช่วยหายใจ และเป็นการฝึกกล้ามเนื้อช่วยหายใจให้แข็งแรง การหย่าเครื่องช่วยหายใจมีหลายวิธี แต่ในที่นี้จะกล่าวถึงวิธีการหย่าเครื่องช่วยหายใจโดยการให้ออกซิเจนทางท่อหลอดลมคอ หรือเรียกว่า T-piece ซึ่งเป็นท่อลูกฟูกสีขาวโดยมีขั้นตอนดังนี้	- ผู้วิจัยเข้าพบผู้ป่วยที่บริเวณข้างเตียง - สร้างสัมพันธภาพที่ดีกับผู้ป่วย โดยการแนะนำตัว พร้อมกล่าวทักทายผู้ป่วย - แจ้งวัตถุประสงค์ในการสอนข้างเตียงให้ผู้ป่วยทราบ - อธิบายเกี่ยวกับวัตถุประสงค์ในการหย่าเครื่องช่วยหายใจ พร้อมภาพพลิกประกอบ	- ภาพเครื่องช่วยหายใจ - ภาพผู้ป่วยขณะใช้เครื่องช่วยหายใจ - ภาพผู้ป่วยขณะหย่าเครื่องช่วยหายใจ ด้วย T-piece	สังเกตจากกริยาท่าทางของผู้ป่วยที่แสดงความสนใจในสิ่งที่ผู้วิจัยพูด

วัตถุประสงค์	เนื้อหา	กิจกรรมการสอน	สื่อการสอน	การประเมินผล
2.....	**1. ขั้นตอนในการหย่าเครื่องช่วยหายใจด้วยวิธี T-piece**			
.....	สำหรับขั้นตอนในการหย่าเครื่องช่วยหายใจมี 3 ขั้นตอน ดังนี้	.....	.....	.....
.....	<u>ขั้นตอนที่ 1</u> ระยะเตรียมพร้อมก่อนหย่าเครื่องช่วยหายใจ	.....	.....	.....
	.....	.....		
	<u>ขั้นตอนที่ 2</u> ระยะทำการหย่าเครื่องช่วยหายใจ			
	.....			
.....	<u>ขั้นตอนที่ 3</u> การถอดท่อหลอดลม			
.....	.....			
3.....	**2. การปฏิบัติตัวขณะหย่าเครื่องช่วยหายใจ**	.....	.....	.....
	1.....	.....	.....	.....
	2.....	.....		.....
4.....	**3. ความปลอดภัยและการดูแลที่จะได้รับ**	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....		.....
	.....			
6.....	**4.การติดต่อสื่อสารขอความช่วยเหลือ**	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....			
	.....			
7. ผู้ป่วยสามารถหายใจเข้าออกได้เต็มที่ในแต่ละครั้งของการหายใจ	**5. การสร้างความมั่นใจในการหายใจเอง**	.....	.....	.....
	.....	.....	.....	.....
	.....			.....
	.....			
	.....			

APPENDIX D

Plan for Instilling Reassurance

แผนการเพิ่มความมั่นใจขณะหย่าเครื่องช่วยหายใจ

กลุ่มเป้าหมาย ผู้ป่วยที่ได้รับการพิจารณาให้หย่าเครื่องช่วยหายใจด้วย T-piece เป็นครั้งแรก

สถานที่ หน่วยบำบัดพิเศษศัลยกรรม โรงพยาบาลสมเด็จพระปิ่นเกล้า
ไอซียูศัลยกรรม ไอซียูอายุรกรรม โรงพยาบาลสมเด็จพระนางเจ้าสิริกิติ์

วิธีการ สอนที่ข้างเตียงแบบรายบุคคล

ระยะเวลา 10 นาที

ผู้สอน เรือเอกหญิง รุจี พลางวรรณ

วัตถุประสงค์ เพื่อให้ผู้ป่วยเพิ่มความมั่นใจในการหายใจเองในระหว่างการหย่าเครื่องช่วยหายใจ
และลดความรู้สึกไม่แน่นอนระหว่างการหย่าเครื่องช่วยหายใจด้วย T-piece

วัตถุประสงค์	เนื้อหา	กิจกรรมการสอน	สื่อการสอน	การประเมินผล
1.....	1.การสร้างความความอบอุ่นใจ ให้กำลังใจ 1..... 2.....	....	....	....
2.....	2. การปฏิบัติตัวในขณะหย่าเครื่องช่วยหายใจ	....	....	....
3.....	3. การบอกความก้าวหน้าในการหย่าเครื่องช่วยหายใจ	....	....	....
4.....	4. การสร้างความมั่นใจในการหายใจเอง	....	....	....

