

**EFFECTS OF FOOT REFLEXOLOGY ON PAIN LEVEL,
VITAL SIGNS, AND SATISFACTION
IN POST-ABDOMINAL SURGICAL PATIENTS**

The image features a large, faint watermark of the Mahidol University logo in the background. The logo is circular with a gold border and contains a central emblem with Thai script. The text 'SARUNYA HOWANGSUWANNAKORN' is centered over the logo.

SARUNYA HOWANGSUWANNAKORN

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**EFFECTS OF FOOT REFLEXOLOGY ON PAIN LEVEL, VITAL SIGNS,
AND SATISFACTION IN POST-ABDOMINAL
SURGICAL PATIENTS**

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EFFECTS OF FOOT REFLEXOLOGY ON PAIN LEVEL, VITAL SIGNS, AND SATISFACTION IN POST-ABDOMINAL SURGICAL PATIENTS.

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ABSTRACT

This study was a quasi-experimental research with a simple cross over design to study the effect of foot reflexology on pain level, vital signs and patient satisfaction in post abdominal surgical patients with gastro-intestinal tract diseases. Most patients had had major abdominal surgery and had been admitted to general surgical and colorectal surgical wards of King Chulalongkorn Memorial Hospital from January to February 2003. Thirty patients were randomly selected into a control and an experimental group. The control group received 30-minutes of supportive-educative care. The experimental group received 30-minutes of foot reflexology. Instruments included the demographic characteristic recording form, the pain assessment form, the vital sign record and a questionnaire for assessing their degree of satisfaction and their opinion of foot reflexology. The investigator performed the demographic data collection and the assistants provided the pain assessment and vital signs record at pre- and post- intervention, immediately after the foot reflexology and at 15 and 45 minute intervals afterwards. Data was then collected on patient satisfaction and post intervention opinions of foot reflexology. The paired t-test was used for research analysis.

The results demonstrated that the patients having foot reflexology indicated lower pain scores than the patients receiving supportive-educative care at a statistically $P < 0.01$. Means of heart rate, respiratory rate and blood pressure in the patients having foot reflexology were measured 45 minutes afterwards and were lower than in the patients having supportive-educative care with statistically significant $P < 0.05$. The mean of satisfaction score on foot reflexology was 8.39 (S.D. = 1.17).

It is recommended that foot reflexology be considered as a complementary alternative in nursing practice for decreasing post-abdominal surgery pain. Further studies relating to it should be conducted, and special training should be provided to nurses and caregivers who could employ foot reflexology to enhance patient care at home and to promote effective post operative pain relief, increase comfort, and improve family relationships.

KEY WORDS: FOOT REFLEXOLOGY/ POST-ABDOMINAL SURGERY/ POST-OPERATIVE PAIN/ VITAL SIGNS

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ผลของการนวดกดจุดสะท้อนที่เท้าต่อระดับความเจ็บปวด สัญญาณชีพ และความพึงพอใจในผู้ป่วยหลังผ่าตัดช่องท้อง

(EFFECTS OF FOOT REFLEXOLOGY ON PAIN LEVEL, VITAL SIGNS, AND SATISFACTION IN POST-ABDOMINAL SURGICAL PATIENTS.)

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บทคัดย่อ

การศึกษานี้เป็นการวิจัยกึ่งทดลอง เพื่อศึกษาถึงผลของการนวดกดจุดสะท้อนที่เท้าต่อระดับความเจ็บปวด สัญญาณชีพและความพึงพอใจในผู้ป่วยหลังผ่าตัดช่องท้องของระบบทางเดินอาหาร โดยศึกษาในผู้ป่วยหลังผ่าตัดใหญ่ระบบทางเดินอาหารที่ติศัลยกรรมทั่วไป ศัลยกรรมลำไส้ใหญ่ และทวารหนักของโรงพยาบาลจุฬาลงกรณ์ระหว่างเดือนมกราคมถึงกุมภาพันธ์ พ.ศ. 2546 คัดเลือกกลุ่มตัวอย่างตามเกณฑ์ที่กำหนดจำนวน 30 ราย ผู้ป่วยทุกรายจะเป็นทั้งกลุ่มทดลองและกลุ่มควบคุม โดยการสุ่มแบบอิสระ กลุ่มควบคุมจะได้รับการดูแลแบบสนับสนุนและให้ความรู้ กลุ่มทดลองจะได้รับการนวดกดจุดสะท้อนที่เท้า ทั้ง 2 กลุ่มใช้เวลาดำเนินการ 30 นาที เครื่องมือที่ใช้ในการศึกษาประกอบด้วย แบบบันทึกข้อมูลส่วนบุคคล แบบบันทึกการประเมินความเจ็บปวดของผู้ป่วย แบบบันทึกสัญญาณชีพ แบบประเมินความพึงพอใจและความคิดเห็นเกี่ยวกับการนวดกดจุดสะท้อนที่เท้า ผู้ศึกษาเป็นผู้เก็บข้อมูลส่วนบุคคลของผู้ป่วยและผู้ช่วยผู้ทำการศึกษาเป็นผู้เก็บข้อมูลความรู้สึกเจ็บปวด สัญญาณชีพ ก่อนและหลังการทดลองทันที 15 นาทีและ 45 นาที แล้วทำการเก็บข้อมูลความพึงพอใจและความคิดเห็นภายหลังการได้รับการนวดกดจุดสะท้อนที่เท้าวิเคราะห์ข้อมูลโดยใช้สถิติ paired t-test

ผลการศึกษาพบว่า ผู้ป่วยที่ได้รับการนวดกดจุดสะท้อนที่เท้ามีระดับคะแนนความเจ็บปวดน้อยกว่ากลุ่มที่ได้รับการดูแลแบบสนับสนุนและให้ความรู้อย่างมีนัยสำคัญทางสถิติ ($P < 0.01$) อัตราเฉลี่ยของความดันโลหิต การเต้นของหัวใจ การหายใจของกลุ่มที่ได้รับการนวดกดจุดสะท้อนที่เท้าลดลงมากกว่ากลุ่มที่ได้รับการดูแลแบบสนับสนุนและให้ความรู้ในช่วงหลัง 45 นาทีอย่างมีนัยสำคัญทางสถิติ ($P < 0.05$) และผู้ป่วยมีความรู้สึกพึงพอใจต่อการนวดกดจุดสะท้อนที่เท้าในระดับมาก (ค่าเฉลี่ย = 8.39, S.D. = 1.17)

จากการศึกษานี้มีข้อเสนอแนะว่า ควรมีการนำการนวดกดจุดสะท้อนที่เท้าไปใช้เป็นทางเลือกหนึ่งในวิธีการบำบัดเสริมทางการแพทย์ เพื่อบรรเทาความเจ็บปวดในผู้ป่วยหลังผ่าตัดช่องท้องของระบบทางเดินอาหาร และควรมีการศึกษาค้นคว้าเพิ่มเติมอย่างต่อเนื่อง ตลอดจนเสนอแนะให้พยาบาลหรือญาติผู้ดูแลฝึกฝนการนวดกดจุดสะท้อนที่เท้าก่อนนำไปปฏิบัติเพื่อบรรเทาความเจ็บปวดหลังผ่าตัดเสริมสร้างความสุขสบายความอบอุ่นใจให้แก่ผู้ป่วย และส่งเสริมสัมพันธภาพอันดีในครอบครัว

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CHAPTER I

INTRODUCTION

Background and significant of the problems

When the tissue is damaged and injured during an operation, then avoiding the suffering from the acute pain from the operation seems to be impossible for the abdominal surgical patients (Jothaketrin, P., 1990: 370-371). The bruised and damaged tissue will be stimulated to secrete the following chemical substances, Bradykinin, Histamine, Prostaglandin and Serotonin. These chemical substances then stimulate the nerves of pain perception to send the nerve impulses from the spinal cord through to the brain where the feeling of pain occurs. The pain affects both fear and anxiety as they are a combination of feelings. Having received the signs of pain from the dorsal horn in the spinal cord, the thalamus will send it to the cerebral cortex together with limbic system which is the main part to respond to fear and anxiety. In the nerve impulse, these kind of feelings will be sent to the reticular formation. It can be explained that there is a close relationship between anxiety and the pain. The more anxiety the patients feel, the more pain they will suffer. During the first 3 days after the operation, the damaged tissue will gradually release the chemical substances which is a process of inflammatory response from surgical trauma until the wound is completely in the normal state (Bonica, 1990: 462-463). Thus during the first 3 days after the operation, the patients will get the severe pain.

According to the research finding, 75% of the patients have suffered from the moderate pain after the operation and 15% suffered at a severe level (Sjostrom, et al., 1999: 247).

Owing to the pain, the patients take a shallow breaths, dare not cough and have a little movement. These reactions are often found within 48 hours after the operation. This will effect an increase in phlegm and respiratory infection, causing pneumonia and atelectasis as well as digestion complications, causing abdominal distention. From these above reasons, the patients need a long time of hospital stay,

which of course, will have social and economic effects. The pain makes the patients feel uncomfortable, upset and suffering (Carroll & Bowsher, 1993: 6).

The pain after an operation, thus, is the main problem needed to be effectively managed. When the pain is relieved, the patients can do more activities, for example, they can get out of bed quickly, have some body movements and take exercise after the first period of the operation. Doing these activities, any-complication state after the operation and any discomfort would be decreased and the patients would get more rapid recovery and would not need to stay long in the hospital.

From the past 5 years experience from 1998-2002 in King Chulalongkorn Memorial Hospital, the investigator found that there was an increasing number of patients with digestive problems waiting for an operation every year compared to other organ operations (Education Division, Registration and Statistics of Thai Red Cross Society, 2000). And after surgery most of the patients faced serious pain and difficulty in moving their body as an early ambulation or taking a deep breath though they have been dosed with pain-killers.

According to pain studies in many types of patients, most of the patients have not received enough pain relief by pain-killers. This indicated that only using pain-killers is not efficient enough. Furthermore, those pain-killers have a side effect on the stomach disorders and on abdominal distention, which causes more pain at the wound as Roongthip Jamornman confirmed in a study on the topic of "The Effect of the Relaxation on the Pain Relief of the Post Abdominal Surgical Patients" (Jamornmarn, R., 1989: 2). The study concerned the same as mentioned above.

From the research concerned, it is found that the effective relief of pain should be done by the pharmacological method together with the non-pharmacological method (Good, et al., 2001: 5), since pain is regarded as a complicated individual phenomenon. To relieve the pain by a non-pharmacological method can help the patients from the over dose resulting in less danger from those side effects. However, the efficiency of the pain relief does not lessen, on the other hand, the non-pharmacological method gives the patients more comfort (Boonsawad, W., 2001; Jamornmarn, R., 1989).

Mostly, the non-pharmacological method is used as the complementary therapy, which is good for the patients with a mild to moderate level of pain (Mc

caffery & Pasero, 1999: 340). Today the massage is regarded as one of the popular kinds of alternative therapy applied to patients with acute and chronic pain (Mc Caffery & Pasero, 1999: 400). There are various kinds of massage such as Swedish massage, Thai massage, acupuncture and reflexology.

Foot reflexology is one of the techniques of massage for complementary therapy. It helps the body's balance and improves blood plasma circulation resulting in toxin decrease and body relaxation. Foot reflexology also helps efficiently to increase the immunity system in the body resulting in good sleep, pain relief and wound healing (Booth, 1994: 38; Dougan&Ellis, 1992:17; Mackey, 2001:163).

Foot reflexology is an independent complementary therapy and is safe enough for patients. It does not use any technologies or complicated equipment. Research in and out of the country has applied foot reflexology for pain relief as seen in the research done by Dobbs(1985: 41-42).Dobbs studied the effects of foot reflexology on the last stage of patients with cancer and found that the patients got more pain relief and relaxation. The study of Oleson and Flocco (1993: 906-911) presented the effects of foot reflexology on women with premenstrual distress and revealed that those women have got more pain relief after foot reflexology treatment. The study of Bangorrut Poonsaard (2000) presented the effects of foot zone therapy on pain outcomes and relaxation in cancer patients and found that the patients had got more pain relief and relaxation. However, foot reflexology has never been applied to post abdominal surgical patients in Thailand. Thus, this is the main reason why the investigator is interested in the study of the effects of foot reflexology on pain relief in post abdominal surgical patients and the level of satisfaction at being healed by foot reflexology therapy.

Research questions

1. How did foot reflexology reduce pain and what effect did it have on vital signs?
2. How did foot reflexology make the post abdominal surgical patients satisfied?

Purposes of the study

The aims of this study were as follows :

1. To study the effects of foot reflexology on the pain level of the post abdominal surgical patients.
2. To study the effects of foot reflexology on the blood pressure, pulse rate and respiratory rate of the post abdominal surgical patients.
3. To study the satisfaction and the opinions of the post abdominal surgical patients after receiving foot reflexology therapy.

Hypotheses in this study

The effects of foot reflexology on the pain level and satisfaction of the post abdominal surgical patients were tested in the following aspects:

1. The patients under going foot reflexology massage have a lower pain score than those under going supportive-educative care.
2. After receiving foot reflexology massage, the patients have a lower rate of respiration, pulse and blood pressure than those who received the supportive-educative care.

A Conceptual framework

The conceptual framework in this study was based on the gate control theory presented by Melzack and Wall (Melzack & Wall, 1965, 1982). This theory proposes that the neural mechanisms in the dorsal horn of the spinal cord are like a gate to allow or stop the nerve impulses transmission from the free nerve endings to the spinal cord and the brain. The gate control will be closed when there is an entrance of the large diameter fibers(A beta) whereas it will be open when there is an entrance of the small diameter fibers(A- delta and C- fibers).

An abdominal operation causes damaged tissue and an increasing flow of chemical substances such as Bradykinin, Prostaglandin, Histamine and Serotonin. These chemical substances will activate the free nerve endings (A-delta and C-fiber) to send the nerve impulses to the cell of substantia gelatinosa in the dorsal horn at the

spinal cord cells. This causes secretion of the substance P and other neurotransmitters such as Glutamate and Calcitonin. These chemicals activate the mechanism of the transmission of afferent impulses to the Transmission Cell (T Cell) and the brain in the thalamus, cerebral cortex and limbic system to perceive and interpret the pain perception.

Foot reflexology causes the activation of the pituitary gland and the hypothalamus. This process increases the flow of more endorphins (Dougans, 1996: 44). In fact, endorphin is an endogenous opiate neuropeptide like a morphine that can reduce the pain. Endorphin will act by gripping the opiate receptor and inhibit the function of the substantia gelatinosa cell in the spinal cord. This will lessen the secretion of substance P including the activation of the nerve impulses to stimulate Transmission Cells (T Cells). From this process, the nerve impulses sent to the brain will decrease resulting in pain reduction. And the effects of foot reflexology will diminish the function of sympathetic nervous system and increase the function of parasympathetic nervous system leading to lower blood pressure, heart rate and respiratory rate.

In addition, foot reflexology will help stimulate the blood circulation and drive waste out of the body (White, 1994 : 38-39). Foot reflexology also helps eradicate the remaining action effects of lactic acid accelerating the peripheral nerves that will cause pain. The reduction of amount in the lactic acid will lessen the activation at the peripheral nerves and help pain relief.

Moreover foot reflexology affects the limbic system and decreases the emotional status such as fear and anxiety. The patients will be feeling relaxed and warm during massage touching. The patients who got foot reflexology will have a good relationship with the masseuses. This good relationship will directly affect the brain in sending the nerve impulses to stop the opening –closing the gate of pain at the spinal cord.

Basic assumption

Since the pain of the patients is regarded as an individual experience, thus, to judge the level of pain after an operation is a matter of their own perception. Only the patients themselves can describe how much pain they get more accurately than any others. So the level of pain judged by the patients themselves is true, valid and reliable.

Scope of the study

This was a quasi- experimental research aiming to study the effect of foot reflexology on the pain level and the satisfaction with reflexological massage in post-abdominal surgical patients. The male and female patients who had undergone surgery and were admitted at general surgical wards and the colo-rectal ward at King Chulalongkorn Memorial Hospital were selected to be the subjects based on the inclusion criteria of this study. The duration of the study was from January to February 2003.

Expected benefits of the study

It was expected that this study will be beneficial to develop another methodology of nursing care, as follows :

1. To develop the methodology of the complementary therapy to alleviate or relieve pain in post abdominal surgical patients.
2. To be used as the basic information for further clinical research as an alternative therapy to relieve pain in the post abdominal surgical patients.

Definition of terms

The terms used in this study are listed below:

Abdominal surgical patients refers to the patients who have pathology in an abdominal organ and are operated on by means of major abdominal surgery and it includes those patients 24 hours after the operation.

Pain refers to the feeling of pain perception after the abdominal operation. Level of pain is judged by the patients themselves. In this study it could be measured by a

pain visual analog scale and pain assessment questionnaire developed by the investigator.

Foot reflexology refers to the technique of therapeutic massage used for the relief of pain. Reflexology is one of the non-pharmacological methods using both hands to massage and using a wooden stick to press on the sole of the feet. All the areas of the soles reflex all the body organs. To press the soles can stimulate the body organs and help with better body function. The pressing and the massage also improve the balance in the body. The pressing is usually done on the specific areas that can reflect to the pituitary gland, solar plexus, adrenal gland, abdominal organs and bladder to improve the function of the body.

Supportive – educative care refers to the caring for patients with a comforting position, appropriate environment, mental support and patient's education for 30 minutes by the investigator.

Satisfaction refers to the positive feelings of well being and happiness of the patients towards foot reflexology. The report of the satisfaction of the patients is derived from the questionnaire and the opinions of the patients towards the foot reflexology which was developed by the investigator for indicating patients' opinions.

CHAPTER II

LITERATURE REVIEW

This chapter presents the review of related literature and aimed to create a good understanding of the related concepts of foot reflexology to clarify the research structure, and to be a guide to setting the conceptual framework, research pattern and research interpretation and covered the following topics:

1. Concepts of Pain
 - 1.1 Definitions of pain
 - 1.2 Pain mechanisms
2. Pain Control Theories
 - 2.1 Gate control theory
 - 2.2 Endogenous pain control theory
3. Concepts of Pain in Post Abdominal Surgical Patients
 - 3.1 Patho-physiology of pain in post abdominal surgical patients
 - 3.2 Factors affecting pain in post abdominal surgical patients
4. Pain Management in Post Abdominal Surgical Patients
 - 4.1 Assessment of post abdominal operative pain
 - 4.2 Methods of pain relief and pain control
5. Foot Reflexology and Utilization for Post Abdominal Operative Pain Relief

1. Concepts of Pain

1.1 Definitions of pain

Pain is a defense mechanism of the human body due to tissue damages and symptoms of pain varied individually (Guyton, 1991: 520).

Pain is a complex individual experience with multiple related factors like social, physical and environmental factors that influenced a variety of individual

perceptions, expressions, toleration of pain, and incomparability even if there were the same stimuli (Mc Caffaery & Pasero, 1999: 16).

The International Association for the Study of Pain stated the definitions of pain as: pain was an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

Pain was an individual experience and it was maintained as long as unrelieved pain was with that person (Mc Caffery, 1979: 11).

Consequently, pain is an individual experience influencing perceptual and emotional discomforts combining with actual or potential tissue damage, and a complexity of physical, psychological, emotional and social aspects. It has multiple related factors that affect variable pain perception, expression, and toleration of the individual. Pain will be there whenever the experiencing person says it is.

1.2 Pain mechanisms

Pain occurs from noxious stimuli when nociceptors change the noxious stimuli to nervous impulses and then transmit through the pain impulse pathway to the brain for recognizing and defining those pain impulses—what the types of pain are and how intense the pain is. Hence, the basic pain mechanisms consisted of 4 processes as follows (Mc Caffery & Pasero, 1999: 18-23):

1. Transduction
2. Transmission
3. Interpretation or Perception
4. Modulation

1. Transduction refers to the process which occurs in the periphery when the nociceptors located in most body tissues such as skin, skeleton, and muscles are stimulated by mechanical, thermal, or chemical noxious stimuli. Along the walls of the nociceptors are ion channels and adequate noxious stimulation causes the resting membrane to be permeable to Na^+ and K^+ which rush into the cells. Those results in electric potential difference and the charge is converted to pain impulses ready to be transmitted along the nociceptor fibers.

2. Transmission is a neuronal process occurring after neuronal transmission from nociceptor stimulation and transmitted through neuronal fibers as A-Delta and C-fiber of the first nociceptor to the spinal cord. In addition, it coordinated with the

second nociceptor in the dorsal horn neuron of the spinal cord. From the dorsal horn, axons of association project neurons across through the anterior commissure to the opposite side and then ascend upward to the thalamus, called Spinothalamic tract neurons. Neuronal substance relief such as substance P being responsible for neuronal transmission or distribution or modulation accomplishes the transmission from the first to the second nociceptor in the dorsal horn. After neuronal impulses ascend to the thalamus, the third nociceptor will be activated and worked after the second process is finished to transmit neuronal impulses to the sensorimotor cortex as a somatosensory area and the front lobe. In brief, transmission processes could be categorized to 3 phases as follow (Mc Caffery & Pasero, 1999: 20):

- 2.1 The peripheral sensory nerves transmitted neuronal impulses to the transduction area to the spinal cord.
- 2.2 Transmission from the spinal cord to the brain stem and thalamus.
- 2.3 Transmission of the neuronal impulses through connections between the thalamus and the cortex.

