COMPARATIVE STUDY OF POSTPARTUM QUALITY OF LIFE BETWEEN PATIENTS HAVING NORMAL VAGINAL DELIVERY AND CESAREAN SECTION

MANATCHANOK MANEEIN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE
(EPIDEMIOLOGY)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2014

Thesis
entitled

COMPARATIVE STUDY OF POSTPARTUM QUALITY OF LIFE BETWEEN PATIENTS HAVING NORMAL VAGINAL DELIVERY AND CESAREAN SECTION

Manatchanok Maneein
.....
Miss Manatchanok Maneein
Candidate

.....
Prof. Prasert Assantachai,
M.D. (Hons), F.R.C.P. (London)
Major advisor

.....
Assoc. Prof. Weerasak Muangpaisan,
M.D., Mphil
Co-advisor

.....
Assoc. Prof. Pornpimol Ruangvutilert,
M.D. (Hons), Ph.D. (OB&GYN. UCL, London),
Thai Board of OB&GYN
Co-advisor

.....
Prof. Banchong Mahaisavariya,
M.D., Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

.....
Assoc. Prof. Winai Ratanasuwan,
M.D. (Siriraj Mahidol)
M.P.H. (Epidemiology)
Program Director
Master of Science (Epidemiology)
Faculty of Medicine, Siriraj Hospital
Mahidol University

Thesis
entitled

COMPARATIVE STUDY OF POSTPARTUM QUALITY OF LIFE BETWEEN PATIENTS HAVING NORMAL VAGINAL DELIVERY AND CESAREAN SECTION

was submitted to Faculty of Graduate Studies, Mahidol University
for the degree of Master of Science (Epidemiology)
on
March 27, 2014

Manatchanok Maneein
.....
Miss Manatchanok Maneein
Candidate

.....
Prof. Prasert Assantachai,
M.D. (Hons), F.R.C.P. (London)
Member

.....
Col. Peerapun Punpuckdeekoon,
M.D., Dip. Thai Board of OB&GYN
Chair

.....
Assoc. Prof. Weerasak Muangpaisan,
M.D., Mphil
Member

.....
Assoc. Prof. Pornpimol Ruangvutilert,
M.D. (Hons), Ph.D. (OB&GYN. UCL, London),
Thai Board of OB&GYN
Member

.....
Prof. Banchong Mahaisavariya,
M.D., Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

.....
Prof. Udom Kachintorn, M.D.
Dean
Faculty of Medicine Siriraj Hospital
Mahidol University

ACKNOWLEDGEMENTS

This thesis has been completely achieved by the great kindness and deliberate assistance of Prof. Prasert Assantachai, the chairman of the thesis, Assoc. Prof. Pornpimol Ruangwutlert, and Assoc. Prof. Veerasak Muangpaisarn, the thesis committee. I would like therefore to thank for their consultancy, opinions, and .encouragement until this thesis has been successfully completed.

I would like also to thank Dr. Supachoke Singhakant, the psychiatrist, Dr. Chanon Neungton, the obstetrician, and Dr.Wanna Phahuwattanakorn, the obstetric nurse, for verifying and giving me the useful suggestions on the research instrument development.

This thesis cannot be achieved without the help and cooperation of the nurses in the Postpartum Care Unit, Siriraj Hospital, and all postpartum mothers for the data collection.

Special thanks to Ms. Pimrapas Tengtrakulcharoen, the assistant researcher of the Division of Clinical Epidemiology, Office of Research Promotion, Faculty of Medicine, Siriraj Hospital, for the advice on the statistics. I also appreciate my colleagues for their assistance.

And finally, I would like to thank my beloved mother, Mrs. Pranee Maneein, and also my family, for their constant encouragement and supports always provided for me and my thesis.

Manatchanok Maneein

COMPARATIVE STUDY OF POSTPARTUM QUALITY OF LIFE BETWEEN PATIENTS HAVING NORMAL VAGINAL DELIVERY AND CESAREAN SECTION

MANATCHANOK MANEEIN 5136461 SIEP/M

M.Sc. (EPIDEMIOLOGY)

THESIS ADVISORY COMMITTEE: PRASERT ASSANTACHAI, M.D., WEERASAK MUANGPAISAN, M.D., PORNPIMOL RUANGVUTTILERT, M.D.