APPENDIX E

Instruments for Data Collection

เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล

<u>ส่วนที่ 1</u> แบบบันทึกข้อมูลส่วนบุคคล

<u>คำชี้แจง</u> โปรดทำเครื่องหมาย ✓ ลงในช่องว่างตามความเป็นจริงหรือเติมข้อความลงในช่องว่างให้สมบูรณ์

1. เพศ ( ) ชาย ( ) หญิง
2. อายุ _____ ปี
3. ระดับการศึกษา
   - ☐ ไม่ได้รับการศึกษา ☐ ประถมศึกษา
   - ☐ มัธยมศึกษา ☐ อนุปริญญา/ปริญญาตรี
   - ☐ สูงกว่าปริญญาตรี
4. การวินิจฉัยโรค _____
5. การผ่าตัด _____
6. ใช้เครื่องช่วยหายใจ_____วัน
7. วิธีการใช้เครื่องช่วยหายใจก่อนหย่าเครื่องช่วยหายใจ
   - ( ) CMV ( ) SIMV and PSV
   - ( ) SIMV ( ) CPAP
   - ( ) PSV ( ) อื่น ๆ ระบุ _____

<u>ส่วนที่ 2</u> แบบประเมินความพร้อมของผู้ป่วยในการหย่าเครื่องช่วยหายใจ

<u>คำชี้แจง</u> ข้อความข้างล่างต่อไปนี้เป็นข้อความที่ใช้ในการประเมินความพร้อมของผู้ป่วยในการหย่าเครื่องช่วยหายใจ โปรดทำเครื่องหมาย ✓ ลงในช่องว่างด้านขวาของข้อความตามความเป็นจริง

เกณฑ์การประเมิน	ใช่	ไม่ใช่	ไม่ได้ประเมิน
I การประเมินสภาพทั่วไป			
1. การทำงานของระบบไหลเวียนโลหิตคงที่ โดยมีอัตราการเต้นของหัวใจ 70-100 ครั้งต่อนาที ความดันซีสโตลิค 110-160 มิลลิเมตรปรอท			
2. ไม่มีปัจจัยที่ทำให้เกิดการเพิ่มขึ้นหรือลดลงของอัตราการเผาผลาญในร่างกาย เช่น ชัก, มีไข้, ติดเชื้อในกระแสเลือด			
.. ..			
12. ผู้ป่วยไม่บ่น/แสดงอาการวิตกกังวลหรือกลัว			
II. การประเมินระบบทางเดินหายใจ			
การไหลของก๊าซและแรงที่ใช้ในการหายใจ			
13. อัตราการหายใจน้อยกว่า 25 ครั้งต่อนาที ไม่มีอาการหายใจลำบาก, ไม่ใช้กล้ามเนื้อที่คอ			
.. ..			
การทำให้ทางเดินหายใจโล่ง			
.. ..			
ความแข็งแรงของกล้ามเนื้อทีใช้ในการหายใจ			
.. ..			
ค่าความดันก๊าซในเลือดแดง			
.. ..			
26. ค่าความดันออกซิเจนในเลือดแดงมากกว่า 60 มิลลิเมตร ปรอท ขณะได้รับความเข้มข้นของออกซิเจนน้อยกว่าหรือเท่ากับ 40 เปอร์เซ็นต์			

<u>ส่วนที่ 3</u> แบบประเมินความรู้สึกไม่แน่นอนในการหย่าเครื่องช่วยหายใจ

<u>คำชี้แจง</u> แบบประเมินชุดนี้มีวัตถุประสงค์เพื่อประเมินความรู้สึกไม่แน่นอนในการหย่าเครื่องช่วยหายใจ เมื่อคุณได้รับฟังข้อความที่ผู้สัมภาษณ์อ่านให้ฟังแล้ว ให้คุณระบุระดับความรู้สึกไม่แน่นอนใน การหย่าเครื่องช่วยหายใจ ซึ่งสามารถเลือกตอบได้ 4 ระดับ แต่ละระดับมีความหมายดังนี้