3. Perception

Perception is individual pain perception as the end result of neuronal activity of neuronal transmission throughout the processes of transduction, transmission, and modulation. The cortex of the parietal lobe represents the extrinsic structure of the body such as face, arms, legs, and abdomen. Therefore, neuronal transmission from nociceptor stimuli at individual body parts would transmit to individual representative in each body part determining the pain location. But there was no pain representative in the visceral organs; the pain location could not be obviously identified and the peripheral neuropathic pain occurred at skin. The perception of pain intensity did not only depend on the amount of nociceptors but also previous experience of pain (Mc Caffery & Pasero, 1999: 22).

4. Modulation

Modulation is involved with the activation of descending pathways that exert inhibitory effects on pain transmission because neurons originating in the brain stem descended to the dorsal horn of the spinal cord. These descending fibers released substances, such as endogenous opioids, serotonin (5HT), and norepinephrine (NE). These substances were capable of inhibiting the transmission of nociceptor neuronal

impulses leading to a higher pain threshold. Endogenous pain modulation helped to explain the wide variations in individual perception of pain (Mc Caffery & Pasero, 1999: 22). In an endogenous pain modulation by a descending pain system, endogenous opioids referred to as Enkephalins and β -Endorphins are released and found throughout the central nervous system (CNS) and expressed an effect like morphine. Endogenous opioids bind to opioid receptor sites and prevent the release of other neurotransmitters such as substance P, inhibiting the transmission of pain impulses.

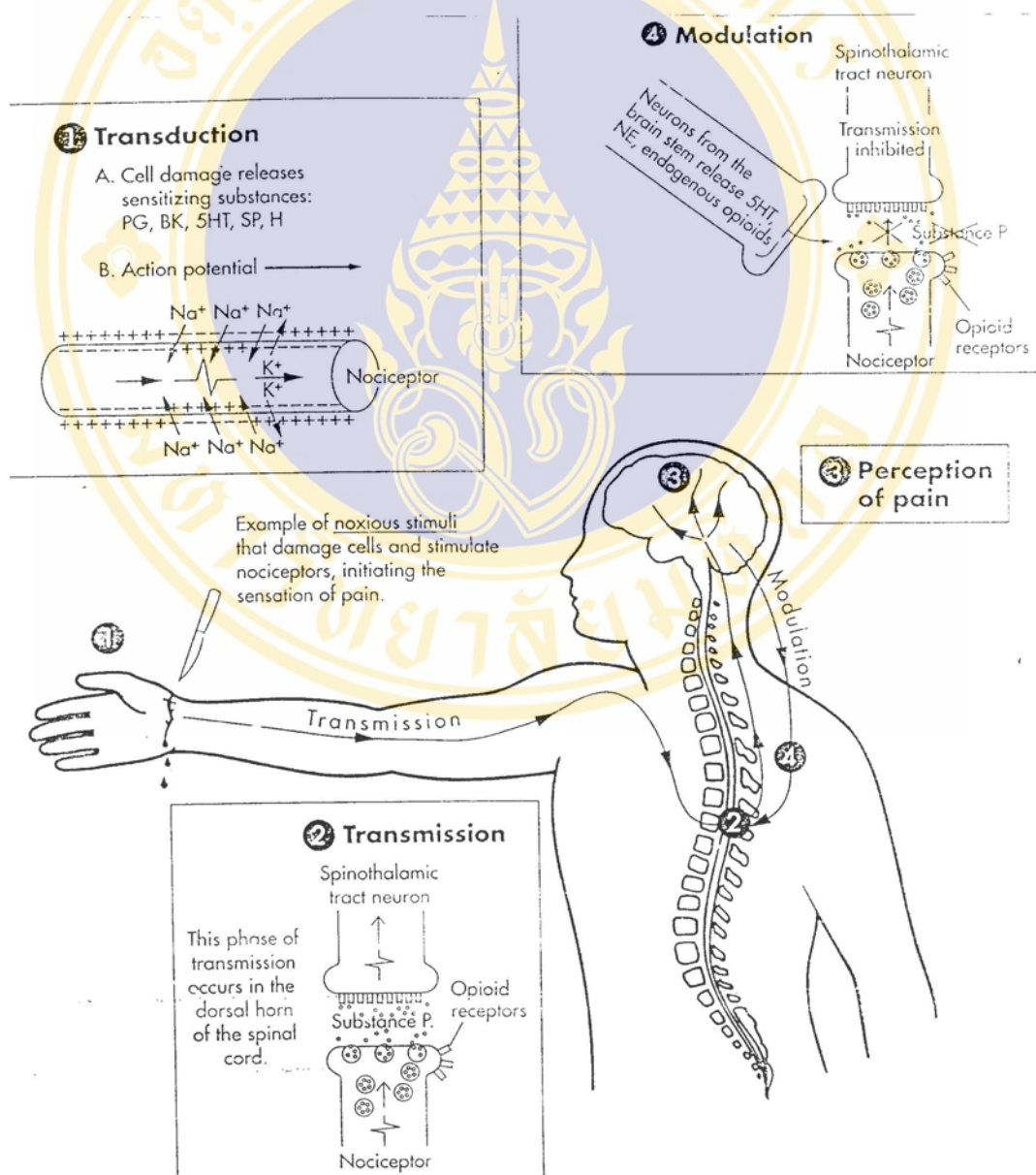


Figure 2: Basic pain mechanism by Mc Caffery & Pasero (1999: 21)

2. Pain Control Theories

There are several theories explaining the pain mechanisms. The Gate Control Theory and the Endogenous Pain Control Theory are suitable to be used in this study.

2.1 Gate Control Theory

Gate Control Theory proposed by Melzack and Wall (1965; 1982) explained the mechanism of pain as nociceptors from several parts of the body were initially transmitted and modulated at the spinal cord level before ascending the neuronal impulses to the brain and descending them along afferent fibers to modulate at the spinal cord level. The gate control theory demonstrated 5 mechanical procedures as follow (Bonica, 1990: 10):

1. Transmission of the nerve impulses from afferent fibers to the spinal cord, Transmission Cells (T Cells) were controlled by a spinal gating mechanism that was situated in the dorsal horn.
2. The spinal gating mechanism was also influenced by the relative amount of activity in large-diameter and small-diameter fibers. The stimulation of large diameter fibers activated the inhibition of neuronal transmission. On the other hand, the stimulation of small diameter fibers resulted in the transmission of pain impulses being facilitated to the brain.
3. Descending neuronal impulses from the brain influenced the spinal gating mechanism.
4. Stimulated large-diameter fibers dominated to transmit the nervous impulses into 2 pathways. One way was to activate the spinal gating mechanism and the other one was to ascend the nervous impulses to the central control by inhibiting the cognitive control then descending the nervous impulses influencing the opening and closing of the gates in this mechanism.
5. The overall result of a gate control mechanism expressed the reaction to pain as the Action System.

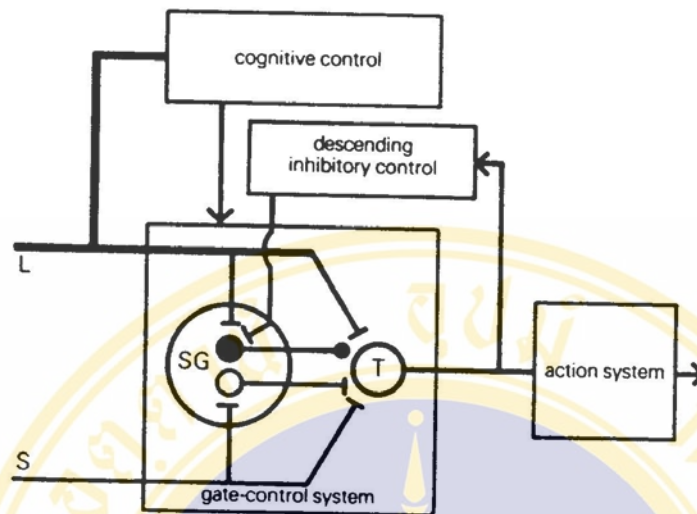


Figure 3: Pain control theory by Melzack & Wall (1982 cited in Bonica, 1990: 10)

In the Figure 3 above, both large- and small-diameter fibers transmitted nervous impulses to stimulate Transmission Cells (T Cells) mediating the transfer of information to the brain. At the same time, both afferent fibers extended their fibers to Substantia Gelatinosa Cells (SG Cells) that acted as the inhibitory neuron of T Cells activated by the large-diameter fibers resulting in closing the gate. Additionally, some afferent impulses occurred by the stimulation of large-diameter fibers were ascended to CNS and descended to affect the opening and closing of the gates.

Small-diameter fibers addressed the opposite outcome when they received stimulation. Stimulating small-diameter fibers mediated the SG Cells to open the gate leading to transmission of neuronal impulses to T Cells and to the brain. Descending inhibitory control from the brain also influenced the opening and closing of gates. Then, behavioral reaction was presented after action system (pain perception) e. g., physical reaction and activity of the reflection

2.2 Endogenous Pain Control Theory

Endogenous pain control theory is involved with the natural pain inhibition by releasing endogenous morphine like substances. In 1970, Opiate neuropeptide was discovered inside the human body. Subsequently, in 1973, Opiate receptors were found spreading around the brain and spinal cord that worked relating to pain. In 1975, an endogenous morphine like substance was discovered whose action was to inhibit the pain (Reynolds, 1991: 10-11). It was called morphine like substance

endorphins. Endorphins originated from the accumulation between "endogenous" and "morphine" linked to the definition of natural peptide substances such as Enkephalines and 3 endorphins—alpha, beta and gamma (Copstead & Banasik, 2001: 1086).

1. Enkephalins had been widely found in the central nervous system (CNS) and the dorsal horn of the spinal cord. They worked effectively in the dorsal horn to inhibit the pain by the effect of closing the gate at the spinal cord and also constrained the ascent of neuronal impulses to the brain (Ignatavicius, Workman & Mishler, 199: 122-123).

2. Endorphins were mostly found at the anterior pituitary gland and the hypothalamus. There were 3 kinds of endorphins—alpha, beta and gamma. Beta-endorphins had an action like morphine to effectively control pain (Ignatavicius, Workman & Mishler, 199: 122-123). Beta-endorphins were largely located at the hypothalamus, periaqueductal gray, limbic system, and substantia gelatinosa cells (SG Cells). Endorphins controlled pain in 2 ways:

2.1 Their first action at the pre-synaptic sites was to inhibit the secretion of substance P at the peripheral nerve.

2.2 Their other action at post-synaptic sites was to inhibit the neuronal transmission of pain impulses by releasing endorphin from the brain passing through the descending system.

The action of endogenous opiate neuropeptide was believed to work at the CNS by inhibiting the release of substance P and stopping the nociceptors by pairing with the suitable opiate receptors (Mc Caffery & Pasero, 1999: 22).

As for the neuronal transmission for pain control, this control was from the cerebral cortex to the hypothalamus passing through the periaqueductal gray medulla to the dorsal horn in the spinal cord. The opening and closing of the gates resulted from two substances released, substance P and endogenous opiate. The stimulation of small-diameter fibers in the spinal cord caused the release of substance P. At the same time, large-diameter and descending neuronal fibers released substances to stimulate SG Cells to secrete enkephalins that inhibited the action of substance P leading to the interruption of neuronal transmission to T Cells and then no neuronal transmission to the brain that meant no pain perception. If enkephalins could not inhibit the whole action of substance P, the rest of substance P would arouse T Cells resulting in some

neuronal transmission to the brain and pain perception would occur. In every time, noxious stimuli motivated the release of enkephalins from enkephalin interneurons that were able to inhibit pain transmission (Polyanan, S., 1985: 31-35).

In the literature review, the level of endorphins in the human body are related to individual pain perception. For instance, in the situation of insufficient endorphin, people would perceive the terrible severe pain. In the case of a large amount of endorphin in the body, people would experience less pain. Endorphin also affected the psychological aspect in the way of the reaction to pain because endorphin promoted a decrease in anxiety. People with anxiety, would have high pain perception. The stimulation of releasing endorphin would decrease anxiety and pain (Copstead & Banasik, 2000: 1086).

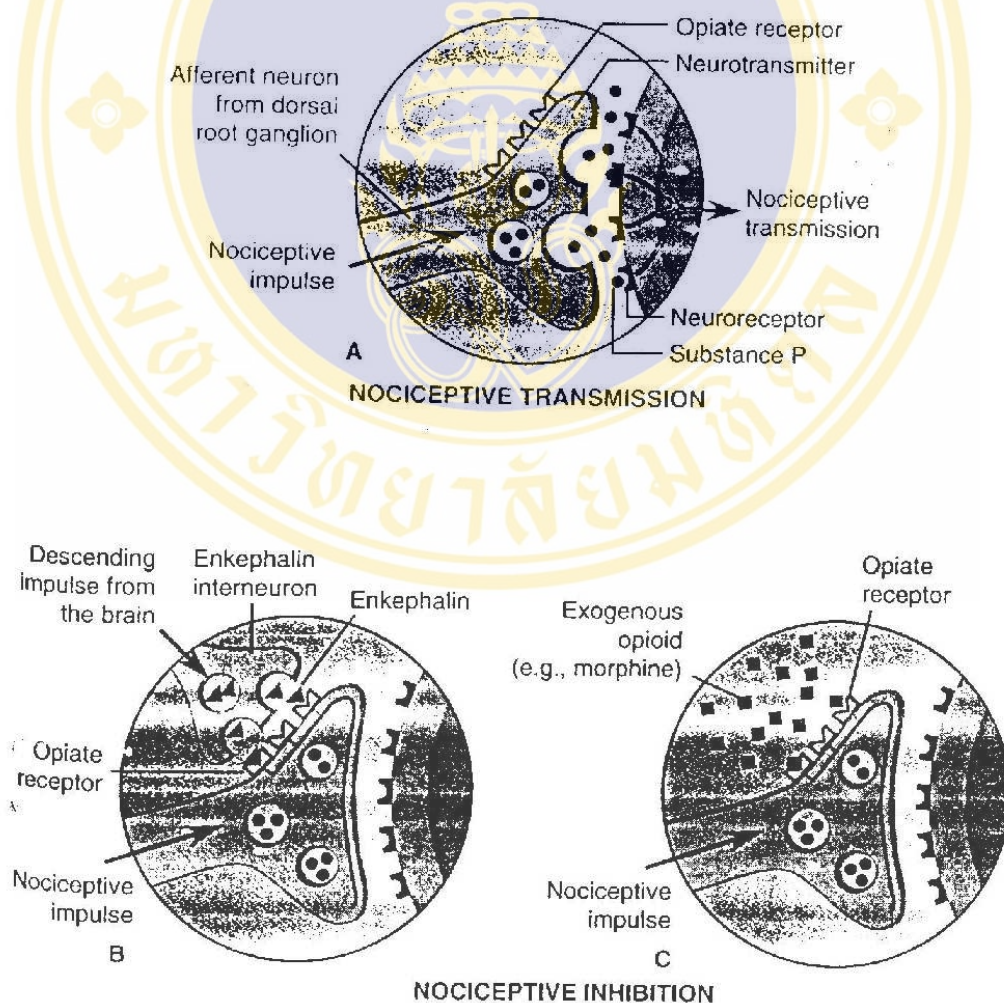


Figure 4: Transmission and inhibition of nociceptors by Copstead & Banasik, 2000: 1085

A. Expressed nociceptive transmission is when nociceptive impulses transmitted to the dorsal root ganglion cause the release of substance P. Substance P would hold to neuroreceptors and transmit neuronal impulses to the brain, then pain perception occurred.

B. Nociceptive inhibition is presented by endogenous opioids. Descending neuronal fibers stimulated SG Cells to secrete enkephalins. The enkephalins would pair with opiate receptors resulting in the inhibition of the secretion of substance P from nociceptive impulses that interrupted the neuronal impulse to T Cells, so there was no neuronal transmission to the brain, and no pain perception.

C. Nociceptive inhibition was demonstrated by the administration of exogenous opioids such as morphine. Exogenous opioids would bind to opiate receptors resulting in inhibiting the release of substance P from nociceptive impulses, so there was no neuronal transmission to brain, and no pain perception.

3. Concepts of Pain in Post Abdominal Surgical Patients

3.1 Patho-physiology of pain in post abdominal surgical patients

An operation causes direct damage or trauma to tissues and nerves. When tissues are injured or damaged it motivates the release of chemical substances e.g., Bradykinin, Prostaglandin, Histamine, and Serotonin. Those substances stimulate the periphery of nociceptors like A-delta and C-fibers leading to arousal of the function of SG Cells in the dorsal horn at a spinal cord level as the opening gate mechanism to transmit neuronal impulses to T Cells and to the thalamus. After the thalamus perceived the pain impulses, neuronal impulse will be transmitted to the cerebral cortex identifying severity, character, location of the pain and emotional stimulation including the pain responses.

3.2 Factors affecting pain in post abdominal surgical patients

As they experienced pain, individual patients have validity of pain perception and pain response due to several factors as follow:

3.2.1 Physical factors

3.2.1.1 Intensity of stimuli caused tissue damages—more intensity, more pain perception (Polyanan, S., 1985: 50). Types, characters and incised

lesions of operations affect a variety of tissue damages. A complex operation with prolonged operative duration and large operative lesion will be mechanical stimuli causing more pain perception. Bonica and Benedetti (1980: 405) stated that the evidence of the transverse incision showed less pain than the diagonal abdominal surgical operative lesion did.

3.2.1.2 Consciousness: Unconscious patients would not perceive any pain. But they could not express any pain response feelings or behaviors. Patients who were administered sedatives would experience drowsiness with a poor conscious level. Hence, pain perception would be declined (Prasanvanakit, A., 2001: 27).

3.2.1.3 Fatigue, exhaustion and tiredness produced insufficient energy conservation for pain modulation leading to a decreased pain threshold (Polyanan, S., 1985: 50)

3.2.2 Psychological factors

3.2.2.1 Emotional status, especially stress, anxiety and fear affected the control system of CNS as emotional arousal. Those caused increased pain perception, the elevated perception and expression of pain except the decrease of pain tolerance (Polyanan, S., 1985: 52). In addition, stress demonstrated medium to severe operative pain in postsurgical patients (Good, et. al., 2001: 41).

3.2.2.2 Past pain experience: Pain response of individual was due to past pain experience, cognition, attitude and care (Milligan, 1994: 26). Patients who had bad experience of pain and had poor pain relief would express their fear and have less pain tolerance when they were confronted with a new pain experience (Prasartvanakit, A., 2001: 28).

3.2.2.3 Self-pain perception referred to self-perception of pain and diseases that influenced the emotional status and pain perception including pain response (Tongtang, A., 1991: 24).

3.2.2.4 Personal characters/habitual manners: People with an open character would have more pain tolerance than people with an antisocial character would (Polyanan, S., 1985: 52).

3.2.2.5 Sufficient, clarified and accurate information enhanced patients to have good perception and capability to encounter their coming

postoperative pain with less anxiety and high pain tolerance (Polyanan, S., 1985: 53; Bucknall, et. al., 2000: 268).

3.2.3 Socio-cultural factors

Social and cultural statuses have the effect on individual pain as the follows:

3.2.3.1 Age: People with different ages will have a variation in pain response. In the study of Destiens and associates (1977) by interviewing 5,176 adult patients in hospital with a prospective cohort study of patients, it was found that nearly 50% of pain record showed older patients suffered less pain than younger ones (Good, 1999: 113). The elderly with physical degeneration and ineffective ability of adaptation had less pain tolerance.

3.2.3.2 Gender: In a the study relating to gender and pain, females had more sensitivity to pain than males did (Good, 1999: 113). In the study of Raftery, Smith-Coggins and Chen (1995) in emergency units, females had more pain perception and more analgesic administration than males that indicated pain was related to gender and pain management (Good, 1999: 113).

3.2.3.3 Culture and society: Each society and culture has a variety of beliefs, perceptions, definitions and pain management. Expression and perception of pain in each culture may relate to belief and religions for example, some religions believed that pain was punishment from God and patients needed to accept and be patient with that pain (Jamonman, R., 1989: 20).

3.2.3.4 Attitudes and traditions of the roles of physicians and nurses: Some patients did not believe in or give respect to nurses, so they kept their pain with them. But some patients believed physicians and nurses were persons who were capable of releasing their pain and make them be comfortable (Milligan, 1994: 26).

3.2.4 Environmental factors

Environment enhances people to have better adaptation coping with pain and tolerance to arousal. Improper environment creates stresses for people leading to more need of using energy, less adaptive ability, less pain threshold and high pain perception. A proper environment promoted better adaptation and pain

tolerance (Polyanan, S., 1985: 54). Environmental factors are categorized into 2 aspects:

3.2.4.1 Physical environment such as cleanness, peacefulness, appropriate light and temperature including good ventilation may decrease pain suffering and cause patients to be more relaxed.