ABSTRACT

This research was a prospective cohort study aimed to investigate and compare the postpartum quality of life between normal vaginal delivery patients and those patients delivering by way of the cesarean section. The samples consisted of 176 postpartum patients of the Postpartum Care Unit, Siriraj Hospital, who were divided into three groups based on their delivery method i.e. normal vaginal delivery (n = 59), elective cesarean section (n = 59), and emergency cesarean section (n = 59). Data was collected on the second day and within 4-6 weeks after their delivery. The Maternal Postpartum Quality of Life (MAPP-QOL) of Pamela D. Hill was used as the research instrument. The data were collected during the period from June 2013 – December 2013 and analyzed by the descriptive and inferential statistics, Mann-Whitney U Test, Kruskal Walis Test, One-way ANOVA, univariate analysis, multivariate analysis, and multiple linear regression.

The study results indicated that the postpartum quality of life on the second day after the delivery of patients having normal vaginal delivery was higher than those receiving emergency cesarean section in terms of the spouse/partner relationship (Mean ± SD = 24.3 ± 3.8: 22.9 ± 3.5), and health and function (Mean ± SD = 22.4 ± 3.8: 18.7 ± 5.2). During the 4-6 weeks after the delivery, the postpartum quality of life of patients that had normal vaginal delivery was higher than those with the emergency cesarean section in terms of economy and society (Mean ± SD = 25.9 ± 2.3: 24.9 ± 2.4), and spouse/partner relationship (Mean ± SD = 26.5 ± 2.8: 25.6 ± 2.8), respectively, with the statistical significance of $p < 0.05$. The variables affecting the postpartum quality of life of patients were the occupation, delivery method, family income, and labor pain.

It was obviously that the delivery method affected the postpartum quality of life of patients. Patients having the normal vaginal delivery had better postpartum quality of life than those with cesarean section. As a result of these finding, it is recommended that the medical staffs should provide their patients with additional knowledge on the benefits of the delivery methods so that the patients can make their best decision.

KEY WORDS: POSTPARTUM / QUALITY OF LIFE / NORMAL VAGINAL DELIVERY / CESAREAN SECTION

120 pages

การศึกษาเปรียบเทียบคุณภาพชีวิตหญิงหลังคลอดระหว่างการคลอดปกติทางช่องคลอดกับการผ่าตัดคลอด
COMPARATIVE STUDY OF POSTPARTUM QUALITY OF LIFE BETWEEN PATIENTS HAVING NORMAL VAGINAL DELIVERY AND CESAREAN SECTION

มนัสชนก มณีอินทร์ 5136461 SIEP/M

วท.ม. (วิทยาการระบาด)

คณะกรรมการที่ปรึกษาวิทยานิพนธ์: ประเสริฐ อัสสันตชัย, M.D., พรพิมล เรืองวุฒิเลิศ, M.D.,
วีรศักดิ์ เมืองไพศาล, M.D.

บทคัดย่อ

การศึกษาครั้งนี้เป็นการศึกษาแบบ Prospective cohort study เพื่อเปรียบเทียบคุณภาพชีวิตหญิงหลังคลอดระหว่างการคลอดปกติทางช่องคลอดกับการผ่าตัดคลอด ในวันที่ 2 และ 4-6 สัปดาห์หลังคลอด กลุ่มตัวอย่างเป็นหญิงหลังคลอดที่แผนกหลังคลอดโรงพยาบาลศิริราช ทั้งหมด 176 ราย แบ่งออกเป็น 3 กลุ่ม ตามวิธีการคลอด คือ การคลอดปกติทางช่องคลอด 59 ราย การเลือกผ่าตัดคลอด 58 ราย และ การผ่าตัดคลอดฉุกเฉิน 59 ราย โดยใช้เครื่องมือวัดคุณภาพชีวิตหญิงหลังคลอด (MAPP-QOL) ของ Pamela D. Hill ดำเนินการเก็บข้อมูลในช่วงเดือนมิถุนายน 2556 - ธันวาคม 2556 วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา กับสถิติเชิงอนุมาน การทดสอบค่ากลางของประชากรสองกลุ่ม กับมากว่าสองกลุ่ม (Mann-Whitney U Test และ Kruskal Walis Test) การวิเคราะห์ ความแปรปรวน (ANOVA) การวิเคราะห์ตัวแปรเชิงเดี่ยว (Univriable analysis) และการวิเคราะห์ ตัวแปรพหุ โดยใช้วิธีวิเคราะห์การถดถอยเชิงเส้น (multiple linear regression)