เห็นด้วยอย่างยิ่ง หมายถึง เมื่อคุณเห็นว่าข้อความนั้นตรงกับความรู้สึกของคุณมากที่สุด
เห็นด้วย หมายถึง เมื่อคุณเห็นว่าข้อความนั้นตรงกับความรู้สึกของคุณเป็นส่วนใหญ่
ไม่เห็นด้วย หมายถึง เมื่อคุณเห็นว่าข้อความนั้นไม่ตรงกับความรู้สึกของคุณเป็นส่วนใหญ่
ไม่เห็นด้วยอย่างยิ่ง หมายถึง เมื่อคุณเห็นว่าข้อความนั้นไม่ตรงกับความรู้สึกของคุณเลย

ข้อความ	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
1. ความคลุมเครือเกี่ยวกับอาการและการรักษาในขณะหย่าเครื่องช่วยหายใจ ..... 2. ซับซ้อนในการรักษาและระบบการดูแลในขณะหย่าเครื่องช่วยหายใจ ..... 3. การขาดข้อมูลเกี่ยวกับการรักษาในขณะหย่าเครื่องช่วยหายใจ ..... 4. การไม่สามารถทำนายผลลัพธ์ในการหย่าเครื่องช่วยหายใจ				

<u>ส่วนที่ 4</u> แบบประเมินความคิดเห็นต่อการให้ข้อมูลในขณะหย่าเครื่องช่วยหายใจ

โปรดตอบคำถามตามความคิดเห็นของท่าน

ท่านมีความคิดเห็นอย่างไรต่อการให้ข้อมูลในขณะหย่าเครื่องช่วยหายใจจากพยาบาล

ข้อดี .....

.....

ข้อเสีย .....

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ข้อเสนอแนะ .....

.....

APPENDIX F

The Mean Scores and Standard Deviation of Each Item of Uncertainty

Table 12 : The mean scores and standard deviation of each item of uncertainty between the control group and the experimental group

No.	Control group				Experimental group			
	pre-test		post-test		pre-test		post-test	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
1.	2.7	.86	2.50	.76	3.00	.79	2.10	.64
2.	2.75	.85	2.55	.76	2.80	1.06	2.05	.94
3.	3.10	.64	2.90	.85	3.45	.76	2.00	.97
4.	2.85	.75	3.10	.72	3.35	.59	1.95	.89
5.	2.60	.68	2.35	.59	2.70	.86	1.55	.69
6.	2.25	.55	2.20	.77	1.90	.79	1.70	.66
7.	1.50	.61	1.45	.76	1.40	.50	1.00	.00
8.	1.75	.55	1.75	.85	1.90	.79	1.25	.55
9.	2.70	.47	2.90	.45	2.65	.88	2.20	.62
10.	3.20	.70	2.90	.79	3.05	.76	1.60	.82
11.	2.70	.66	2.50	.61	2.75	.85	1.55	.83
12.	2.60	.75	2.25	.55	2.65	.75	1.80	.70
13.	3.15	.75	3.10	.55	3.15	.88	2.90	.91
14.	1.75	.55	1.95	.69	2.15	.99	1.25	.44
15.	1.70	.47	2.10	.55	2.15	.88	1.40	.94
16.	2.70	.66	2.60	.75	2.95	1.00	1.80	.89
17.	2.90	.72	3.15	.67	3.35	.59	2.20	1.11
18.	2.60	.82	2.85	1.04	2.85	.88	1.75	.97
19.	1.85	.67	1.75	.44	2.15	.75	1.60	.50
20.	2.00	.56	2.00	.79	2.30	.92	1.80	.77

BIOGRAPHY

NAME		LT. RUJEE PLANG-WAN
DATE OF BIRTH		31 MAY 1974
PLACE OF BIRTH		Nong-khai, Thailand
INSTITUTIONS ATTENDED		Naval nurse college,1991-1995
		Bachelor of Nursing Science
		Mahidol University, 1999-2004
		Master nursing Science
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POSITION & OFFICE	1995-1997	Department of Maternity
		Somdej Prapinklao Hospital (Naval
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		Position : Registered Nurse
	1997-1999	Surgical intensive care unit
		Somdej Prapinklao Hospital, (Naval
		Medical Department), Bangkok
		Position : Registered Nurse
	2002-present,	Division of Nursing
		Somdej Pranangchao Sirikit Hospital
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		Chonburi Province
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