3.2.4.2 Psychosocial environments, for instance the good relationship between people, good family relations, and good communication between patients and medical professionals. Those create a warm feeling and security to patients and also influence the pain perception of patients.

4. Pain Management in Post Abdominal Surgical Patients

Pain is an individual complex experience caused by physical, emotional, social, and environmental perception. It is a personal perception so that other people cannot identify their pain intensity. In Cohen's study (1980), 75% of postsurgical patients were in marked or severe pain. Seers (1987) demonstrated that 86% of postsurgical patients was incapable to effectively manage their pain (Milligan, 1994: 24). Unrelieved pain may result in postoperative complications associated with negative impacts to patients in physical, psychological, and economic aspects including prolonged duration in the hospital (Huang, et. al., 2001: 440).

In postsurgical patients, most patients expect to have less pain and have some people e. g., doctors and nurses to make them gain more comfort, especially nurses who spent more time with them than other medical professionals. Nurses are the persons who should have the best assessment and management for helping patients release their pain. Hence, the roles of nurse in pain management are defined in 2 phases as follows:

4.1 Assessment of post abdominal operative pain

4.2 Methods of pain relief and pain control

4.1 Assessment of post abdominal operative pain

In effective pain relief in post-surgical patients, the major significance was the standard pain assessment with validity and reliability because the assessment enhanced good nursing decisions and also instrument utilization for pain relieving.

(Allock, 1996: 1144). Pain assessment instruments consisted of the following:

4.1.1 Person's subjective report is an instrument to assess individual pain by self-report that was counted to be the best accurate information because pain was an individual experience. Therefore, when persons identified their pain whatever it was, it should be truly occurred. There are several instruments to assess pain. Each instrument has its own objectives to assess pain in various dimensions and different targets. Consequently, selection of a suitable instrument for assessing pain is essential. The popular pain instruments are as follows (Tritrakan, T., et. al., 2001: 34-35):

Verbal rating scale (VRS) or Verbal descriptor scales is a set of pain descriptions arranged for minimum to maximum pain categorizing it in 4 levels, no pain, mild, moderate and severe. It may have a fifth scale of unbearable.

Numerical rating scales (NRS) are a set of numbers like 0-10 or 0-100. Generally, one end indicated no pain and the other end defined the worst possible pain. Patients have to select the number that is accurate for their present intensity of pain and mark it down.

Both VRS and NRS are easy to utilize with reliability and validity and can be determined as good pain assessment instruments.

Visual analog scale (VAS) is able to assess the subjective symptoms and is popular to use in pain assessment. It normally is a straight line of 10 cm., located as horizontal or vertical lines. One end represents no pain and the other end indicates the maximum pain that patients had never had before (or maximum pain that patient had ever thought off). Patients have to mark on the straight line at the location accurate to their actual pain. The distance in centimeters or millimeters from the one end of zero will be the number showing the severity of patient's pain.

In this study, the investigator selects the VAS as a study instrument to assess the severity of pain in post abdominal surgical patients.

4.1.2 Interviews : Direct information from patients is essential to the pain assessment because it indicates the most accurate description of pain. This interview includes questions related to the location, duration, characters and severity of their pain.

4.1.3 Measurement and observation of the physical changes

4.1.4 Pain is reflected in the function of the autonomic nervous system. The sympathetic nerves respond to mild and moderate levels of pain resulting in hypertension and tachycardia (Jose Closs, 1989: 43-44). If it is severe pain, the parasympathetic nerve will respond and demonstrate many symptoms such as nausea, fatigue, stupor, hypotension and bradycardia leading to shock and unconsciousness.

4.2. Methods of pain relief and pain control in post abdominal surgical patients

Nursing activities for relieving pain in post surgical patients are divided to 2 main methods as follows:

4.2.1 Pharmacological method

4.2.2 Non-pharmacological method

4.2.1 Pharmacological method

It is not a direct role of nurses but nurses need to have sufficient knowledge, good judgement for making decisions in opioid analgesic administration according to doctor's order. They require knowing the actions of medicines, timing of immediate reaction, timing of optimum reaction, expired duration of the reaction, and side effects (Polyanan, S., 1985: 102). Thereby, for most pain relief in post surgical patients, it is necessary to administer strong opioid analgesics, especially in the first-24 hours of post operation. Nurses need to consider opioid analgesic administration according to the physician's order. Opioid analgesics most commonly administered to postsurgical patients are the following:

4.2.1.1 Opioid analgesics e.g., morphine and pethidine are popular. Their actions are sudden and strong. Proper doses of opioid analgesics are calculated by patient's body weight. The side effects of opioid analgesics were respiratory depression, CNS dysfunction causing hypotension, and retardation of GI tract system—nausea, vomiting, and constipation. Most opioid analgesics were administered via intramuscular and intravenous injections (Niruttisart, S., 2002: 9-10).

4.2.1.2 Non-opioid analgesics e. g., paracetamol is an analgesic with moderate reaction. Its form is normally oral medicine. It is inappropriate to use in patients with liver diseases, coagulation disorders, or peptic ulcers (Niruttisart, S., 2002: 9-10).

4.2.2 Non-pharmacological method

Nursing activities offered many methods of postoperative pain relief. In the literature review about reinforcement treatments, Stevenson (1995) stated that the reinforcing treatments affected pain relief such as pre-operative information, relaxation, guided imagery, breathing training, distraction, musical treatment, massage, acupuncture, and transcutaneous electrical nerve stimulation (TENS). Blankfield's literature review study (1991) was related to psychognosis and relaxation training, and those techniques showed a decrease of analgesic demand in 13 studies from a total of 15 studies. In addition, positive results were a decrease in hospitalization, good emotional status after operation, and fast recovery (Good, 1999: 119). Foot reflexology is one of the popular methods for pain control in various populations.

5. Foot Reflexology and Utilization of the Complementary Therapies for Post Abdominal Operative Pain Relief

Reflexology therapy employed a unique technique of using thumbs and fingers to apply specific pressure to reflex areas on the feet and hands. The reflex areas corresponded to all the glands, organs and parts of the body that are mapped out in site-specific delineation or zones on feet and hands (Mackey, 2001: 163). Reflexology therapies are classified into 3 kinds; ear reflexology, hand reflexology and foot reflexology. Generally, reflexology is favorably applied on the feet because the feet had a large skin surface more convenient and more sensitive to pressure at reflex points and offered more obvious benefits than ear and hand reflexology.

Foot reflexology is a part of personal health promotion aiming to provide holistic care covering the dimensions of body, mind and spirit. The basic concept of foot reflexology promotes homeostasis. The state of body balance affects the proper physical functions because body, mind and spirit are together and cannot work independently.

Foot reflexology improves blood circulation, lymphatic circulation and intangible energy flow—encouraging the clearance of toxins and leading to an effective

immune system. It also motivates relaxation, good sleep and wound healing (Mackey, 2001: 163; Dougans & Ellis, 1992: 17; Booth, 1994: 38).

Reflexology is different from the foot massage. Foot massage aimed to provide foot comfort but reflexology applied the specific pressure to reflex points on the feet that corresponded to specific areas of the body, organs, and glands (Smith, 1990: 29).

5.1 History of reflexology

Foot reflexology originated in China, ancient India, Egypt and Western countries 5,000 years ago. Reflexology therapy was believed to have been established as long as acupuncture therapy was in China over 3,000 years ago. Acupuncture applied pressure to points on hands and feet for physical treatment. There is evidence in pictures of foot reflexology, 2,350 years ago in a cemetery of an Egyptian doctor in Sakara City, Egypt that indicated the obvious procedures of ancient reflexology. In fact, nobody claims to know the exact origin of reflexology but they would accept Egypt and China were magnificent ancient medical centers. The Buddha's footprints on the stone in Medicine Teacher Temple, Nara, Japan, in 740 AD. showed the functions of feet stimulating the nervous systems in human bodies. Foot reflexology therapy was familiar and related to acupuncture therapy (Andrews, et. al., 1998: 226).

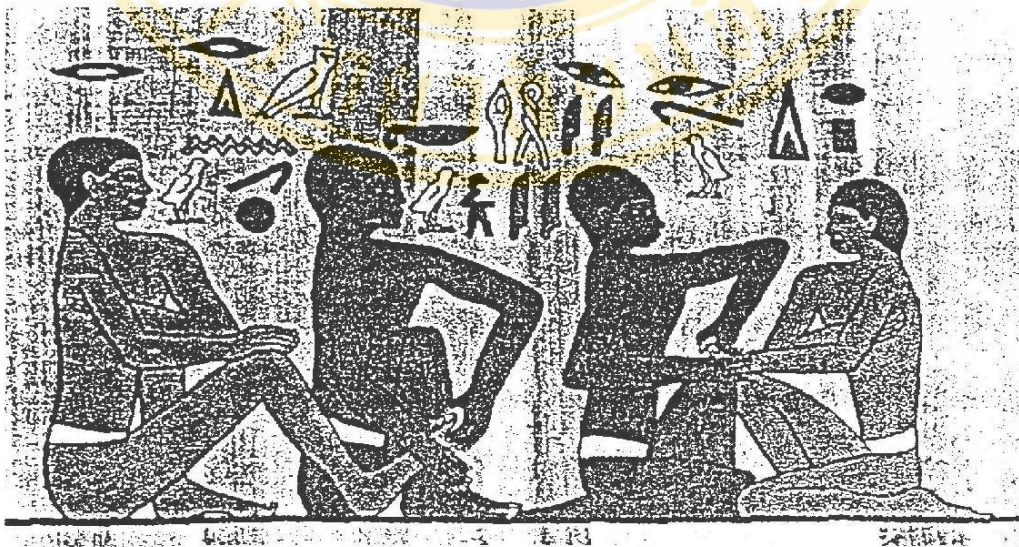


Figure 5: Ancient picture, age 2, 350 years old, in a cemetery of an Egyptian doctor at Sakara City, Egypt. (Byers, D. C. cited in Lockett, 1992: 15).

The current revival of interest in this technique began in the early 1990s with an American EENT specialist, Dr. William H. Fitzgerald who was interested in foot reflexology effecting pain relief when specific pressure was applied on the hands and feet at the pre-operative period. In the late 1930, Eunice Ingham, a physical therapist who discovered Fitzgerald's work and extended her ideas as applying varying levels of pressure to certain areas could not only decrease pain but also provide other health benefits. Ingham mapped the specific reflex zones on the feet that reflexologists use today (Andrews, et. al., 1998: 266). Ingham also wrote the first book related to reflexology and arranged the special training for reflexologists. Then, she received the name of Mother of Reflexology.

5.2 Foot Reflexology Theories

The main theories of foot reflexology derive from the zone theory and the meridian theory. There were several hypotheses that could be explained by the energy theory, the lactic acid theory, the theory of proprioceptive nervous receptors and the psychological theory (Stephenson, Weinrich & Tavakoli, 2000: 68). In explanations of pain, there are the gate control theory by Melzack and Wall (Dougans, 1994: 44) and the endogenous theory (Hayes & Cox, 1994: 1577-1582):

The Zone Theory

In 1971, Dr. William Fitzgerald, an American EENT specialist of Francis, Hartford, indicated that if finger areas were pressured, local numbness at hands, arms, shoulders, jaw, face, ears and nose would be presented. Following this belief, he applied this technique with minor surgical operations. He postulated that the body was divided into 10 vertical zones with 5 closely associated zones on each arm, within which all the structures were connected by a flow of energy. The five areas on each foot and hand were part of the five zones on each side of the body: applying pressure on a reflex point within any one area would thus have corresponding effects on different organs lying within that zone. Zoning lines or separated energy pathways were longitudinal lines from toes to head. The first zone is located at the toes. Hands also had energy zones, starting at the thumbs (Dougans & Ellis, 1992: 45; Booth, 1994: 38). Except in the brain, the effect of pressure would influence the organs in the opposite site. Therefore, the pressure on left toes would affect to the functions of the

right brain and the effect on the left brain would be reflected from the pressure applied to the right feet. The concept of this theory believed human beings were alive with a life force and their life force flew through the energy pathways. That meant the opportunity to prevent and treat some diseases and symptoms via the energy pathways was possible (Deeviset, K. & Toeam, Y., 2001: 7).

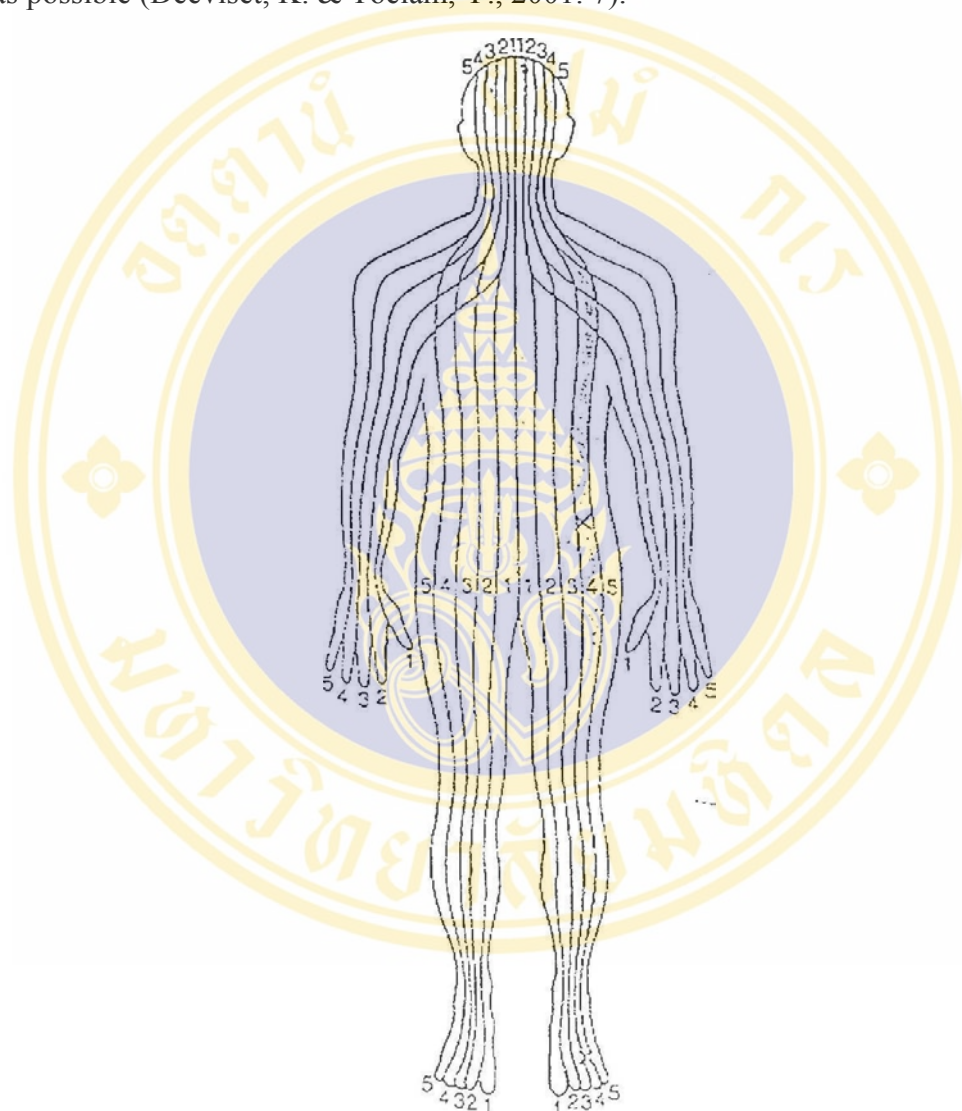


Figure 6: The zone theory by Dr. W. Fitzgerald (Dougans & Ellis, 1992: 45).

The Meridian Theory

The concept of meridian theory emphasized the reflex points on feet and hands in relation to other organs and glands in the body. This theory was modified from the Zone Theory. In 1983, Ingham, a physical therapist, studied the zone theory and mostly applied it to the soles because the foot area was more sensitive than others

were to practice reflexology. She mapped the foot areas showing the relationship between energy pathways and the reflex points corresponding to visceral organs and then it was called the Meridian Theory (Botting, 1977: 124). For instance, if pressure was applied on the right feet or hands, the direct effects would be expressed at the visceral organs and glands that were located in the right side of the body. On the other hand, applying the reflexology therapy to the left feet or hands, the direct results would show at visceral organs and glands located in the left side of the body.

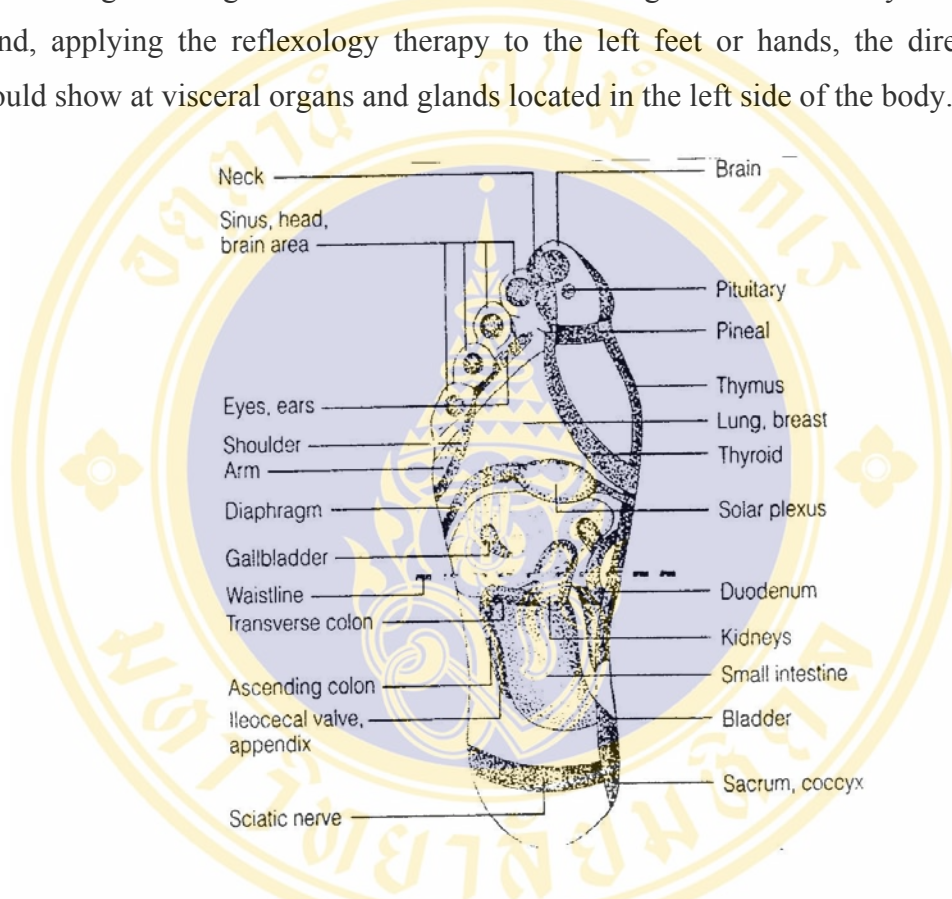


Figure 7: Mapped locations on foot corresponding to visceral organs by Andrews, et. al., 1998: 267

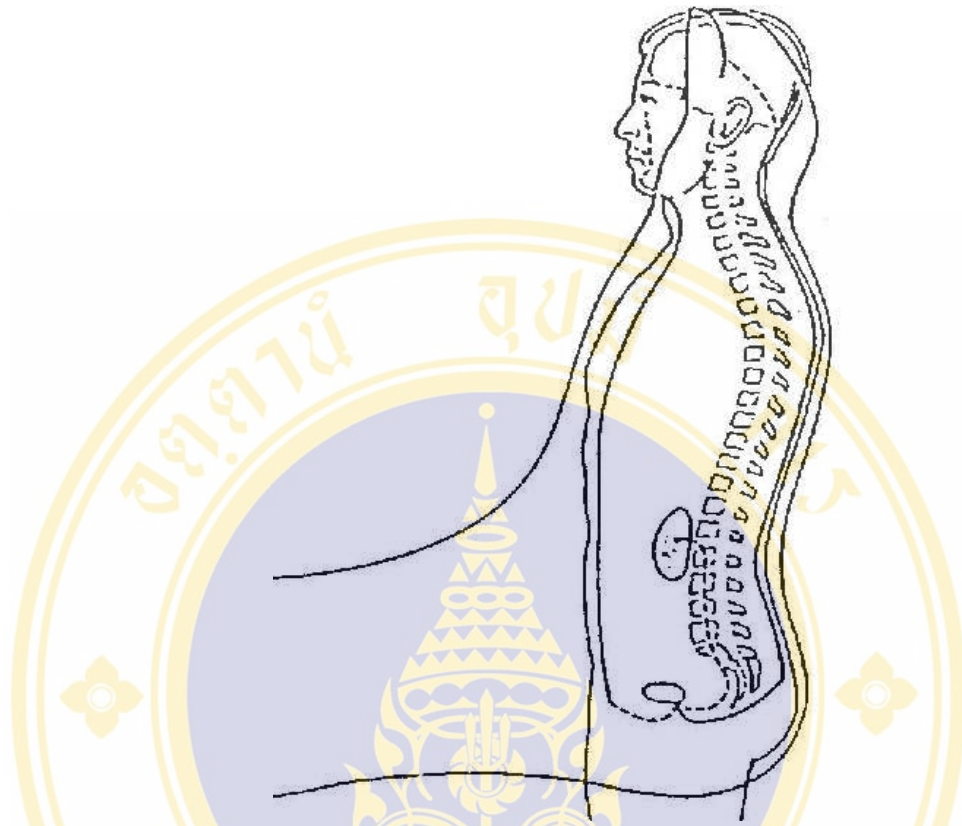


Figure 8: Image of spine merged to the sole by Dougan & Ellis, 1992: 53.