ผลการศึกษาพบว่าคุณภาพชีวิตหญิงหลังคลอดด้วยวิธีการคลอดปกติทางช่องคลอด มีคะแนนคุณภาพชีวิตดีกว่าการผ่าตัดคลอดฉุกเฉิน ในวันที่ 2 หลังคลอด ด้านความสัมพันธ์ของคู่สมรส (Mean ± SD = 24.3± 3.8:22.9±3.5) ด้านสุขภาพและการทำงาน (Mean ± SD = 22.4±3.8:18.7±5.2) และที่ 4-6 สัปดาห์หลังคลอด ด้านเศรษฐกิจและสังคม (Mean ± SD = 25.9±2.3:24.9±2.4) ด้านความสัมพันธ์ของคู่สมรส (Mean ± SD = 26.5±2.8: 25.6±2.8) อย่างมีนัยสำคัญทางสถิติที่ $p < 0.05$ ตัวแปรที่มีอิทธิพลต่อคุณภาพชีวิตหญิงหลังคลอด คือ การประกอบอาชีพ วิธีการคลอด รายได้ของครอบครัว และความปวด

การศึกษาครั้งนี้แสดงให้เห็นว่าวิธีการคลอดมีผลต่อคุณภาพชีวิตหญิงหลังคลอดโดยการคลอดปกติทางช่องคลอดจะมีคุณภาพชีวิตที่ดีกว่าการผ่าตัดคลอด แต่การผ่าตัดคลอดทั้งการเลือกผ่าตัดคลอด และการผ่าตัดคลอดฉุกเฉิน ไม่ทำให้คุณภาพชีวิตหญิงหลังคลอดต่างกัน ดังนั้นบุคลากรทางการแพทย์ผู้ดูแลหญิงตั้งครรภ์ควรมีการจัดให้ความรู้เกี่ยวกับผลประโยชน์ต่อมารดาและทารกในแง่ของการคลอดทางช่องคลอด กับการผ่าตัดคลอดเพื่อให้หญิงตั้งครรภ์มีข้อมูลในการเลือกวิธีการคลอดได้อย่างเหมาะสม

120 หน้า

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF TABLES (cont.)

CHAPTER I
INTRODUCTION

1.1 Rational and background

Pregnancy and childbirth are the natural processes of the body which result in the changes of organs and body systems of the pregnant women, structurally, chemically, physically and mentally. Since these changes provide balance between the fetus growth and childbirth, they are harmless to the pregnant women when happened appropriately. In other words, the natural normal or vaginal delivery is the most suitable and safest way of delivery as there are lower complications compared to the surgical methods.

The rate of cesarean section is increasing worldwide. For example, in the United States, the statistics of CDC/NCHS showed that the rate of cesarean section in 1991 was 23% and decreased to 21% during1994-1998. However, the rate was increased to 26%, 29% and 32% in 2002,2004,and 2007, respectively(1). In Thailand, the data of the survey conducted by the International Health Policy Program, Ministry of Public Health on the childbirth patterns of Thai women in the past twelve years (1990-2001) revealed the increasing popularity of cesarean section as well. In 1990, the rate of cesarean section among Thai pregnant women was 14.8% and then increased to 20.7% in 2001(2). The rates of cesarean section in private hospitals were higher than the ones of the public hospitals. For instance, the rates of cesarean section in Chulalongkorn Hospital in 1993 and 2002 were 26.1% and 34.4%, respectively. In Siriraj Hospital, the rates of cesarean section were also increased, namely, from 23.89% to 32.82%, and 39.7% in 1998, 2006, and 2008, respectively(3). Such rates of cesarean section in Thailand were obviously higher than the standard of the World Health Organization stating that the cesarean section rate should not be exceeded than 15% of the total delivery cases.

Cesarean section is an obstetric operation aiming to help pregnant women with medical indications for the safety of mothers and babies. At present, as the

cesarean section was involved with the social and economic values, the unnecessary cesarean section was reduced. The caesarean section had negative effects to both mothers and babies because it might result in the complications after operation such as blood loss, side effects from anesthesia, wound infection, adverse effects on respiratory system and intestine system, including injury to internal organs. In addition, the new born delivered by the cesarean section also suffered from the transient tachypnea 4.5 times more than the babies delivered by normal vaginal method(4). Because the babies delivered by cesarean section might experience the problems of respiratory system due to poorly expanded lung, their long-term health would be also affected. The research from Arhus University of Denmark on 34,000 delivery cases showed that children delivered by the caesarean section were risky to the respiratory system problems 3.9 times and 3 times more than the babies with normal vaginal delivery at the gestational ages of 37 weeks and 38 weeks, respectively (5). Apart from the aforementioned complications, the unnecessary cesarean section also abused the limited health budget and medical resources. The study of The Implications of Private Practice in Public Hospitals on the Cesarean Section Rate in Thailand indicated that the 1% higher rate of caesarean section would account for the expenditures of 2.5 million USD (6).