Foot reflexology applied to lateral inner foot affecting to autonomic nervous system.

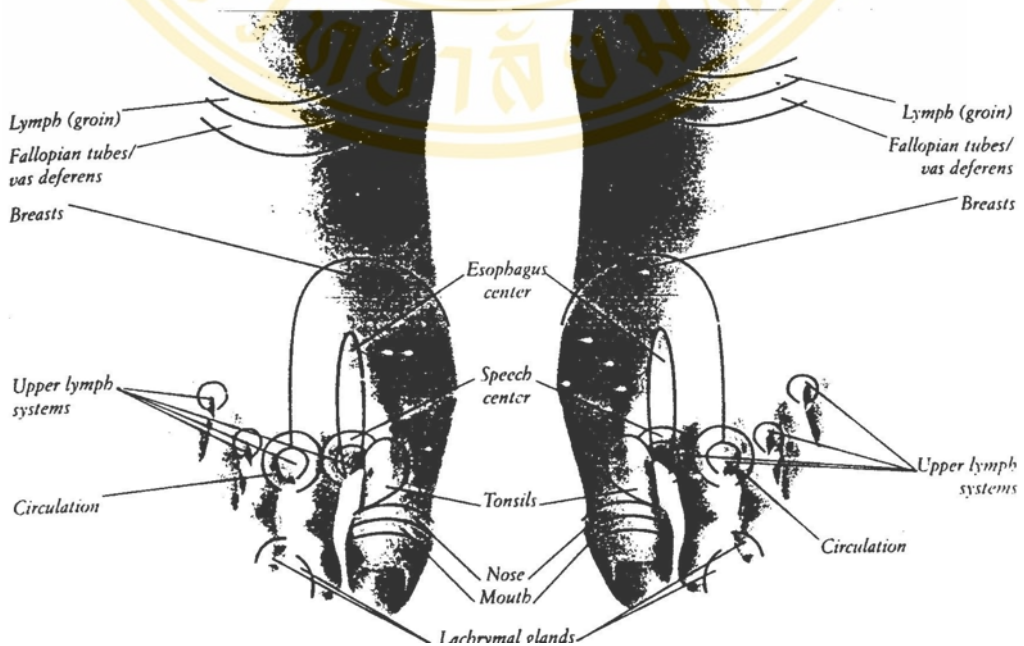


Figure 9: Image of organs on dorsum of the feet by Dorgan, 1999: 85

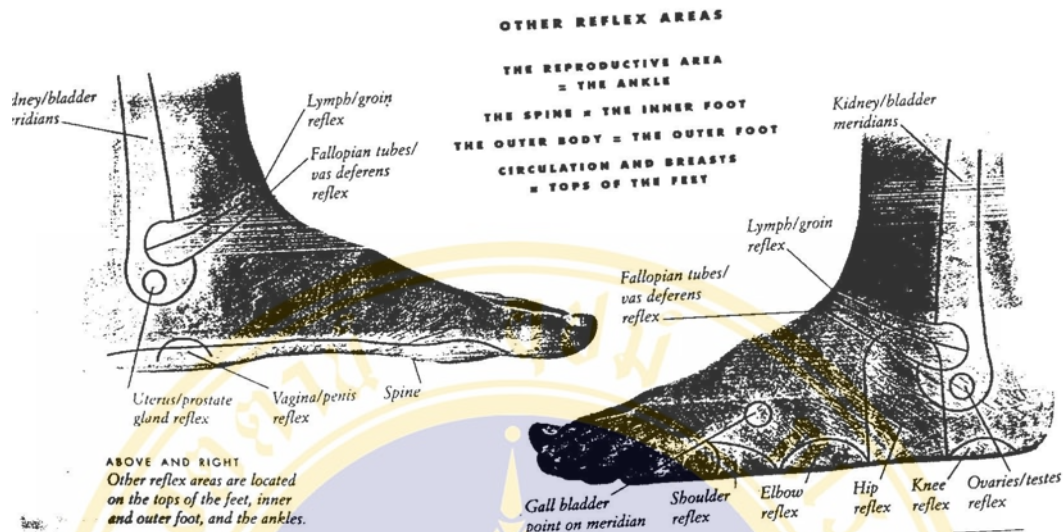


Figure 10: Reflex points on inner and outer feet corresponding to organs and glands by Dougan, 1999: 84.

The Energy Theory

Foot reflexology promoted good circulation of energy without blocked pathways enhancing the state of body balance and effective functions of the organs (Stephenson, Weinrich & Tavakoli, 2000: 68)

The Lactic Acid Theory

Stress motivated the release of lactic acid to congest along the energy pathways and be deposited as the microcrystals in the feet that obstructed the energy channels. Reflexology crushed the crystals and allowed for the free flow of energy (Stephenson, Weinrich & Tavakoli, 2000: 68; Dobbs, 1985: 42).

Theory of Proprioceptive Nervous Receptors

The emphasis of this theory is involved with the nervous system as well as the complex electric circuit of the human body. If there were no neurotransmitters connected to organs, the human body was unable to function properly. This theory stated that a connection existed between the areas of the feet and the body organs and that reflexing the feet affected the organs. The pressure at reflex points on the feet transmitted nervous impulses to CNS stimulating organs, endocrine, immune system, and the neuropeptide system (Stephenson, Weinrich & Tavakoli, 2000: 68).

The Psychological Theory

Foot reflexology could be explained by the psychological theory that reflexology was simple method of showing care and concern from nurses to patients (Dobbs, 1985: 42).

The Gate Control Theory

Foot reflexology aiming to relieve pain could be described by the gate control theory and endogenous theory. Those theories emphasized that foot reflexology transmitted the neuronal impulses to stimulate the pituitary gland at the hypothalamus causing the release of endorphins (Dougans, 1996: 44). Endorphins were endogenous opiate neuropeptides acting as the pain killer—morphine to inhibit pain by decreasing neurotransmitters to T Cells leading to less neuronal impulses to the brain.

Foot reflexology stimulates blood circulation, promotes the clearance of toxins and diminishes the congestion of lactic acid—an arousal of free nerve endings (Greene, 2000). Decreasing lactic acid cause less stimulation on free nerve endings and less pain.

Foot reflexology also eliminates the emotional stimuli such as fear and anxiety because the touch approach creates a warm feeling, security, and trust including sending a direct effect to the brain causing to inhibition of opening and closing of the gates at the spinal cord level(Hulme, Waterman & Hillier, 1999: 461).

5.3 Effects of foot reflexology in post abdominal surgical patients

Foot reflexology is a complementary technique of care with the purpose of holistic care of body, mind and spirit dimensions. Foot reflexology demonstrates the effects to post abdominal surgical patients as in the following:

5.3.1 Physical effects: foot reflexology affected the body (Mackey, 2000: 159, 163, 167; White, 1994: 39; Hayes & Cox, 1999: 1577-1582; Stephenson, Weinrich & Tavakoli, 2000: 68):

5.3.1.1 Expressing a direct effect to improve homeostasis and enhance proper functions of visceral organs.

5.3.1.2 Demonstrating positive blood circulation and lymphatic functions referring to effective oxygen carriage into cells and positive clearance of waste products from the body.

5.3.1.3 Improving the immune system

5.3.1.4 Enhancing wound healing because the reflexology arouses the releases growth hormone promoting protein synthesis.

5.3.1.5 Decreasing muscular tension that causes pain relief. Foot reflexology also elevates the release of endorphins that act as well as morphine in inhibiting pain by restraining neurotransmitters to the spinal cord.

5.3.1.6 Stimulating the functions of the parasympathetic nervous system reflects a decreased heart functions, bradycardia, hypotension, more relaxation and better sleep.

5.3.2 Psychological effects: foot reflexology showed psychological effects as follows (Hayes & Cox, 1999: 1577-1578; Mackey, 2001: 161): Touching approach of reflexology made patients feel calm, warm, and trustful. It was a communication from hands to heart that enhanced the great relationship between people who received massage and the masseur without verbal expression. It promoted positive relaxation, less anxiety and more warmth including more comfort.

In the study of Malkin (1994), the effects of foot reflexology in post surgical patients either by expressive touch, therapeutic touch or systemic touch would be addressed in positive aspects. Expressive touch created warm and secure feelings. The therapeutic touch enhanced positive energy flow to the organs. In addition, the systemic touch promoted the state of body balance and effective functions of organs (Ounprasertpong, L., 2001: 9).

In the literature review related to foot reflexology, foot reflexology was more employed in Western countries. As the existing empirical information, Dobbs (1985: 41) stated that the effects of foot reflexology on patients in the last stage of cancer indicated they gained less pain and more relaxation. Evan (1990: 29-31) presented the effects of reflexology in postnatal mothers with Caesarian sections that the foot reflexology helped patients to have normal voiding after removal of a Foley's catheter and diminished abdominal distension and enhanced better sleep. Oleson and Flocco (1993: 906-911) indicated that the effects of foot reflexology in premenstrual distress patients demonstrated less torment and more relaxation including more energy conservation for the next day. Hayes and Cox (1999: 1577-1582) researched about

the sudden effects of 5-minute foot reflexology applied to general patients that illustrated bradycardia, hypotension and slow respiratory rate. Stephenson, Weinrich and Tavakoli (2000: 67-72) indicated that a study about the effects of foot reflexology on anxiety and pain in breast cancer and lung cancer patients showed patients who had foot reflexology gained lower scores of anxiety and pain with statistical significance.

As mentioned above, Western countries were interested in foot reflexology and have conducted much research since 1985. In Thailand, the arts' of foot reflexology started to play a big role as an opportunity for health promotion for people and several research studies relating to the supportive roles of nurses have been done. For instance, Panyim, V. (2000) conducted a research of foot reflexology affecting pain and torment in post hysterectomy patients whose results indicated that patients who had foot reflexology had lower average scores of pain and torment than patients who had no foot reflexology did. Poonsa-ard, B. (2000) studied the effects of foot reflexology on pain and relaxation in cancer patients. The study determined that patients who received foot reflexology had less pain and more relaxation expressed in a decrease of blood pressure, heart rate and respiratory rate. Ounprasertpong, L. (2001) stated the effects of foot reflexology on fatigue and pain in AIDS patients indicated a significant variation of pain intensity between patients who had actual foot reflexology and artificial foot reflexology. Phuckmanee, S. (2002) showed the effects of foot reflexology on anxiety and torments from pain in breast cancer patients who were administered chemotherapy and the scores of anxiety and torments from pain in the patients who received foot reflexology were decreased with the statistical significance. At present, much research related to foot reflexology therapy have been conducted.

Conclusion

In the literature review mentioned above, patients with major abdominal surgery had severe pain, especially in the first to third days post-operation. The postoperative pain affects the physical, psychological, emotional, and social statuses of patients. Unrelieved pain causes patients to encounter fear, anxiety, insufficient sleep and other postoperative complications. Consequently, postoperative pain

management is essential in the nursing care of postoperative surgical patients. Nurses are the closest persons to patients and they should be able to assess the best in observation, analysis and pain relief for patients even if there are some pain killers used according to physician's orders for post surgical patients. Several researchers indicated that only using pain killers were insufficient for performing effective pain relief in post abdominal surgical patients (De Rond M. E. J., et. al., 2000: 210). Pain is a complex phenomenon and it is not a good idea to apply only one technique to control or relieve it. The combination of pain relief techniques e. g. pharmacological methods and non-pharmacological methods may lead to better results in pain relief. Foot reflexology is a non-pharmacological method and also a complementary therapy that demonstrates the independent role of nurses with high safety, convenience, simple technology and no instrument requirements for patients. In foot reflexology, the major essential instruments are only 2 hands and one heart. This technique is easy to perform and teach patients and relatives, so patients will gain happiness, comfort, and warmness with decreased anxiety. In Thailand, there is no research indicating the effects of foot reflexology on decreasing pain in post abdominal surgical patients what interested the investigator to conduct a study related to the above mentioned topic.

CHAPTER III

METHODOLOGY

This study was a quasi- experimental research using a simple cross over design. Each sample participated both in the control and in the experimental group for studying the effectiveness of the reflexology on the pain level, blood pressure, pulse rate, respiratory rate and satisfaction of post abdominal surgical patients.

Population and Sampling

The population of this study was general surgical patients, male and female adults who had to have a major abdominal operation of the gastrointestinal system and were recruited 24 hours after operation. The patients were admitted at the general surgical wards and colo- rectal ward in King Chulalongkorn Memorial Hospital. The samples consisted of 30 patients, who were selected by inclusion criteria as follows:

1. Not lower than fifteen years old.
2. Having full consciousness and being able to verbally communicate.
3. Willingly participating in this study.
4. No contraindication for the reflexology including deep vein thrombosis, acute inflammation of the venous and lymphatic system.
5. Pain score = 4-6.
6. Taking analgesic medicine for more than 2 hours.

Exclusion criteria

1. The patients, who had immediate postoperative complications that lead to an increase in pain level or a decrease in level of consciousness during the first 3 days after surgery including shock, nausea and vomiting all the time.
2. Receiving continuous analgesic infusion.

Sampling technique

A simple crossover design was used for this study. All subjects were randomized by drawing lots, to be in either the experimental group or the control group as shown in table 1.

Samples who were randomly chosen to be in the experimental group (A) on the first postoperative day would become part of the control group (B) on the second postoperative day. Similarly, samples who were randomly chosen to be in the control group (B) on the first postoperative day would become part of the experimental group (A) on the second postoperative day. This design was used to balance extraneous variables that could have had an effect on the individual’s pain perception.

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 st post operative day	A	B	B	A	A	A	B	A	A	A	B	B	A	B	A
2 nd post operative day	B	A	A	B	B	B	A	B	B	B	A	A	B	A	B

Sample	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1 st post operative day	A	A	B	A	B	B	B	B	A	B	B	A	B	B	A
2 nd post operative day	B	B	A	B	A	A	A	A	B	A	A	B	A	A	B

Table I . Showed the number of subjects randomly placed in the experimental group (A) and control group (B)

A = experimental group

B = control group

Setting of the study

Five wards in the general surgical and colo–rectal wards in King Chulalongkorn Memorial Hospital were set to be the study unit of this study including:

1. The first and the second floor of The Arthorn Building.
2. The first and the second floor of The Punjamarashinee Building.
3. The first floor of The Jongkonnewattanawong Building.

These wards admitted patients for abdominal surgery. All of the patients in the 5 wards are taken care of based on the abdominal surgical nursing care standard of

King Chulalongkorn Memorial Hospital , so the nursing practice in those 5 wards are the same, consisting of the surgery pain assessment by facial , emotional and vital signs, talking and asking about pain perception including advice and mental support, taking good care of the patient 's body, including general hygiene care, maintaining a comfortable position, wound dressing, maintaining the environment to make the patient comfortable and to have adequate rest, changing the sheet every two day, or when wet or dirty, providing a private area for the patient and giving analgesic medicine following the doctor's order and observing the side effects of the medicine.

Duration of the study

Form January to February, 2003.

Instrumentation

The instruments of this study were composed of two parts as follows:

1. Experimental procedure instruments

1.1 Post operative reflexology instruction was composed of preparation and method of the reflexology.

1.2 The foot reflexology tools comprised of

1.2.1 A small piece of little wood that Thai massages calls "Are-Jan-Yai" instead of the finger to press in the heel .

1.2.2 Lotion or oils to reduce friction and prevent skin damage.

1.2.3 Two towels for keeping feet warm.

1.3 Automatic electronic sphygmomanometer for measuring blood pressure and heart rate.

1.4 A watch with a second hand, which counted for one full minute.

2. Data collection instruments included:

2.1 Demographic data recording form which included age, gender, marital status, level of education, occupation, ward where the patient was admitted, the experience of pain and treatment information, which included patient's diagnosis,

operative day, type of surgery, type of surgical incision, pain control analgesia during the first 3 days after operation.

2.2 Patient's pain evaluation form, which the patient perceived by referring to the level of pain intensity at that time which is defined on a 10 centimeter horizontal continuum line with anchor words on the extreme left zero (0) which indicated no pain and the extreme right ten (10) which indicates the worst possible pain.

2.3 Physiological measured report which assessed blood pressure, respiratory rate and heart rate.

2.4 Satisfaction questionnaires about the opinion of patients while and after receiving the reflexology. These questionnaires were developed by the investigator, and included open and closed end questions and some of the visual analog scale in the questionnaires for indicating patients' feeling.

2.5 An automatic electronic sphygmomanometer and a watch with a second hand.

Validity and Reliability

1. Content validity of the reflexology instruction was approved by three specialists, composed of:-

1.1 Two nurse instructors who had experience in complementary therapy.

1.2 One instructor who is a specialist in the reflexology at the National Institute of Thai Traditional Medicine, Department of Medical Service, Ministry of Public Health.

2. Content validity of patient's pain evaluation form, physiological measured report, satisfaction and opinion questionnaires were approved by three specialists, composed of:-

2.1 Anesthetic doctor instructor who had experience in pain management at The Faculty of Medicine, Chulalongkorn University .

2.2 Anesthetic nurse who had experience in pain management at King Chulalongkorn Memorial Hospital.

2.3 The head nurse who was experienced in pain control management in The Abdominal Surgical Unit at The Faculty of Medicine, Siriraj Hospital, Mahidol University.

The investigator improved the instruments based on specialists' suggestions. After permission from the Ethical Human Research Committee, King Chulalongkorn Memorial Hospital, the investigator tried out the instruments for reliability 10 major abdominal surgical patients who had similar characteristics to the samples of this study. Cronbach alpha reliability of the pain evaluation form equal to 0.89.

Preparation of the investigator and the assistants

In this study, the investigator practiced the methods of foot reflexology with Assistant Professor Dr.Ladaval Ounprasertpong who was an expert in the reflexology and complementary therapy in The Nursing School Faculty of Medicine at Ramathibodi Hospital, Mahidol University. After that the investigator was trained in foot reflexology and received a certificate from The National Institute of Thai Traditional Medicine, Department of Medical Service, Ministry of Public Health. This training course took 8 hours per day for a week and skills were practiced on healthy persons, at least ten persons per week. In this study, the demographic data and treatment information were collected by the investigator, while the vital sign, patient's pain evaluation form, and satisfaction and opinion questionnaires were collected by two investigator's assistants, who are nurses in The Arthron Building at King Chulalongkorn Memorial Hospital. These two nurses were well trained to collect data based on the investigator protocol. They received an explanation about the patient's pain evaluation form, physiological measured report and satisfaction questionnaires about the opinions of patients after receiving foot reflexology. The assistants who collected the patient's pain evaluation form, recorded vital signs before and after receiving foot reflexology and supportive-educative care including satisfaction evaluation and foot reflexology opinions.

Procedure for data collection

1. The investigator sent an introduction letter from The Faculty Graduate Studies, Mahidol University to Chulalongkorn Memorial Hospital's director for

project presentation and for data collecting permission to the Ethical Human Research Committee.

2. Data was collected after permission was granted.

2.1 The investigator explained about the study objectives and data collection details to the nurse 's director, the head nurses of the general surgery wards and colo-rectal wards, and registered nurses for collaboration in this study.

2.2 The investigator checked the admission record of the general surgery and colo – rectal wards every day to identify patients admitted for major abdominal surgery. The investigator introduced herself and explained the objectives, and procedures of the study to the patient. To protect the rights of human subjects , the investigator contacted all the subjects to ask for their willing participation. Informed consent was obtained from all subjects.

3. All demographic data were collected from the subjects by interviewing, and the method of assessing the pain was explained to the patients and they were given a chance to ask their questions.

4. The subjects were assigned to the control group or the experimental group by random sampling, as shown in table I. All subjects were placed either in the experimental group or control group.

5. The investigator gave 2-3 cases of foot reflexology for experimental samples and 2-3 cases of supportive-educative care for control samples depending on how many samples met inclusion criteria.

6. In the experimental group, 24 hours after operation, the investigator's assistant conducted the patient's pain evaluation form to assess if the level of pain was about 4-6 scores and if the patients had had analgesic medicine more for than 2 hours. She measured the vital signs. After that the investigator explained the method of foot reflexology and prepared the environment. Then foot reflexology was done at the patient's feet for 30 minutes (15 minutes for each foot) by the investigator. The investigator's assistant collected the level of pain, and vital signs immediately, 15 minutes and 45 minutes after the reflexology. Then she asked about patient's satisfaction and opinions after foot reflexology.

7. In the control group, 24 hours after operation and after the patients had had analgesic medicine for more than 2 hours, the investigator 's assistant conducted

the patient's pain evaluation form to assess if the level of patient's pain was about 4-6 scores. She measured the vital signs and after that the patient was given supportive-educative care provided by the investigator. The supportive-educative care composed of caring about the comfortable position, appropriate environment, mental-support and patient's education for 30 minutes by the investigator. The assistant collected the level of pain scores, and vital signs immediately, 15 minutes and 45 minutes after the supportive-educative care.

8. Next day, the experimental group would be changed to the control group and the control group would be changed to the experimental group. In the data collection, the starting time of intervention the next day was usually over 24 hours with the mean of the extra time as 52 minutes because the pain level of patients at that time did not meet the inclusion criteria.

9. The investigator noted the time and period of giving analgesic medicine for three days after the operation from the patient's chart.

10. Then all data were processed and analyzed.

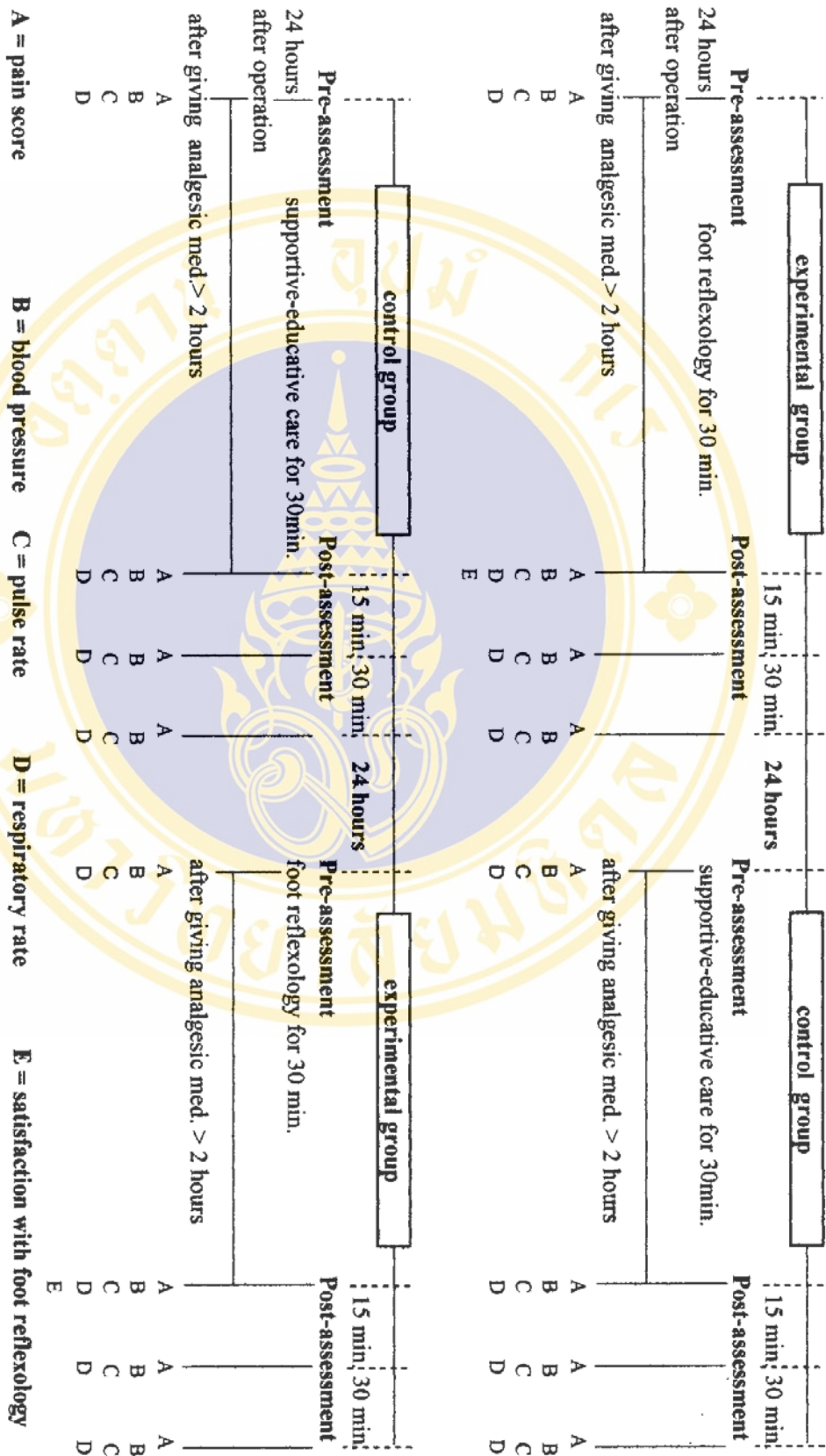


Diagram 1. The process of intervention

Protection of Human Subjects

The investigator realized the ethical issues in this study so the data collection recognized the patient's prestige and effects on patient. Before the data was collected, the investigator sent an introduction letter from The Faculty of Graduate Studies, Mahidol University to King Chulalongkorn Memorial Hospital's director for project presentation and for data collection permission to the Ethical Human Research Committee. After permission, was granted firstly the project was begun by the introducing the investigator herself, and declaring the objectives and procedures of this study for the subjects. Additionally, the study was presented to interns in all aspect. The subjects who participated in this study were free to consider to participate or withdraw from this study at all times and they would not be affected in anyway. If the subjects did not understand anything about this study, they could request information from the investigator at any time. Then the subjects were asked to sign a consent form to approve that they were willing to participate in this study.

Data analysis

1. Frequency and percentage was used to analyze demographic data.
2. Paired t-test was used to compare mean scores of pain before and after the supportive-educative care, before and after the reflexology, before the reflexology and before the supportive-educative care and after the reflexology and after the supportive-educative care.
3. Paired t-tests were used to compare means of vital signs before and after the reflexology, before and after the supportive-educative care, before the reflexology and before the supportive-educative care, before the reflexology and before the supportive-educative care and after the reflexology and after the supportive-educative care.
4. Mean and standard deviation were used to analyze satisfaction data.

CHAPTER IV

RESULTS

This research was a quasi-experimental research aiming to study the effects of foot reflexology on pain and satisfaction of post abdominal surgical patients. The result of this research is divided into 2 parts as follow:

Part 1: General characteristics of the sample groups

Part 2: The result of hypotheses testing

Part 1: General characteristics of samples

Table 2. Numbers and percentage of samples classified by gender, age, marital status, educational level, occupation and original address

Characteristics of Samples		Numbers (n = 30)	Percentage (%)
Gender			
	Male	9	30.0
	Female	21	70.0
Age (years)			
	21-40	5	16.7
	41-60	10	33.3
	61-80	14	46.7
	81 and over	1	3.3
Marital Status			
	Single	3	10.0
	Married	19	63.3
	Widow / Divorce	8	26.7

Table 2. Numbers and percentage of samples classified by gender, age, marital status, educational level, occupation and original address (continued)

Characteristics of Samples		Numbers (n = 30)	Percentage (%)
Religion			
	Buddhism	27	90.0
	Christian	1	3.3
	Islam	2	6.7
Educational Level			
	Elementary level	13	43.3
	High school level	13	43.3
	Undergraduate level	4	13.3
Occupation			
	Government Officer	2	6.6
	Self - employed	6	20.2
	Private Enterprise employee	1	3.3
	Employee	3	10.0
	Farmer	1	3.3
	Unemployed	16	53.3
	Student	1	3.3
Original address			
	North	3	10.0
	Central	13	43.3
	East	2	6.7
	North - Eastern	12	40.0

In table 2, most samples, 70% were female and 30% of samples were male. The age ranges in samples was 21-85 years. Most of the samples were in the age range from 61-81 years, 46.7%. The second age range was 41-60 years, 33.3%. The religions of samples were 90% Buddhism, 6.7% were Islam, and 3.3% were Christian. The majority of marital status was married, 63.3%. The educational level of samples were equal between elementary and high school levels (43.3%). The least common was undergraduate level (13.3%). Samples with unemployment were the most

common of samples found (53.3%) and only 20% were self-employed. The majority of samples were came from the central region of Thailand (43.3%). The North Eastern was second (40%).

Table 3. Numbers and percentage of samples classified by operative experience and diagnosis

Characteristics of Samples		Numbers (n = 30)	Percentage (%)
Operative experience			
	ever operative experience	12	40.0
	never operative experience	18	60.0
Diagnosis			
	Biliary tract disease	8	26.7
	Large bowel disease	14	46.7
	Disease of stomach	4	13.3
	Liver and pancreas disease	4	13.3
Operative duration			
	1-3 hours	20	66.7
	> 3 hours	10	33.3
Location of operative wound			
	Midline incision	15	50.0
	Transverse incision	8	26.7
	Subcostal incision	4	13.3
	Benz incision	3	10.0
Type of analgesic opoid			
	Pethidine	10	33.3
	Morphine	5	16.7
	Pethidine & Morphine	11	36.7
	Pentidine & paracetamol	4	13.3

In table 3, most samples had no operative experience, 60% and the other 40% had operative experience. The most common diagnosis of samples were abnormalities of GI tract as 46.7% and the least common diagnosis was abnormalities of the biliary tract, 26.7%. Location of operative wound were mostly found as midline

incision at 50% and transverse incision was second at 26.7%. The most popular analgesic opioid was of pethidine & morphine (36.7%). The second choice of analgesics opioid administration was Pethidine, at 33.3%.

Part 2: The results for hypothesis testing

Hypothesis 1: Patients with post intervention of foot reflexology will earn the lower perception of pain scores than other patients with supportive-educative care do.

Table 4. Comparison on the mean difference of pain pre and post intervention of foot reflexology by the paired t-test (n = 30)

Assessment Period	Pre Intervention of foot reflexology		Post Intervention of foot reflexology		mean Diff.	t	P - Value
	mean	SD	mean	SD			
		5.02	0.82				
Immediately after intervention			2.99	1.09	2.03	14.83	0.00**
15-min.After intervention			2.99	1.06	2.14	17.76	0.00**
45-min.After intervention			3.00	1.07	2.02	16.18	0.00**
**P < 0.01							

Regarding the comparative analysis of the mean pain scores in pre and post intervention of foot reflexology, patients with post intervention immediately, 15 min and 45 min. after foot reflexology stated lower mean pain scores than patients with pre intervention of foot reflexology significantly ($P < 0.01$).

Table 5. Comparison of the mean pain scores in pre and post supportive-educative care by paired t-test (n = 30)

Pain Assessment Period	Pre supportive-educative care		Post supportive-educative care		mean Diff.	t	P - Value
	mean	SD	mean	SD			
	4.62	0.73					
Immediately after intervention			3.51	0.87	1.11	11.51	0.00**
15-min. After intervention			3.58	0.78	1.04	10.86	0.00**
45-min. After intervention			0.34	1.07	0.28	2.09	0.05*
**P < 0.01 *P ≤ 0.05							

The comparison of the mean pain scores in post supportive-educative care showed a decrease from mean pain scores in pre supportive-educative care significantly at P<0.01 immediately and 15 min. after intervention. But the mean of pain score at 45 min. after supportive-educative care showed a significant decrease at P=0.05 when compared with the mean of pain score in pre supportive-educative care.

Table 6. Comparison of the mean difference of pain scores in pre interventions of foot reflexology and supportive-educative care (n = 30)

Intervention	n	Mean of Pain score	SD of Pain score	mean Diff.	t	P- Value
Pre supportive-educative care	30	4.62	0.73			
Pre foot reflexology care	30	5.02	0.82	0.4	1.83	0.08
P ^{ns} >0.05						

From the above table the mean of pain scores between pre supportive-educative care and pre-foot reflexology care were non significantly different at P>0.05.

Table 7. Comparison of the mean difference of pain scores in patients with post interventions of foot reflexology and supportive-educative care (n = 30)

Pain assessment period	Post Intervention of Foot Reflexology		Post supportive-educative care		mean Diff.	t	P - Value
	mean	SD	mean	SD			
	Immediately after intervention	2.99	1.09	3.51			
15-min,after intervention	2.38	1.06	3.58	0.78	-0.70	-2.868	0.01*
45-min,after intervention	3.00	1.07	4.34	1.05	-1.34	-4.731	0.00**

**P < 0.01, *P < 0.05

In table 7 the comparison of mean pain scores between immediately, 15 min and 45 min after supportive-educative care were statistically significantly different from immediately, 15 min and 45 min post intervention of foot reflexology at $P < 0.05$, 0.01 and 0.00, respectively.

Hypothesis 2: Patients with post intervention of foot reflexology demonstrate a lower heart rate, respiratory rate and blood pressure than patients with post supportive-educative care do.

Table 8. Comparison of the mean difference of vital signs in pre and post intervention of foot reflexology by the paired t-test

Variables	vital sign assessment period	Pre intervention of foot reflexology		Post Intervention of foot reflexology		mean Diff.	t	P - Value
		mean	SD	mean	SD			
		Systolic blood pressure	137.47	15.12				
	immediately			128.80	15.31	12.27	7.49	0.00**
	after 15-min.			123.43	29.00	15.03	3.52	0.00**
	after 45-min.			124.80	14.61	12.67	8.46	0.00**
Diastolic blood pressure		82.90	9.14					
	immediately			75.73	9.08	7.17	5.65	0.00**
	after 15-min.			75.83	7.94	7.07	4.35	0.00**
	after 45-min.			76.10	9.91	6.80	3.93	0.00**
Heart rate		88.37	11.45					
	immediately			83.03	10.83	5.33	5.47	0.00**
	after 15-min.			81.83	10.97	6.53	6.20	0.00**
	after 45-min.			81.53	11.64	6.83	7.50	0.00**
Respiratory rate		22.80	2.33					
	immediately			21.40	1.98	1.40	5.46	0.00**
	after 15-min.			21.40	2.47	1.40	2.97	0.01*
	after 45-min.			21.07	2.62	1.73	6.50	0.00**

**P < 0.01, *P < 0.05

In table 8 the results revealed that systolic blood pressure of post operative abdominal patients immediately, 15 min and 45 min post intervention of foot reflexology were significantly different from pre intervention of foot reflexology at P<0.00 , which was the same for diastolic blood pressure, heart rate and respiratory

rate. Except respiratory rate after 15 min. were significantly difference from pre intervention of foot reflexology at $P < 0.01$.

Table 9. Comparison of the mean difference of vital signs in pre and post intervention of supportive-educative care by the paired t-test.

Variables	vital sign assessment period	Pre supportive- educative care		Post supportive educative care		mean Diff.	t	P - Value
		mean	SD	mean	SD			
		Systolic blood pressure	137.5	15.14				
	immediately			125.4	15.28	10.10	8.29	0.00**
	after 15-min.			127.97	15.87	7.50	7.76	0.00**
	after 45-min.			133.4	15.33	2.10	1.56	0.13
Diastolic blood pressure		80.87	8.12					
	immediately			76.53	9.91	4.33	2.42	0.02*
	after 15-min.			76.03	10.07	4.83	2.54	0.02*
	after 45-min.			79.77	8.52	1.10	0.93	0.36
Heart rate		87.73	11.32					
	immediately			84.63	10.46	3.10	3.46	0.00**
	after 15-min.			83.70	11.01	4.83	3.33	0.00**
	after 45-min.			86.23	11.80	1.50	1.47	0.15
Respiratory rate		22.4	2.37					
	immediately			21.60	2.06	0.80	2.26	0.03*
	after 15-min.			21.73	2.50	0.67	1.50	0.14
	after 45-min.			21.80	1.99	0.60	1.39	0.17
**P < 0.01, *P < 0.05								

Table 9 showed that at immediately and 15min after post supportive-educative care, systolic and diastolic blood pressure, heart rate were significantly different from pre supportive-educative care at $P < 0.00$, 0.00 , 0.02 , 0.02 , 0.00 , 0.00 , respectively. But there were non significant differences at 45 min after supportive-educative care. However, the respiratory rate of post supportive-educative care was

significantly different only between pre supportive-educative care and immediately post supportive-educative care at $P < 0.03$.

Table 10. Comparison of the mean difference of vital signs in the patients with pre interventions of foot reflexology and supportive-educative care by paired t-test.

Variables	Pre intervention of foot reflexology		Pre supportive-educative care		mean Diff.	t	P - Value
	mean	SD	mean	SD			
	Systolic blood pressure	137.47	15.12	135.47			
Diastolic blood pressure	82.90	9.14	80.87	8.12	2.03	1.09	0.28
Heart rate	88.37	11.45	87.73	11.32	0.63	0.48	0.64
Respiratory rate	22.80	2.33	22.40	2.37	0.40	1.24	0.23
P ^{ns} > 0.05							

There were non significant differences of systolic and diastolic blood pressure, heart rate and respiratory rate between pre intervention of foot reflexology and pre supportive-educative care

Table 11. Comparison of the mean difference of vital signs in the patients with post interventions of foot reflexology and supportive-educative care

Variables	vital sign assessment period	Post intervention of foot reflexology		Post supportive- educative care		mean Diff.	t	P - Value
		mean	SD	mean	SD			
		Systolic blood pressure	immediately	125.20	15.31			
	after 15-min.	122.43	29.00	128	15.88	-5.53	-1.30	0.21
	after 45-min.	124.80	14.61	133.4	15.33	-8.57	-4.35	0.00**
Diastolic blood pressure	immediately	75.73	9.08	76.53	9.91	-0.80	-0.69	0.5
	after 15-min.	75.83	7.94	76.03	10.07	-0.20	-0.14	0.89
	after 45-min.	76.10	9.92	79.97	8.52	-3.67	-2.56	0.02*
Heart rate	immediately	83.03	10.83	84.60	10.46	-1.06	-1.15	0.26
	after 15-min.	81.83	10.97	83.70	11.01	-1.87	-1.15	0.26
	after 45-min.	81.53	11.64	86.23	11.80	-4.70	-3.90	0.00**
Respirator rate	immediately	21.40	1.98	21.60	2.06	-0.20	-0.570	0.57
	after 15-min.	21.40	2.47	21.73	2.50	-0.20	-0.570	0.57
	after 45-min.	21.40	2.02	21.80	1.97	-0.73	-2.164	0.04*

**P < 0.01, *P < 0.05

From table 11 there were significant differences of vital sign (systolic blood pressure, diastolic blood pressure, heart rate and respiratory rate) at 45 minutes after foot reflexology when compared to post supportive-educative care at P<0.00, 0.02, 0.00 and 0.04, respectively.

Patients satisfied with post intervention of foot reflexology.

Table 12. Means and standard deviations of patients’ satisfaction with foot reflexology

Satisfaction of foot reflexology		mean	SD
Pain perception		2.99	1.02
Relaxation		7.56	1.11
Comfort		7.87	1.05
Warmness and Trust in reflexology		7.69	0.64
Perception of foot reflexology benefits		8.30	1.10
Agreement with the foot reflexology training for family members		8.39	1.54
Satisfaction		8.39	1.17

In table 12 patients satisfaction in foot reflexology were mild pain and more satisfied in the aspect of relaxation, comfort, geniality, benefit and agreement to train for family members and overall satisfaction (mean= 2.99, 7.56-8.39, S.D.=1.02, 0.64-1.54, respectively).

CHAPTER V

DISCUSSION

The effects of foot reflexology on pain and satisfaction of 30 post operative abdominal surgical patients were studied. All 30 subjects had major abdominal surgery and the majority were elderly people aged between 61-80 years. Most common diagnoses were large intestine diseases and biliary tract diseases. Those reflected the familial aspects of a trend in diseases of the large intestine and rectum that mostly occurred in adults aged over 40 years (Vatcharapook, T., 1999: 668) and in biliary tract diseases that mostly are found in adult patients aged over 50 years (Panthusena, C., 2001: 272). Most of them presented moderate and severe pain levels that was harmonious with the study of Carr (1997) that indicated 75% of post operative patients coped with torment from moderate pain and 15% of post operative patients faced severe pain (Carr, 1997 cited in Sjostrom, et. Al., 1999: 2547).

Random selection into the control group and the experimental group was employed with 30 subjects. The control group received the 30 minute supportive-educative care. The experimental group received foot reflexology with a 30-minute duration performed by the researcher. The outcomes of research analysis can be explained according to the hypotheses as follows:

1. Patients with post intervention immediately, 15 min, and 45 min after foot reflexology had significantly lower mean pain scores than patients post supportive-educative care. Moreover, this study showed that patients with post intervention immediately, 15 min and 45 min after foot reflexology had significantly lower mean pain scores than those with pre intervention at $P < 0.01$. This may be because the foot reflexology affected stimuli to the pituitary gland leading to increased endorphins secretion (Dougans, 1996: 44). Endorphins are endogenous opiate neuropeptides with the same action of morphine in human bodies. It also inhibited the secretion of substance P causing reduced neurotransmitters to T-cells and the brain that caused decreased pain perception (Watt-Watson & Long, 1993: 164).