Postpartum period is very crucial for postpartum mothers because the mother generally have physical, mental, and social changes. So, mothers have to adapt themselves to such changes. Different delivery methods usually affect the postpartum mothers. The comparative study on the postpartum period of women with different delivery methods revealed that those having the normal vaginal delivery suffered from less pain during the first three days after the delivery than those with cesarean section (7). There was also a comparative study in Iran on the quality of life of postpartum mothers with normal vaginal delivery and cesarean section. The results indicated that mother with normal vaginal delivery had higher vitality scores and mental health scores than the ones with cesarean section during 6-8 weeks after the delivery. The physical functioning scores of mother with normal vaginal delivery were also higher than the ones with cesarean section during 12-14 weeks after the childbirth (8). However, some studies using SF36 were not be able to reveal the differences because

SF36 is the general health questionnaire that does not specifically and directly focus on the postpartum mothers.

Therefore, the study on the postpartum period of women with different delivery methods by using the specific quality of life instrument is very interesting since the obtained data will be useful and important in treating postpartum women and provide the information for the pregnant women to choose the right delivery method according to their pregnancy conditions. In addition, there are only a few studies on the quality of life of postpartum women in Thailand.

As a result, this topic became the main objective of this study. The maternal postpartum quality of life questionnaire was used as the research instrument. It was expected that the research findings would be beneficial in providing care for the postpartum mothers and could be also used as the guidance on the future delivery method for the pregnant women.

1.2 Objectives

Primary objective

To compare the postpartum quality of life of women between those who had normal vaginal delivery and those who had cesarean section

Secondary objectives

1. To investigate the reasons behind the preference of each delivery method.
2. To study the postpartum quality of life of women with normal vaginal delivery, cesarean section, and emergency cesarean delivery.
3. To explore the factors affecting the postpartum quality of life of women.

1.3 Research hypotheses

1. Women with normal vaginal delivery have better postpartum quality of life in terms of emotion and baby than those with cesarean section.
2. Women with normal vaginal delivery have better postpartum quality of life in terms of socio-economic aspects than those with cesarean section.
3. Women with normal vaginal delivery have better postpartum quality of life in terms of spouse relationship than those with cesarean section.
4. Women with normal vaginal delivery have better postpartum quality of life in terms of family and friend relationship than those with cesarean section.
5. Women with normal vaginal delivery have better postpartum quality of life in terms of health and work than those with cesarean section.

1.4 Scope of study

Samples: The pregnant women who delivered their babies at the Postpartum Care Unit of Siriraj Hospital.

Setting: The data were collected in two episodes as follows:

1) The data were collected at the Postpartum Care Unit, Siriraj Hospital, on the second day after the delivery.

2) The data were collected again 4-6 weeks after the delivery at the Postpartum Check-up Unit. Provided that the postpartum mothers were absent on the appointment date, they were called by the researcher for the data collection.

Duration: June 2013 – December 2013

1.5 The expected benefits of the study

The research results would reveal the differences of postpartum quality of life of women with normal vaginal delivery and cesarean section and could be used as the first referential baseline data for future study. Besides, the findings would reveal the trend of choosing the method of delivery, their postpartum feelings and the preferred method of delivery for their next pregnancy. The research findings could be

also used not only to solve the problems of increased cesarean section rate in the future but also to improve the postpartum quality of life of women.

1.6 Definitions

Postpartum women means the women who delivered their babies either by normal vaginal delivery or by cesarean section and were followed for the next 6 weeks.

Normal vaginal delivery means the normal vaginal delivery at the gestational age of 37-42 weeks. Such delivery occurs naturally without any use of obstetric procedure.

Cesarean section means the planned surgical delivery to avoid labor pain and/or the emergency surgery in case that the normal vaginal delivery cannot occur naturally.

Postpartum quality of life of women means the appropriate ways of life in the society of the postpartum women to fulfill their physical, mental, emotional and social needs which lead to the happiness, good physical and mental health of both mothers and babies.