In addition, foot reflexology promotes blood circulation, muscle relaxation, and sufficient oxygen to cells that supports the study of Greene (2000) stating reflexology motivated blood circulation, increased oxygen saturation by 10-15% and decreased lactic acid congestion, a pain stimulator that led to decelerated pain perception (Greene, 2000 cited in Boonsawad, W., 2002: 40).

The approach of foot reflexology is a temporary distraction of pain concern referring to declined negative emotional stimulators such as anxiety, fear and enhanced warmth, good relationships between patients and the reflexologist, and more relaxation. It directly influenced the brain and motivated the neurotransmission through the descending pathway prohibiting the opening-closing gate mechanism at the spinal cord (Phungvithaya, S., 1997: 11; Reynolds, 1996: 8-9).

Hence, foot reflexology presents a positive effect on the decreased pain levels in patients that corresponds to the study of Stephenson, N. L., et al. (2000: 67-72) demonstrating that foot reflexology in breast and lung cancer patients showed the positive result of decreasing anxiety with a statistical level of significance. Dobbs (1985: 41-42) also stated that end-stage cancer patients who employed foot reflexology had less pain and more relaxation and those patients said that foot reflexology presented many possible benefits for them and their families. Their family members or care providers agreed to perform it to patients and that encouraged good relationships, love and care.

In the analysis of patients with post intervention of supportive-educative care, mean pain scores declined to a statistically significant level of 0.01 immediately and 15 minutes after intervention. The mean pain score at 45 minutes post intervention of supportive-educative care decreased with a statistically significant level of 0.05. This was because supportive-educative care also emphasized in both physical and psychological cares. Positive feelings e.g. good, genial, be encouraged, happy, cognitive, and having someone to care occurred with patients leading to a decrease of anxiety, fear, emotional stimulators and the promotion of self-adaptation for encountering coming events, pain toleration and diminishing pain perception. The study of Jerayingmonkon, P. (1993), on the effects on the approach to a decrease of anxiety in 30 post operative patients who were administered general analgesics and were surgical, obstetric-gynecological patients, and orthopedic patients, showed

similar outcomes that all assistant actions e. g. body position, posture arrangement, and bed bath–general cleaning led to decreased anxiety, feeling genial, comfortable, relaxed and be encouraged to fight the pain. It supports this study which indicated that the mean pain score was decreased in the periods of immediately, 15 minutes and 45 minutes post supportive-educative care with statistical significance.

In the analysis of mean pain scores in pre interventions of foot reflexology and supportive-educative care by the paired t-test mentioned in table 6, it showed no difference with statistical significance. But a comparison between the mean difference of pain from post intervention of foot reflexology and supportive-educative care by paired t-test mentioned in table. 7, demonstrated that patients with post intervention of foot reflexology showed lower mean pain score than patients with post intervention of supportive-educative care in all periods of intervention, especially in 45 minutes and the mean differences of pain scores were statistically significant at 0.00. Those results showed that the effects of foot reflexology promoted higher pain toleration and a longer period of analgesics opioid demand. The result of Joachim's study (1983, cited in Hayes & Cox, 1999: 77) generates support as reflexology enhanced the decreased demands of analgesic opioid and sedatives. And the effects of the reflexology could relieve pain more effectively than the effects of supportive-educative care did.

2. Post intervention of foot reflexology motivated a lower heart rate, blood pressure and respiratory rate than post supportive-educative care did.

The results from this study confirmed the hypotheses above that there were significant differences in vital signs (systolic blood pressure, diastolic blood pressure, heart rate and respiratory rate) only at 45 minutes after intervention of foot reflexology.

In the comparative analysis of pre intervention of foot reflexology and pre intervention of supportive-educative care by the paired t-test, heart rate, respiratory rate and blood pressure indicated no statistically significant difference. Table 10, showed the general physiological conditions of 2 stages of intervention to be nearly the same status. So that it should not have any effect on post intervention. Any changes in vital sign during post intervention could be the effect of a different intervention. In addition the analysis of pre and post intervention of foot reflexology showed that mean vital signs in post intervention of foot reflexology had decreased

with statistical significance in all periods of intervention, as shown in table 8, because foot reflexology applied pressure to 26 different points in the foot area as well as stimulating major peripheral nerves to continuously transmit neuronal impulses. It also affected organs and the parasympathetic nervous system resulting in vasodilatation, effective waste clearance of lactic acid, and muscular relaxation including less anxiety. Those lead to a decreased heart rate, respiratory rate and blood pressure (Dougans, 1996; Mackey, 2001). This was harmonious with the study of Hayes & Cox (1999: 1577-1582) relating to the sudden effects of 5-min. intervention of foot reflexology in ICU patients. Post intervention of 5-min. foot reflexology demonstrated a lower heart rate, respiratory rate and blood pressure with statistical significance. Combining a quiet and peaceful environment including a comfortable postures were more required before intervention than pre foot reflexology did.

In a comparison of the mean differences of vital signs in pre and post intervention of supportive-educative care, blood pressure and heart rate were diminished with statistical significance in the periods of immediately and 15-min. of post intervention. But at 45-min. post intervention the decrease no statistical significance. Respiratory rate demonstrated a decline with statistical significance in only immediately post supportive-educative care. The 15-min. and 45-min. of post intervention showed a decrease but no statistical significance, as shown in table 9. All this was because supportive-educative care was a distraction that was temporarily effective. And in the table 5, although the evidence showed the mean pain scores after supportive-educative care decreased, as the time went by, the increasing mean pain scores demonstrated then reached almost the same level of the mean of pain scores in the pre supportive-educative care, especially in 45 min. post supportive-educative care. When pain increased, it reacted with the sympathetic nervous system, and resulted in increasing vital signs until there was no difference in vital signs in pre supportive-educative care.

In the analysis of post interventions of foot reflexology and supportive-educative care, blood pressure, heart rate and respiratory rate declined with statistical significance in the period of 45-min.in both interventions. However, post interventions of foot reflexology and supportive-educative care immediately and after 15-min. presented no difference in blood pressure, heart rate and respiratory rate with

statistical significance, as shown in table 11. The reason could be that foot reflexology enhanced patients to gain more relaxation because of the diminished function of the sympathetic nervous system and increased function of the parasympathetic nervous system leading to lower blood pressure, heart rate and respiratory rate. Post intervention of supportive-educative care in the period of 45min showed no difference of mean vital signs. This indicated that the effect on post intervention of supportive-educative care identified less pain and more relaxation but lasted only a short time. The effect on post intervention of foot reflexology lasted longer than the supportive-educative care supported by the lower mean of vital signs at 45-min. post foot reflexology. This corresponded to the study of Panyum, W. (2000) that indicated the effects of foot reflexology on pain and distress in abdominal hysterectomy patients. Wunpen's study was conducted with 60 obstetric-gynecological patients who were selected to be in control and the experimental groups with 30 subjects in each group. The study outcome showed the mean vital signs in subjects who had foot reflexology were lower than those of subjects who had normal care. The research of Poonsaard, B.(2000) addressed the supportive aspects that 30 patients with any kind of cancer were divided into two groups, and a change-over design was used in this study. The experimental group had 30-min. genuine foot reflexology—pressing on at the right reflex points for 30 min. a time and the control group had artificial foot reflexology—pressing on the foot area without proper weight and no concern for the reflex points. The outcome of that study demonstrated that subjects with post foot reflexology had less pain, more relaxation and decreased values of vital signs with statistical significant difference than those who received artificial foot reflexology.

3. Patients had satisfaction after the intervention of foot reflexology; however, pre intervention of foot reflexology determined the mean pain score was at a moderate pain level (5.02). At the post intervention of foot reflexology, mean pain scores immediately after intervention gradually decreased to a mild pain level (2.99) This showed the same trend as the mean of relaxation scores which was at the more relaxation level (7.56). And the mean of comfort scores was at the more comfortable level (7.87). This was because foot reflexology aroused the parasympathetic nervous system to reduce physical reactions—decreased heart rate, respiratory rate and blood pressure leading to more relaxation (Hayes & Cox, 1999). Foot reflexology also

stimulated the pituitary gland to secrete endorphins as well as natural morphine in the human body that inhibited pain transmission to the spinal cord and the brain. Being out of the pain cycle encouraged more relaxation and happiness (Dougans, 1999: 44). In addition, a comfortable posture during the intervention of foot reflexology and peaceful environment enhanced patients to have good and sufficient sleep, more relaxation, and extreme happiness. Foot reflexology generated the proper functions of organs, positive inner balance, increased blood circulation, muscular relaxation, better mobility, effective immunity, diminished pain enhancing both physical and psychological relaxation (Mackey, 2001: 163). Oleson and Flocco (1993) stated in a harmonious study on the effects of foot reflexology on females with premenstrual distress that females with post genuine foot reflexology showed decreased suffering from premenstrual distress and more relaxation. Most of them fell a sleep during the intervention. Poonsaard, B. (2000) also stated that cancer patients who had genuine foot reflexology expressed less pain and more relaxation.

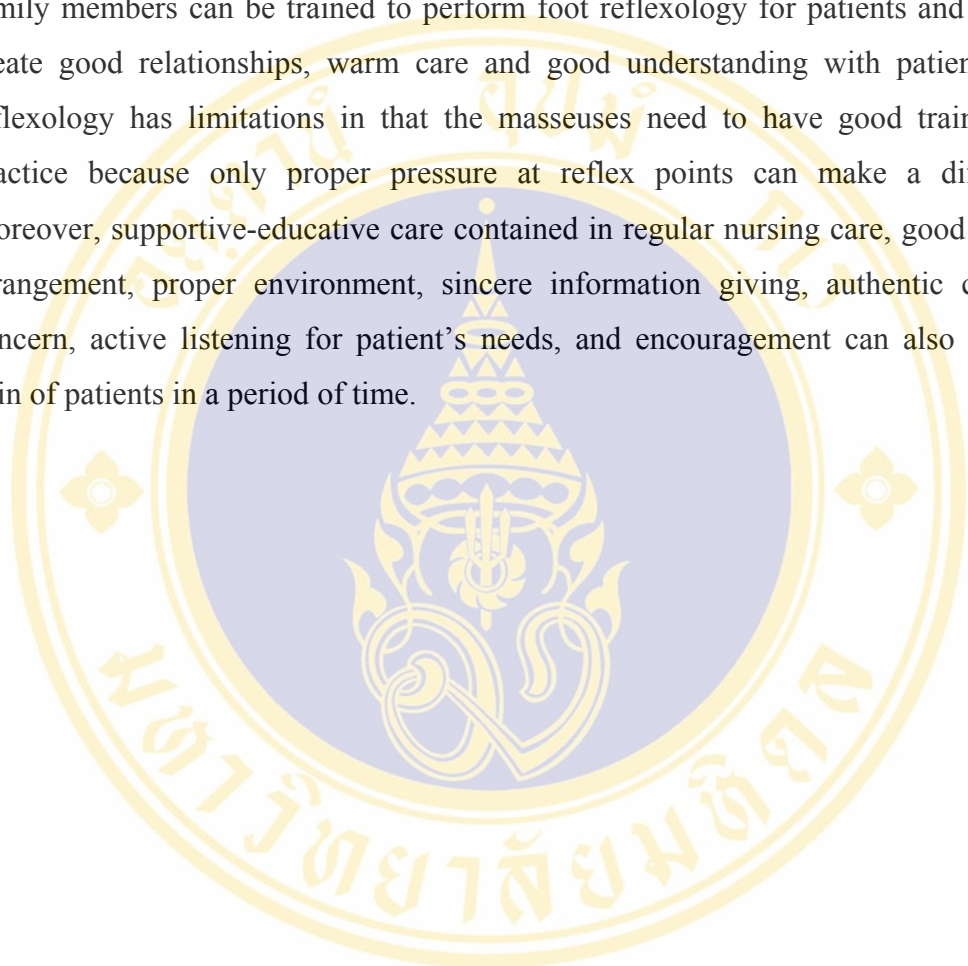
Moreover, patients with post intervention of foot reflexology defined geniality and trust in the masseuse at a high level (mean =7.69). They acknowledged the expected benefits of foot reflexology were many benefits (mean=8.30). Agreeing with family members having special training on foot reflexology showed a high degree (mean =8.39). Thus, reflexology was a pattern of physical communication expressing care, concern and geniality (White, 1988). And also, it was a communication from hands through hearts, a non-verbal communication that enhanced the positive relationship between patients and reflexologists leading to positive relaxation, decreased anxiety, increased geniality and comfort (Mackey, 2001: 160). Sim (1986) stated that the nursing approach elevated feelings of patients e.g. geniality, be cared for and trust. In this study, most samples were elderly people and they normally had positive attitude and good perception of foot reflexology. Most of them liked foot reflexology and the approach (Prachayapramita, S., 1998). The intervention of foot reflexology in this study created good feelings in the samples e.g. not being neglected, being cherished, being secure, having less anxiety and good relationships including a good attitude to reflexologists. Five patients from this study indicated that they were so impressed with the foot reflexology from the nurses because they had never thought nurses would perform that intervention by themselves.

Dobbs (1985) said that in post intervention of foot reflexology, patients stated less pain, more relaxation, and its benefits for patients and families. To provide the foot reflexology for patients by family members promoted positive relationships, and expressions of love and care in the family. In this study, 4 patients were interested in training for foot reflexology for self-intervention of foot reflexology at home. The mean score of subjects' satisfaction were at much satisfaction (8.39). This is because foot reflexology promotes pain reduction, more relaxation, less anxiety, and more comfort including the touching approach from reflexology; also non-verbal communication enhances patients to gain geniality, happiness and pleasant.

Likewise, the additional discovery from post intervention of foot reflexology was that 8 patients reported that they felt more energy and power to mobilize after intervention and the elimination of abdominal distension. Six patients felt a sleep during the intervention. Two of them had a 2-hour deep sleep after intervention. The study of Bang-Onrat (2000) on the effectiveness of foot reflexology to reduce pain and promote relaxation in cancer patients, also supported those findings that cancer patients with post intervention of foot reflexology gained less pain, had more relaxation and additional benefits such as they eliminated abdominal distension, reduced constipation, declined fatigue, and motivated mobility. Evans (1990) studied about the effects of foot reflexology on Cesarean Section mothers and stated the outcome that foot reflexology motivated self-voiding after removing the urethral catheter, diminished abdominal distension after surgery and promoted good sleep. One patient commented that foot reflexology bumped his/her wound. This confirms that foot reflexology enhances good benefits to patients but the masseuse needs to emphasize proper pressure at the reflex points as improper pressure may lead to discomfort and no positive effect on patients. During intervention, the masseur has to closely observe patient's reactions such as physical actions and present symptoms. Good practice of foot reflexology before performing on patients is essential.

In conclusion, foot reflexology is one effective method to decrease pain without analgesic opioid administration in post abdominal surgical patients with GI tract diseases. It can be applied in samples who had severe and moderate pain levels. In addition, it enhances patients to feel more relaxed and comfortable. It indicated longer effects than supportive-educative care did. Foot reflexology also creates

feelings of patients as being genial, being encouraged, being cherished, being loved, being care for and being concerned that gave patients positive impressions and happiness. It can be one alternative for complementary nursing care that demonstrates effective results to decrease pain in post abdominal surgical patients. Nurses and family members can be trained to perform foot reflexology for patients and that can create good relationships, warm care and good understanding with patients. Foot reflexology has limitations in that the masseuses need to have good training and practice because only proper pressure at reflex points can make a difference. Moreover, supportive-educative care contained in regular nursing care, good position arrangement, proper environment, sincere information giving, authentic care and concern, active listening for patient's needs, and encouragement can also decrease pain of patients in a period of time.



CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study was conducted as a quasi-experimental research with a simple cross over design aimed at studying the effects of foot reflexology on pain levels, vital signs and patient's satisfaction in post abdominal surgical patients with gastrointestinal tract diseases. The conceptual framework of this study employed the Gate Control Theory of Melzack & Wall (1965: 1982) to be a guide.

The data collection was performed from January to February 2003 at the general surgical wards and colo-rectal ward of King Chulalongkorn Memorial Hospital. Samples were randomly selected as 30 patients with major abdominal surgery based on inclusion criteria. They were 21 females and 9 males, age 21-85 years. Each sample was separated into a control group and an experimental group by chance. Samples were randomized into the control group in the first day and the experimental group on the second day and vice versa. The control group would have the intervention of 30-min.supportive-educative care and the experimental group would have the intervention of 30-min. foot reflexology.

Instruments in this study for data collection were demographic characteristics record-general data, physical assessment form, questionnaires for assessing patient's satisfaction and opinions on foot reflexology. The questionnaire was tested for reliability by Cronbrach alpha coefficient and had the reliability of 0.89. Instruments for research intervention included with foot reflexology instruction, reflexology tools, automatic blood pressure device, and a watch with a second hand.

Data collection was implemented after completing the sampling selection accorded to the inclusion criteria. Introduction of this study, objectives, procedures and the assessment of pain levels related to patient's perception were used in the post 24 hour operative period and the over-2-hour analgesic opioid administration should

be explained to patients. The investigator's assistants let patients evaluate their pain levels. If patients had pain level at 4-6 scores, their vital signs were taken and patients in the experimental group would receive 30-min. foot reflexology from the investigator. Likewise, patients in the control group would receive the intervention of 30-min. supportive-educative care from the investigator. Subsequently, the assistant assessed the pain of patients, recorded vital signs in both groups at immediately, 15min. and 45min. periods after intervention. Patients had to answer the questionnaire relating to their satisfaction and opinion on mid and post intervention of foot reflexology.

The Statistic Package for Social Science for Windows version 10 (SPSS/FW) was used for the research analysis.

Research Results

The results of this study are summarized as follows:

1. The majority of samples (70%) were female; most of them were aged 61-80 years (46.7%), Buddhist (90%), unemployed (53.3%) and their original address was the central region of Thailand (43.3%). Sixty percent of subjects indicated no operative experience. The majority of samples had the diagnoses of large bowel disease (46.7%). Operative duration was 1-3 hours (66.7%). The site of operative wounds were defined as the midline incision (50%) and analgesic opioid - pethidine & morphine were administered (36.7%). Samples showed a pain level in pre-intervention of 4-6 scores as well as a moderate pain level.

2. The subjects with post intervention of foot reflexology demonstrated lower mean differences of pain scores than the patients with post intervention of supportive-educative care at a statistical significant level of $P < 0.05$ in the immediately and 15 min. periods after intervention. Patients with post intervention of foot reflexology showed the decreased pain with a statistically level of significant level of $P < 0.01$ in the 45-min. period.

3. Means of vital signs of post supportive-educative care and post foot reflexology at 45-min period indicated decrease with statistical significance of 0.01. But the immediately and 15-min. periods of post interventions indicated no mean difference with statistical significance at $P < 0.05$.

4. In the assessment of satisfaction and opinions on foot reflexology, patients with post intervention of foot reflexology immediately showed decreased mean pain scores to a mild level (mean=2.99, S.D.=1.02). The mean score of relaxation was at the high level (mean=7.56, S.D. = 1.11). Comfortable feeling showed a high level (mean=7.87, S.D. = 1.05). Geniality and trust in the masseur was at a high level (mean 7.69, S.D. = 0.64). Finding benefits of foot reflexology were many benefits (mean 8.30, S.D. =1.10). To agree with family members to be trained in foot reflexology was a high degree (mean= 8.39, S.D. = 1.54). Patients voted their satisfaction with foot reflexology at a high level (mean= 8.39, S.D. = 1.17).

Limitations

1. The size of the sampling group was small because of limitations of the study time.
2. Most samples were females so that could not represent other populations.
3. There were other activities which disturbed the intervention of foot reflexology such as physician's visits, nursing activities e.g. vital signs monitoring, intake-output record and so forth that distracted the attention of patients and the masseur from the foot reflexology. Those may have promoted ineffective intervention because the essential aspect of foot reflexology was good attention on the intervention and patients.

Recommendations

Recommendations for nursing practice

1. Nurses should integrate foot reflexology into their nursing practice when the patients are still suffering from pain in order to reduce pain in post abdominal surgical patients.
2. Foot reflexology should be included in the official development plan of effective nursing care aiming to improve effective pain management in post abdominal surgical patients.
3. Foot reflexology should be supported and suggested to nurses and family members of patients as a complementary training that is an effective alternative to

eliminate pain in post abdominal surgical patients.

4. In proper intervention, proper timing is essential. No nursing activities should happen during the intervention because the effective intervention of foot reflexology requires a peaceful and quiet environment for the most relaxation and calmness of patients such as before sleep or when the patient still suffering in pain.

5. Family members should be educated and trained about foot reflexology aiming to reduce pain and enhance good relationships, more comfort, and geniality in post abdominal surgical patients.

Recommendations for nursing education

1. Foot reflexology could contribute to the content in nursing education programs for reducing pain in post abdominal surgical patients.

2. Training on foot reflexology should be widely performed to people who are interested in it. That aims to create new visions of further studies in this topic and to increase the availability of foot reflexology training in order to raise the practicing skill of foot reflexology that enhances people to apply it in their routine lives.

Recommendations for further study

1. The effects of foot reflexology on abdominal distention, post operative fatigue, sleepiness and the moment of mobility and ambulating should be studied in the future.

2. The same pattern of research should be conducted with a larger size of samples and a longer evaluation time because the result could be generalized to a large population and also it can be monitored in a longer study duration.

3. A comparative study on the effects between post intervention of foot reflexology and hand reflexology should be carried out.

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รายนามผู้ทรงคุณวุฒิ

รายนามผู้ทรงคุณวุฒิตรวจหาความตรงตามเนื้อหา และความเหมาะสมของภาษาที่ใช้ของเครื่องมือที่ใช้ประเมินความเจ็บปวด แบบสอบถามความพึงพอใจ และความคิดเห็นของผู้ป่วยต่อการนวดกดจุดสะท้อนที่เท้ามีดังนี้

เครื่องมือที่ใช้ในการนวดกดจุดสะท้อนที่เท้าในผู้ป่วยหลังผ่าตัดช่องท้อง

1. รองศาสตราจารย์ ดร.ลดาวัลย์ อุ่นประเสริฐพงศ์ อาจารย์ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล
2. รองศาสตราจารย์ บงกช เก่งเขตกิจ อดีตอาจารย์ภาควิชาการพยาบาลศัลยศาสตร์ คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล
3. อาจารย์ ยุพิน โตเอี่ยม วิทยากรศูนย์ส่งเสริมสุขภาพแผนไทย สถาบันการแพทย์แผนไทย กระทรวงสาธารณสุข

เครื่องมือที่ใช้ประเมินความรู้สึkJเจ็บปวดหลังผ่าตัด แบบบันทึกการเปลี่ยนแปลงของสัญญาณชีพ แบบสอบถามความพึงพอใจ และความคิดเห็นของผู้ป่วยเกี่ยวกับการนวดกดจุดสะท้อนที่เท้ามีดังนี้

1. รองศาสตราจารย์ นายแพทย์ปิ่น ศรีประจิดติชัย อาจารย์ภาควิชาวิสัญญีวิทยา คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
2. นางสาวกุศลศรี ต่อเล็บ พยาบาลผู้ชำนาญการพิเศษระดับ 7 ฝ่ายวิสัญญีวิทยา โรงพยาบาลจุฬาลงกรณ์
3. นางสาวสศุติ โรจนภิรมย์ หัวหน้าหอผู้ป่วย 72 ปี ชั้น 7 ได้ โรงพยาบาลศิริราช



คำชี้แจงและพิกัดสิทธิ์ของผู้เข้าร่วมการศึกษา

ดิฉันชื่อ นางสาวศรัณยา หวงสุวรรณกร นักศึกษาหลักสูตร พยาบาลศาสตรมหาบัณฑิต สาขาการพยาบาลผู้ใหญ่ คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล กำลังทำสารนิพนธ์เรื่อง ผลของการนวดกดจุดสะท้อนที่เท้าต่อระดับความเจ็บปวดและความพึงพอใจในผู้ป่วยหลังผ่าตัดช่องท้องของระบบทางเดินอาหารเพื่อเป็นแนวทางในการปรับปรุงคุณภาพการพยาบาล ให้มีประสิทธิภาพยิ่งขึ้น จึงใคร่ขอความร่วมมือจากท่านในการเข้าร่วมโครงการ โดยท่านจะได้รับการนวดกดจุดสะท้อนที่เท้าเป็นเวลา 30 นาที/วัน เป็นเวลา 1 วัน และได้รับการประเมินความเจ็บปวดหลังการผ่าตัดเป็นเวลา 2 วัน

การเข้าร่วมการศึกษารั้งนี้ จะเข้าไปโดยความสมัครใจของท่าน ไม่ว่าจะท่านจะเข้าร่วมหรือไม่ก็ตาม จะไม่มีผลกระทบใดๆต่อท่าน หากท่านเข้าร่วมการศึกษา และเกิดเปลี่ยนใจภายหลังท่านมีสิทธิ์ที่จะถอนตัวได้ตลอดเวลา โดยไม่มีข้อแม้ใดๆ ในระหว่างการเข้าร่วมการศึกษา หากท่านมีข้อสงสัยใดๆ สามารถสอบถามดิฉันได้ตลอดเวลา ข้อมูลที่ได้จากท่านทั้งหมดจะเป็นความลับ และจะนำเสนอผลการศึกษาเป็นแบบภาพรวมเท่านั้น

การศึกษาจะสำเร็จลงได้หากท่านให้ความอนุเคราะห์และให้ความร่วมมือ จึงขอขอบคุณในความร่วมมือของทุกท่านมา ณ โอกาสนี้ด้วย

ศรัณยา หวงสุวรรณกร

นักศึกษาหลักสูตร พยาบาลศาสตรบัณฑิต

มหาวิทยาลัยมหิดล

สำหรับผู้เข้าร่วมการศึกษา

ข้าพเจ้าได้ทราบรายละเอียดของการศึกษาดังที่ได้อธิบายไว้ข้างต้นแล้ว มีความเข้าใจ และ
สมัครใจเข้าร่วมในการศึกษาครั้งนี้

.....
(ลายมือชื่อผู้เข้าร่วมการศึกษา)

วันที่/...../.....

ลงชื่อ.....พยาน

(.....)

ลงชื่อ.....พยาน

(.....)





เครื่องมือที่ใช้ในการศึกษา

แบบสอบถามข้อมูลเกี่ยวกับผู้ป่วย

ข้อมูลส่วนบุคคล

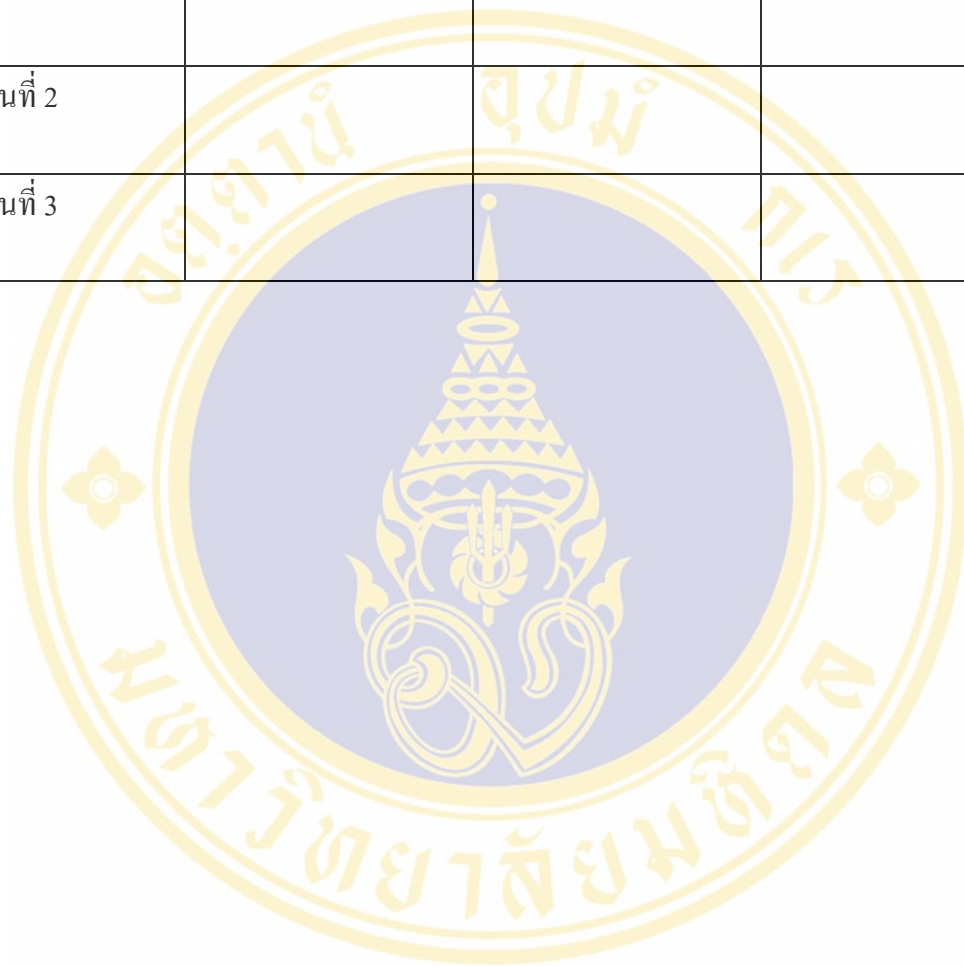
1. ผู้ป่วย กลุ่มทดลอง ลำดับที่..... กลุ่มควบคุม ลำดับที่.....
2. วันที่บันทึก.....
3. เลขประจำตัวโรงพยาบาล (Hospital number)
4. อายุ..... ปี เพศ
5. สถานภาพสมรส.....
6. ศาสนา.....
7. ระดับการศึกษา.....
8. อาชีพ.....
9. ภูมิลำเนา.....
10. ประสบการณ์การผ่าตัด เคยได้รับการผ่าตัด โปรรระบุ.....
 ไม่เคยได้รับการผ่าตัด

ข้อมูลการรักษา

1. การวินิจฉัยโรค.....
2. ชนิดของการผ่าตัด.....
3. วันที่ผ่าตัด.....
4. ระยะเวลาทำผ่าตัด.....
5. ตำแหน่ง และลักษณะของแผล.....

6. ชนิดของขาระงับปวด จำนวน และเวลาที่ผู้ป่วยได้รับยาในระยะ 3 วันแรกหลังการผ่าตัด

วันที่	ชนิด	จำนวน	เวลาที่ได้รับยา
วันแรก			
วันที่ 2			
วันที่ 3			



รายที่.....

แบบบันทึกการประเมินความรู้สึกเจ็บปวดหลังผ่าตัดสำหรับกลุ่มควบคุม

วันที่/...../.....

คำแนะนำการใช้เครื่องมือ

ขอให้ท่านพิจารณาว่าระดับความเจ็บปวดที่เป็นอยู่ในขณะนี้เป็นอย่างใด แล้วตอบคำถามตามความเป็นจริงที่ตรงกับความรู้สึกของท่านมากที่สุด

ขอให้ท่านบอกถึงระดับความรู้สึกเจ็บปวดจากแผลผ่าตัดในขณะนี้ว่าเป็นอย่างไร โดยให้เส้นตรงยาว 10 เซนติเมตร แทนค่าคะแนนความรู้สึกเจ็บปวด ตั้งแต่ 0= ไม่มีความรู้สึกปวดเลย 10= มีความปวดมากที่สุด โปรดกาเครื่องหมาย หรือขีดบนเส้นตรงระหว่าง 0 – 10 ที่ใดก็ได้ที่ตรงกับความรู้สึกปวดของท่านในขณะนี้มากที่สุด

0 10
ไม่ปวดเลย ปวดมากที่สุด

หลังให้การดูแลทันที

0 10
ไม่ปวดเลย ปวดมากที่สุด

หลังให้การดูแล 15 นาที

0 10
ไม่ปวดเลย ปวดมากที่สุด

หลังให้การดูแล 45 นาที

0 10
ไม่ปวดเลย ปวดมากที่สุด

รายที่

แบบบันทึกการประเมินความรู้สึกเจ็บปวดหลังผ่าตัดสำหรับกลุ่มทดลอง

วันที่/...../.....

คำแนะนำการใช้เครื่องมือ

ขอให้ท่านพิจารณาว่าระดับความเจ็บปวดที่เป็นอยู่ในขณะนี้เป็นอย่างไรมากที่สุด แล้วตอบคำถามตามความเป็นจริงที่ตรงกับความรู้สึกของท่านมากที่สุด

ขอให้ท่านบอกถึงระดับความรู้สึกเจ็บปวดจากแผลผ่าตัดในขณะนี้ว่าเป็นอย่างไร โดยให้เส้นตรงยาว 10 เซนติเมตร แทนค่าคะแนนความรู้สึกเจ็บปวด ตั้งแต่ 0= ไม่มีความรู้สึกปวดเลย 10= มีความปวดมากที่สุด โปรดกาเครื่องหมาย หรือขีดบนเส้นตรงระหว่าง 0 – 10 ที่ใดก็ได้ที่ตรงกับความรู้สึกปวดของท่านในขณะนี้มากที่สุด

0 10
 ไม่ปวดเลย ปวดมากที่สุด

หลังได้รับการนัดทันที

0 10
 ไม่ปวดเลย ปวดมากที่สุด

หลังได้รับการนัด 15 นาที

0 10
 ไม่ปวดเลย ปวดมากที่สุด

หลังได้รับการนัด 45 นาที

0 10
 ไม่ปวดเลย ปวดมากที่สุด

แบบบันทึกการเปลี่ยนแปลงของสัญญาณชีพ

สัญญาณชีพ	วันที่ 1			วันที่ 2			
	ก่อน	หลัง		ก่อน	หลัง		
		ทันที	15 นาที		30 นาที	ทันที	15 นาที
ความดันโลหิต (mmHg)							
อัตราการเต้นของหัวใจ (ครั้ง/นาที)							
การหายใจ (ครั้ง/นาที)							

คะแนนของความรู้สึกเจ็บปวดแผลผ่าตัด

วันที่	คะแนนความเจ็บปวด		
	ก่อนการทดลอง	หลังการทดลอง	
		ทันที	15 นาที
วันแรก (กลุ่มควบคุม)			
วันที่ 2 (กลุ่มทดลอง)			

แบบสอบถามความพึงพอใจและความคิดเห็นเกี่ยวกับการนวดกดจุดสะท้อนที่เท้า

วันที่บันทึก// เวลา

1. ในระหว่างการนวดกดจุดสะท้อนที่เท้า ท่านรู้สึกอย่างไร

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2. ท่านรู้สึกอย่างไร หลังจากได้รับการนวดกดจุดสะท้อนที่เท้า โดยให้เส้นตรงยาว 10 ซม. แทนความรู้สึกของท่าน โดยมีคะแนนเรียงตามลำดับจาก 0 – 10 ตัวเลขระหว่าง 0 – 10 หมายถึงระดับความรู้สึกของท่านที่มีมากขึ้นตามลำดับ โปรดกาเครื่องหมายหรือขีดลงบนตัวเลขระหว่าง 0-10 ที่ได้ที่ตรงกับความรู้สึกของท่านมากที่สุด

2.1 ท่านรู้สึกปวดเพียงใด

0

ไม่ปวดเลย

10

ปวดมากที่สุด

2.2 ท่านรู้สึกผ่อนคลายมากเพียงใด

0

ไม่ผ่อนคลาย

10

ผ่อนคลายมากที่สุด

2.3 ท่านรู้สึกสุขสบายมากเพียงใด

0

ไม่สุขสบาย

10

สุขสบายมากที่สุด

2.4 ท่านรู้สึกอบอุ่นใจ ใจว่างใจในตัวเองเพียงใด

0

ไม่รู้สึกอบอุ่น

และใจว่างใจ

10

รู้สึกอบอุ่น

และใจว่างใจมากที่สุด

2.5 ท่านคิดว่า การนวดกดจุดสะท้อนที่เท้ามีประโยชน์เพียงใด

0

ไม่มีประโยชน์

10

มีประโยชน์มากที่สุด

2.6 ท่านเห็นด้วยกับการให้บุคคลในครอบครัวท่านได้รับการฝึกอบรมการนวดกดจุด
สะท้อนที่เท้าหรือไม่

0 10
ไม่เห็นด้วย เห็นด้วยมากที่สุด

2.7 ท่านมีความพึงพอใจต่อการนวดกดจุดสะท้อนที่เท้าหรือไม่

0 10
ไม่พึงพอใจ พึงพอใจมากที่สุด

3. ท่านมีความคิดเห็นอย่างไรต่อการนวดกดจุดสะท้อนที่เท้า

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คู่มือในการนวดกดจุดสะท้อนที่เท้าผู้ป่วยที่ทำผ่าตัดช่องท้อง

หลักสำคัญในการนวด

1. ผู้นวดต้องมีความรู้เกี่ยวกับโครงสร้างของเท้าและจุดสะท้อนของตำแหน่งบนเท้าเป็นอย่างดี
2. ผู้นวดต้องตัดเล็บให้สั้น ถอดแหวน นาฬิกา และเครื่องประดับ ล้างมือให้สะอาดก่อนการนวดทุกครั้ง
3. สถานที่นวดต้องมิดชิด มีม่านปิด อากาศถ่ายเทได้สะดวก บรรยากาศเงียบสงบ
4. ต้องมีใจเป็นสมาธิทั้งผู้นวดและผู้ถูกนวด ใส่ใจอยู่กับการนวด การนวดที่คือนั้น ผู้นวดไม่ควรชวนผู้ป่วยคุยในขณะที่นวด เพื่อให้ผู้ป่วยมีจิตใจที่สงบ และได้พักอย่างเต็มที่
5. ให้ผู้ถูกนวดล้างเท้าให้สะอาด ควรใช้น้ำอุ่น เพื่อเป็นจุดเริ่มของพลัง
6. การนวดต้องเริ่มที่เท้าซ้ายเสมอ เพราะที่เท้าข้างซ้ายมีตำแหน่งที่เป็นที่ตั้งของหัวใจ เพื่อกระตุ้นการไหลเวียนโลหิต
7. การใช้ไม้กดจุดให้ลงน้ำหนักให้พอดีกับแต่ละบุคคล ขณะกดลงไปแต่ละครั้ง ให้กดอย่างเนิบช้า ไม่กระแทก เมื่อกดลงไปเต็มที่แล้วหยุดนิ่ง นับ 1 – 10 แล้วค่อยๆ ถอนมือออกช้าๆ แล้วเลื่อนไปกดจุดต่อไป การกดนั้นหลักการคือ กดไต่ลงไปจนครบ 5 นิ้วที่ปลายนิ้วเท้า แล้วไต่ต่อไปถึงสันเท้าจนครบ 26 จุด
8. ขณะนวดต้องสังเกตสีหน้าของผู้ถูกนวด เพื่อประเมินความรู้สึกของผู้ถูกนวด

ขั้นตอนการเตรียมก่อนการนวดกดจุดสะท้อนที่เท้า

1. อธิบายถึงวัตถุประสงค์ วิธีการนวดให้ผู้ป่วยทราบ
2. จัดให้ผู้ป่วยอยู่ในท่าที่ผ่อนคลาย ไม่เกร็งตัว
3. ก่อนนวดกดจุดสะท้อนต้องตรวจดูว่าผู้ป่วยไม่มีข้อห้ามของการนวดกดจุดสะท้อน
4. ใช้โลชั่น หรือน้ำมันเพื่อหล่อลื่นให้การนวดกดจุดสะท้อนที่เท้าเป็นไปได้โดยไม่มีอาการระคายเคือง เสียคสีผิวหนังผู้ป่วย

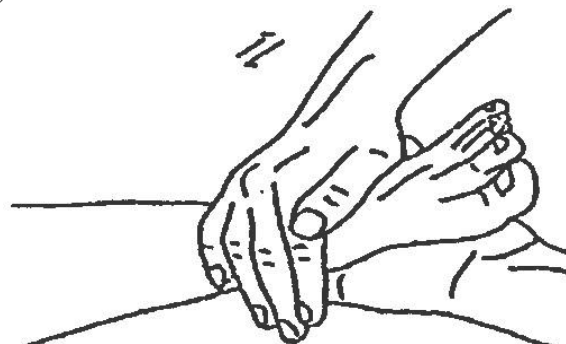
วิธีการนวดกดจุดสะท้อนที่เท้าผู้ป่วยหลังผ่าตัดช่องท้องที่มีความเจ็บปวด

1. พันผ้าที่เท้าเริ่มจากใช้ผ้าขนหนูวางรองใต้เท้าขวา แล้วทำการพันห่อหุ้มเท้าข้างขวาเพื่อช่วยให้เท้าได้รับความอบอุ่น และเพื่อความเป็นส่วนตัว และใช้ผ้าขนหนูอีกหนึ่งผืนวางรองเท้าซ้าย เริ่มต้นการนวดกดจุดสะท้อนโดยเริ่มจากเท้าซ้ายก่อนเพราะตำแหน่งบนเท้าซ้ายจะมีจุดที่มีความสัมพันธ์ไปยังหัวใจ ซึ่งเป็นการกระตุ้นการไหลเวียนของโลหิต