CHAPTER II
LITERATURE REVIEW

The literatures related to the research on the postpartum quality of life between women with normal vaginal delivery and those with cesarean section could be reviewed as follows:

1. Delivery
    - 1.1 Normal vaginal delivery
    - 1.2 Abnormal delivery or dystocia
    - 1.3 Cesarean delivery
2. Postpartum period
3. Quality of life

2.1 Delivery

Definitions

Delivery is the process naturally happened when female body expels the fetus and relevant products from the uterus. The delivery can be both performed through the vagina and cesarean section. Generally, the delivery can be divided into two types: normal delivery and abnormal delivery.

2.1.1 Normal delivery is the process where the baby is brought out through mother's vagina. The process contains the following characteristics:

1) The gestational age is 37 weeks or more but not exceeding 42 weeks. If the childbirth takes place before 37 weeks, it shall be categorized as the preterm birth and as the post-term birth if the childbirth takes place after 42 weeks.

2) A child has a vertex presentation.

3) The childbirth naturally occurs through the vaginal canal without using any unnecessary tool such as forceps or vacuum instrument.

4) The delivery process usually takes only 24 hours or less starting from the labor pain to the childbirth.

5) No complications like intra-partum hemorrhage, postpartum hemorrhage, or retention of placenta, occurred during the labor.

Stages of labor (9)

1. First stage of labor: The cervix is opened and effaced at the beginning of true labor pain. The cervix will be effaced and fully opened.

2. Second stage of labor: This is the stage of compulsion beginning with the full dilatation of the cervix and ending with the delivery of fetus.

3. Third stage of labor: At this stage, the placenta will be fully delivered after the childbirth.

4. Fourth stage of labor: This stage covers the first two hours after the childbirth when mother is at risk of abnormal hemorrhage.

Factors influencing delivery process (9, 10)

The three important factors affecting the delivery process are as follows:

1. Two types of the power(9):

1) Uterine contraction or primary power is the important force for the effacement and dilatation of the cervix, descent, flexion and internal rotation of the fetus, and the delivery of the placenta at the third stage of labor.

2) Bearing down effort or secondary power is the important force for the second stage of labor. Such power leads to the flexion of the head, internal rotation, and descent of the fetus through the birth canal.

2. Two parts of the passage or the birth canal:

1) The pelvis or the bony part is the part that can be minimally expanded and must be in the normal shape so that the infant can be passed through the birth canal.

2) The soft tissue part of the birth canal can be expanded. It consists of the uterus, cervix, vagina, uterine muscle and perineum. The soft tissue part of the birth canal must be well expanded without any obstruction against the descent of the infant.

3. The passengers include the infant, placenta, amniotic sac, and amniotic fluid. The important requirement is that the baby should have the size and shape that are appropriate with the mother's vagina to smoothen the delivery process. Apart from the fetus, the amniotic fluid and the placenta are also important. There should be appropriate amount of amniotic fluid whereas the placenta should be in the appropriate position so that it does not obstruct the descent of the fetus.

Apart from the three factors mentioned above, there are also other factors affecting the childbirth. For example, if the mothers are unhealthy or have a weak physical health like fatigue or dehydration, they will have lower bearing force. Besides, if the mothers are too anxious or worried about the pain, they cannot control the labor pain resulting in the abnormal uterine contraction and low bearing down effort.

2.1.2 Abnormal delivery or dystocia

Definitions

Dystocia refers to all kinds of abnormal delivery like prolonged, delayed, or obstructed delivery. In other words, the abnormal delivery does not follow the pattern of normal labor curve (11).

Dystocia is harmful to mother and baby. It also results in the increasing disability and mortality rate among the mother and baby. Hence, mother with dystocia must be urgently and correctly diagnosed for further appropriate intervention.

Signs and symptoms (12)

The process of the abnormal delivery can occur at the first or the second stage of labor with the following signs and symptoms.

1. Abnormal cervix dilatation rate and downward movement of the fetus:

1.1 Prolonged cervix dilatation rate and downward movement of the fetus (protracted labor).

1.2 The cervix dilatation rate or the downward movement of the fetus has been stopped/paused (arrested labor).

1.3 Insufficient abdominal bearing force at the second stage of labor.

2. Disproportion of the fetal head and mother's pelvis:

2.1 Abnormal shape and size of the fetus.

2.2 Abnormal presentation or posture of the fetus.

2.3 Contracted pelvis of the mother.

3. Rupture of the amniotic fluid sac without labor pain

Dystocia can be caused by one or several possibilities as follows.