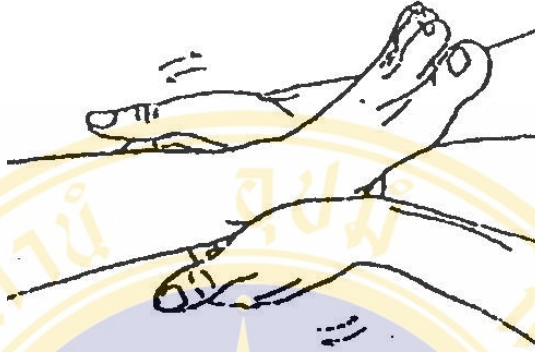
2. ใช้สันมือทั้งสองข้างบีบข้อเท้า 10 ครั้ง เพื่อกระตุ้นการไหลเวียนของโลหิต

3. ใช้ฝ่ามือทั้ง 2 ข้างบีบปลายเท้าตรงตำแหน่งข้างอุ้งนินหัวแม่เท้า กับนิ้วก้อยด้านนอก 10 ครั้ง เพื่อกระตุ้นการไหลเวียนของโลหิตให้ดีขึ้น

4. สะโลมคริมที่เท้าเพื่อหล่อลื่นให้การนวดกดจุดเป็นไปอย่างมีประสิทธิภาพใช้มือ 2 ข้างข้างหนึ่งอยู่ที่ฝ่าเท้า อีกข้างอยู่ที่หลังเท้า ลูบสลับขึ้นมาถึงปลายเท้า 5 ครั้ง เป็นการนวดได้ฝ่าเท้า (Sanwich technique) เพื่อทำให้เกิดการผ่อนคลาย



5. ตบสันเท้าที่เอ็นร้อยหวายด้วยมือ 2 ข้างสลับกัน พร้อมกับลูบเข้าหาตัวผู้นวด 5 ครั้ง เป็นการกระตุ้นเอ็นร้อยหวายเพื่อกระตุ้นบริเวณท้องน้อยด้านนอกและด้านใน



6. ใช้นิ้วหัวแม่มือจรดกันที่กึ่งกลางสันเท้า นิ้วทั้ง 4 อยู่ที่หลังเท้า ลูบนิ้วจากกลางเท้าขึ้นไปยังปลายเท้า 5 ครั้ง เป็นการกระตุ้นการไหลเวียนโลหิต และกระตุ้นเซลล์ประสาทของร่างกาย



7. วางนิ้วหัวแม่มือเกยกันนิกนิ้วจากกลางฝ่าเท้าออกไปทางด้านข้างโดยสลับนิ้วบน – ล่าง ขึ้น 5 ครั้ง ลง 5 ครั้ง เป็นการกระตุ้นไปตามจุดต่างๆของร่างกาย



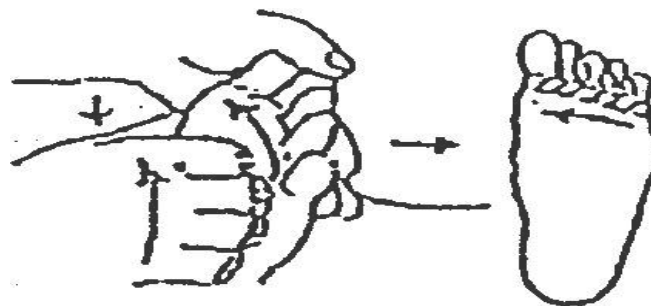
8. ใช้มะเหงกกดครูดเนินอุ้งฝ่าเท้าจนถึงสันเท้า 5 ครั้ง อวัยวะทุกส่วนจะได้รับการกระตุ้น ตั้งแต่ ปอด หัวใจ อวัยวะในช่องท้อง จนกระทั่งถึงรังไข่ มดลูก อัณฑะ



9. ใช้นิ้วหัวแม่มือยึดเป็นหลัก แล้วใช้มะเหงกกดครูดจากนิ้วก้อยไปนิ้วโป้ง 5 ครั้ง เพื่อกระตุ้น ปอด ทางเดินหายใจ คอ



10. ใช้มะเหงกกดครูดจากนิ้วก้อยไปนิ้วโป้งที่คอนิ้วอีก 5 ครั้ง เป็นการกระตุ้นอวัยวะ บริเวณตา หู ก้านคอ



11. ใช้ไม้จิ้มฟันที่ข้างฝ่าเท้าด้านใน จากข้างนิ้วหัวแม่เท้าจนถึงส้นเท้า 5 ครั้ง อวัยวะที่
รับการกระตุ้นคือ ส่วนของกระดูกสันหลังนับตั้งแต่คอจนกระทั่งถึงก้นกบวมทั้งระบบประสาท
อัตโนมัติ ก็ได้รับการกระตุ้นด้วย



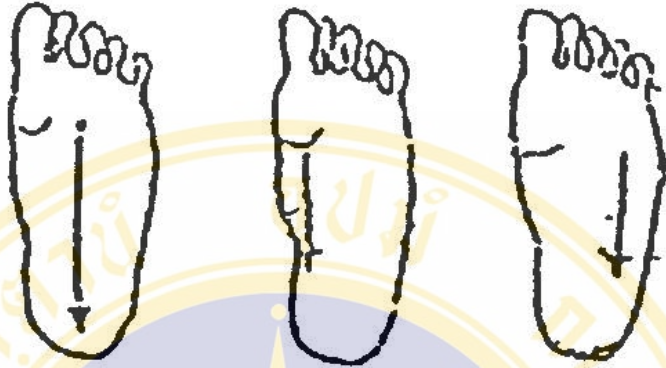
12. ใช้ไม้กดครูดอ้อมโค้งอุ้งนิ้วหัวแม่เท้า 5 ครั้ง เป็นการกระตุ้นการทำงานของต่อม
ไทรอยด์ กระเพาะอาหาร



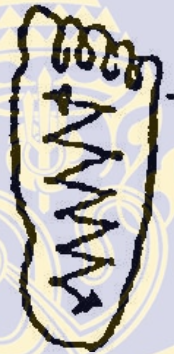
13. ใช้ไม้กดครูดจากกลางนิ้วชี้มาทางเนินด้านนิ้วก้อย 5 ครั้ง อวัยวะในส่วนของปอด
กระบังลม จะได้รับการกระตุ้น



14. ใช้ไม้กดครูดเป็นแนวยาวที่กึ่งกลางฝ่าเท้าได้อุ้งนิ้วโป้งได้เนินนิ้วก้อย แนวละ 5 ครั้ง เป็นการกระตุ้นจุดศูนย์รวมประสาท ต่อมหมวกไต ไต ระบบทางเดินอาหาร ระบบสืบพันธุ์



15. ใช้ไม้กดครูดสลับฟันปลาที่ฝ่าเท้า ขึ้น 5 ครั้ง ลง 5 ครั้ง เป็นการกระตุ้นอวัยวะทุกส่วนของร่างกาย



16. ใช้มือทั้ง 2 ข้าง ข้างหนึ่งอยู่ที่ฝ่าเท้า อีกข้างหนึ่งอยู่ที่หลังเท้า ลูบสลับขึ้นมาจนถึงปลายเท้า 5 ครั้ง เพื่อเป็นการผ่อนคลาย



17. มือขวาจับปลายเท้าไว้ มือซ้ายกำลักษณะมะเหงกคว่ำ นิ้วหัวแม่มือแตะกลางฝ่าเท้า กดกระดูกมะเหงกที่ด้านข้างของเท้าด้านในจากนิ้วหัวแม่มือเท้าถึงสันเท้า 5 ครั้งเพื่อกระตุ้นระบบประสาทอัตโนมัติ และอวัยวะด้านข้างคือส่วนของกระเพาะปัสสาวะ



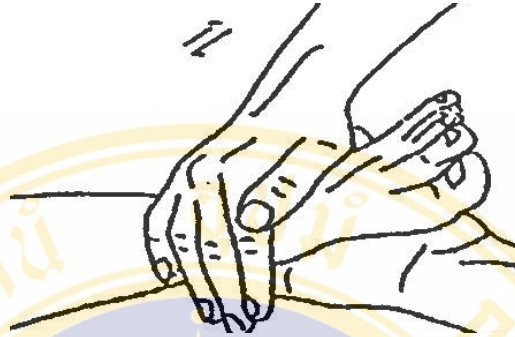
18. ใช้มะเหงกวนเป็นวงกลมบริเวณหลังเท้า เพื่อกระตุ้นการทำงานของต่อมน้ำเหลือง อวัยวะบริเวณทรวงอก กระบังลม



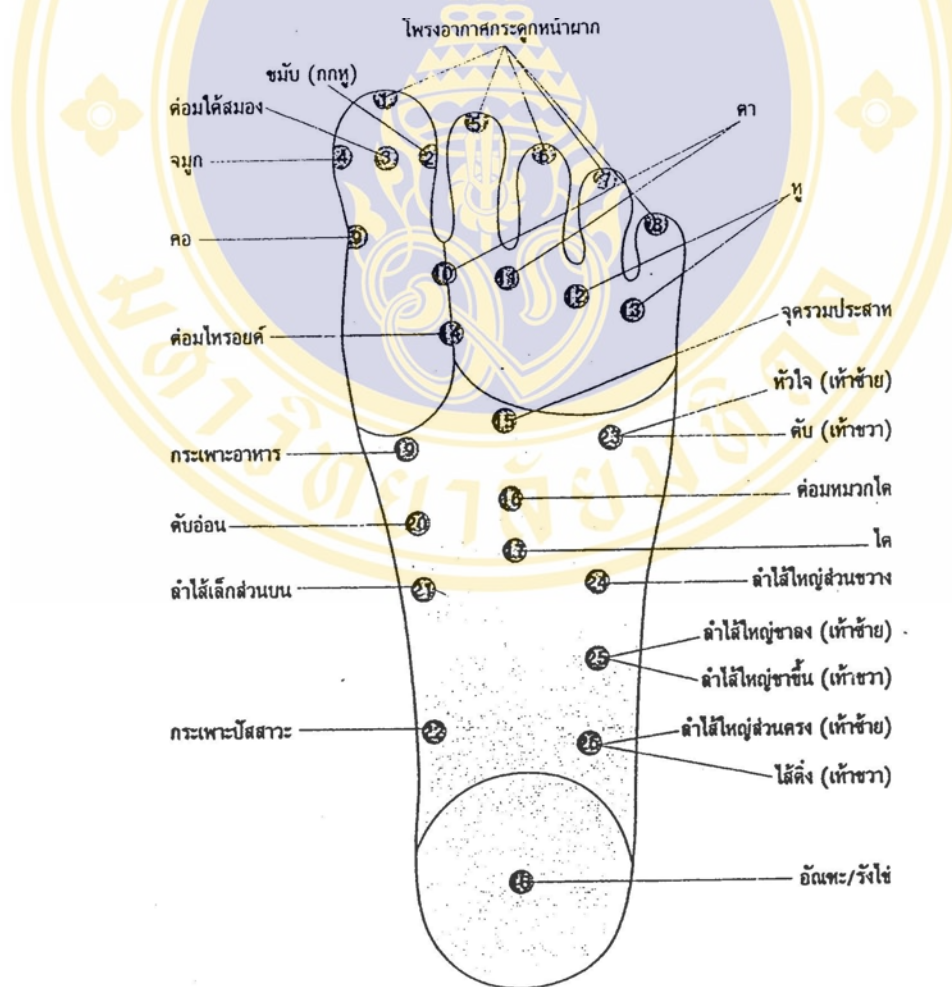
19. จับปลายเท้าให้คว่ำลง ใช้นิ้วหัวแม่มือจรดกึ่งกลางหลังเท้าเป็นแนวตรงไปทางผู้ป่วย จากหลังเท้าผ่านข้อเท้าขึ้นไปเล็กน้อย ทำซ้ำกัน 5 ครั้ง เพื่อกระตุ้นการทำงานของต่อมน้ำเหลือง บริเวณร่างกายส่วนนอก และบริเวณช่องท้อง



20. ใช้มือทั้ง 2 ข้าง ข้างหนึ่งอยู่ที่ฝ่าเท้า อีกข้างหนึ่งอยู่ที่หลังเท้าถูสลับขึ้นมาจนถึง
ปลายเท้า 5 ครั้ง เพื่อให้เกิดการผ่อนคลาย



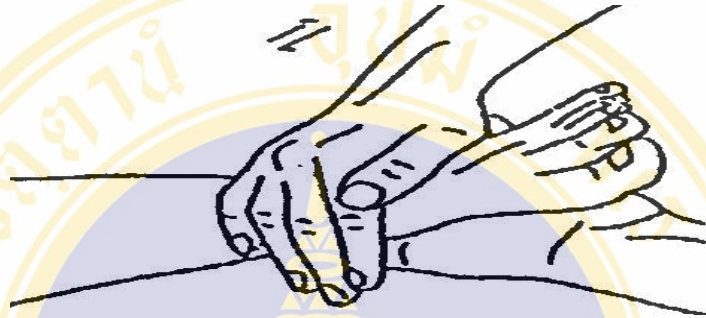
21. ใช้ไม้กดจีตามจุดต่างๆ การกดจะกดอย่างเนิบ นับ 1-10 แล้วค่อยๆ ถอนออก การกด
จุดสะท้อนจะทำตามลำดับดังนี้



การกดจุดแต่ละครั้งเพื่อให้มีประสิทธิภาพจะต้องกดอย่างเนิบ แล้วหยุดนับ 1-10 แล้วค่อยๆถอนมือออกจากนั้นทำการกดจุดสะท้อนบริเวณต่อมใต้สมอง จุดศูนย์ประสาท ต่อมหวมวกไต ไต กระเพาะปัสสาวะ และอวัยวะภายในช่องท้องอีกครั้งหนึ่งเพื่อเป็นการกระตุ้นซ้ำ

22. ใช้มือทั้ง 2 ข้าง ข้างหนึ่งอยู่ที่ฝ่าเท้า อีกข้างหนึ่งอยู่ที่หลังเท้าลูบสลับขึ้นมาจากปลายเท้า 5 ครั้ง เพื่อให้เกิดการผ่อนคลาย

23. ให้คนไข้ตั้งเข่าขึ้น แล้วผู้ตรวจใช้มือทั้ง 2 ข้างบีบคลายกล้ามเนื้อที่น่อง ตบสลับกันแล้วรูดลงมาที่ข้อเท้า ทำซ้ำกัน 5 ครั้ง เพื่อผ่อนคลายกล้ามเนื้อ



24. ใช้ผ้าห่อเท้าซ้ายไว้ เพื่อให้เท้าอบอุ่น เป็นการเก็บพลังให้กับผู้ป่วยตามหลักทฤษฎีของพลังงาน(Energy therapy) แล้วเปลี่ยนมานวดเท้าขวา



25. การนวดเท้าขวาทำเช่นเดียวกับนวดเท้าซ้าย

26. เมื่อนวดกดจุดเท้าเสร็จทั้ง 2 ข้าง นวดนอผ้าดังนี้

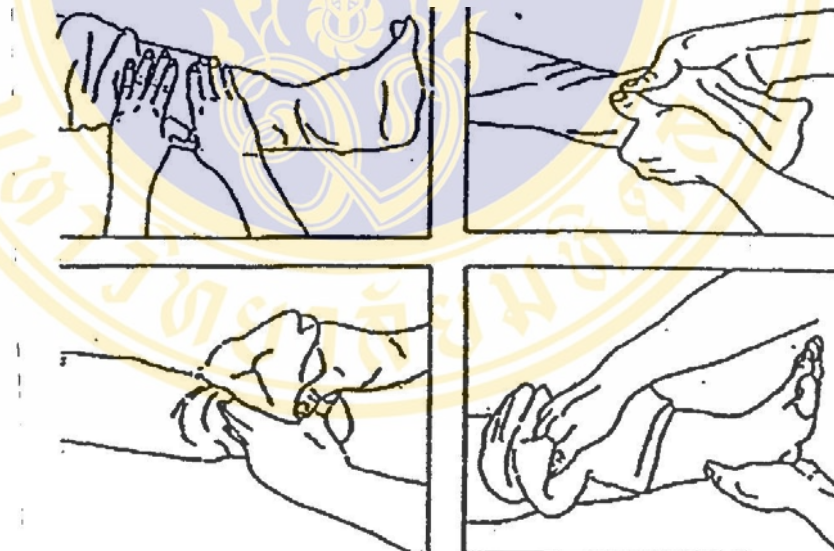
26.1 นวดกดฝ่าเท้าด้วยนิ้วหัวแม่มือให้ทั่ว

26.2 ดึงปลายผ้าออก ใช้นิ้วหัวแม่มือนวดบนหลังเท้า ดึงนิ้วทุกนิ้ว

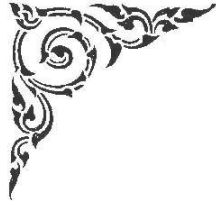
26.3 นวด กด คลึง ตั้งแต่เข้า น่อง ลงมาถึงข้อเท้า

26.4 เอาผ้าออก นวดเท้าพร้อมกับเช็ดโลชั่นออก นวดน่อง หมุนข้อเท้า กระจก

ขึ้นลง







สถาบันการแพทย์แพทยไทย

ประกาศนียบัตรนี้ให้ไว้เพื่อแสดงว่า

นาง ศรัณญา ทรงสุขวัฒนากร

ได้สำเร็จหลักสูตรหมวดผ้าทอ (๖๐ ชั่วโมง) รุ่นที่ ๑๐๙

ตามโครงการอบรมขนาดแผนไทย ของศูนย์ส่งเสริมสุขภาพแพทยไทย สถาบันการแพทย์แพทยไทย
สนับสนุนโดย มูลนิธิการแพทย์แพทยไทยพัฒนา

ให้ไว้ ณ วันที่ ๒ เดือน ธันวาคม พุทธศักราช ๒๕๕๕

(แพทย์หญิงเพ็ญนิภา ทรัพย์เจริญ)

ผู้อำนวยการสถาบันการแพทย์แพทยไทย



ประกาศนียบัตรนี้ให้ไว้เพื่อแสดงว่า

นางสาว อรุณษา ชวตวิจิตรกุล

ได้เข้าร่วมประชุมวิชาการและอบรม

เรื่อง การนวดกดจุดฝ่าเท้าและการสร้างเสริมสุขภาพ

ระหว่างวันที่ 21 -22 กันยายน 2545

ขอให้ท่านนำความรู้และประสบการณ์ที่ได้รับ ไปใช้ในการดูแลสุขภาพตนเอง
ครอบครัว และ ให้เป็นประโยชน์แก่เพื่อนมนุษย์ และขอความมีสุขสวัสดิ์ จงมีแต่

ท่านและครอบครัวสืบไป


ศาสตราจารย์ ดร. สุดา วาทยานนท์

ผศ.ดร. ลดาวัลย์ อุ่นประเสริฐพงศ์

ประธานและผู้จัดอบรม



ความรู้สึกของผู้ป่วยขณะที่ได้รับการนวดกดจุดสะท้อนที่เท้า

ตารางแสดงความรู้สึกของผู้ป่วยขณะที่ได้รับการนวดกดจุดสะท้อนที่เท้า (ตอบได้มากกว่า 1)

	ความรู้สึก	ความถี่	ร้อยละ
รู้สึกสบาย		26	86.7
รู้สึกผ่อนคลาย		24	80.0
ความวิตกกังวล ความเครียดลดลง		5	16.7
รู้สึกเพิดเพิด		9	30.0
รู้สึกเหมือนในท้องมีการเคลื่อนไหว คิดว่าเนื่องจากเลือดลมเดินได้ดี		3	10.0
ลืมความปวดปวดลดลง		25	83.4
ง่วงนอน		12	40.0
เบาบริเวณขาและเท้า		6	20.0
สะท้อนแปล		1	3.3



ความคิดเห็นของผู้ป่วยต่อการนวดกดจุดสะท้อนที่เท้า

ตารางแสดงความคิดเห็นของผู้ป่วยต่อการนวดกดจุดสะท้อนที่เท้า (ตอบได้มากกว่า 1)

	ความคิดเห็น	ความถี่	ร้อยละ
	เป็นสิ่งที่ดีมีประโยชน์	27	90.0
	ทำให้รู้สึกสบาย	9	30.0
	ทำให้รู้สึกผ่อนคลาย	27	90.0
	คลายความวิตกกังวล	15	50.0
	หลังการนวดกดจุดที่เท้าจะสามารถเคลื่อนไหวได้ดีขึ้น	8	26.7
	อุ่นใจที่มีคนมาคอยดูแล	15	50.0
	เจ็บแผลน้อยลง	18	60.0
	นอนหลับได้ดี	6	20.0
	ทำให้ร่างกายได้พักผ่อนจริงๆ	9	30.0
	เลือดลมเดินได้ดี	8	26.7
	ลืมความปวดไปได้	8	26.7

BIOGRAPHY

NAME	Mrs. Sarunya Howangsuwannakorn
DATE OF BIRTH	2 December 1959
PLACE OF BIRTH	Kalasin, Thailand
INSTITUTE ATTENDED	Thai red cross colleage, Bangkok, 1977-1981 : Bachelor of Nursing Science Mahidol University, 2001-2003 : Master of Nursing Scinece. (Adult Nursing)
POSITION & OFFICE	1981-Present, Arthorn building, Department of Surgery, King chulalongkorn Memorial Hospital, Thailand Position : Register Nurse 6