1. The abnormal expulsive forces such as uterine dysfunction, insufficient abdominal bearing forces, and so on.

2. The abnormally narrow pelvic cavity of the mother (contracted pelvis).

3. The deformity of fetus such as abnormal presentation, posture, size, and shape.

4. The abnormality of other reproductive organs that obstruct the childbirth, for example, vagina stenosis, septal vagina, cervix stenosis, abnormal position of the uterus, ovarian tumor or myoma uteri.

The uterine dysfunction and the abnormal pelvic cavity are usually the main causes of the dystocia that result in the cesarean section.

1. Abnormal muscle contraction

1.1 The uterine dysfunction can be divided into two types:

1.1.1 Hypotonic: The contraction of the uterus is too weak but still in a rhythm starting from the fundus to the central segment then to the lower segment. Somehow, the uterus force is not strong enough to cause the cervix dilatation. Hence, the mothers do not feel the labor pain.

Causes: Fifty percents of the hypotonic dysfunction cannot be detected whereas the rest maybe caused by:

1) The disproportion of the fetus and the mother's pelvis.
2) The abnormal presentation and the posture of the fetus.
3) The excessive extension of the uterus from the previous twin pregnancy or polyhydramnios.
4) Taking of too many pain killing medicines within the inappropriate period.
5) The intrauterine infection and prolonged rupture of amniotic fluid sac.
6) The psychological stress from fear, especially for the first delivery, the fatigue from prolonged labor pain and full bladder.

Diagnosis: Most of the hypotonic uterine dysfunction occurred in the active phase. The mothers will face a mild labor pain. The cervix is effaced and dilated at least 4 centimeters with a mild uterine contraction (13).

Treatment and intervention: The abnormal uterine dysfunction will delay the labor and increase the risks of infection and fatigue of the mothers. Thus, the mother will be provided with proper and sufficient intravenous fluid. Besides, the disproportion of the fetus and the mother's pelvis must be checked before giving the following treatments (13):

1) Puncturing the amniotic fluid sac and observing the progress of labor.
2) Giving oxytocin to stimulate uterine contraction.
3) The cesarean section will be performed in case of abnormal labor process.

1.1.2 Hypertonic: The contraction of the uterus is severely high. The intrauterine force is over 50 mm/Hg. whereas the period between each uterine contraction is less than two minutes, or both (11). The contraction usually starts from the center of the uterus and will be harder in the fundus. The contraction is not steady and asynchronous. The hypertonic uterine is generally found in the latent phase of the first phase of labor. The mother will suffer a severe pain but the cervix does not dilate or the failure of downward presentation of the fetus.

Causes: Fifty percents of the hypertonic dysfunction cannot be detected whereas the rest maybe caused by the abnormal position of the fetus, the disproportion of the fetus and the mother's pelvis, and the anxiety of mother.

Diagnosis: The hypertonic uterine is generally found in the latent phase of the first phase of labor. Although the mother feels severely painful, her cervix does not dilate or the fetus fails to move downward.

Treatment and intervention:

1) The cesarean section must be promptly performed if the fetus is in distress.

2) The pain-killing medicine can be used if the amniotic fluid sac is not ruptured so that the mother can get a rest whereas the progress of labor will be normal.

3) The mother will be provided with the uterine relaxing drug.

1.2 Insufficient abdominal bearing force

When the cervix is fully opened and the uterine is contracted, the mother will feel a labor pain. If the bearing force is not sufficient, the delivery will be prolonged.

Causes:

1) The mother has no delivery experience especially in her first pregnancy.

2) The mother feels tired due to the lack of sleeping and adequate diet and the labor pain.

3) The mother takes too many analgesic drugs or receives spinal anesthesia.

Treatment and intervention:

1) The advice on appropriate bearing force should be given to the mother.

2) The proper pain management should be prescribed.

3) The appropriate obstetrics methods and equipments should be used such as forceps extraction, vacuum extraction or cesarean section, etc.

2. Abnormal pelvis of mother

The abnormality of the mother's pelvis occurs when one of the pelvic diameters is abnormally short resulting in the narrow pelvic cavity. Such abnormality can be divided as follows:

2.1 Pelvic inlet contraction

The pelvic inlet contraction means the diameter of the pelvic inlet from the anterior to the posterior direction being shorter than 10 cm, or the transverse diameter being shorter than 12 cm (12).

In general, the full-term fetal head usually has an approximate bi-parietal diameter of 9.5 to 9.8 cm (12). If the mother's pelvic inlet is shorter than 10 cm, the fetal head cannot pass easily whereas the fetal presentation will be obstructed at the pelvic inlet.

Impact on delivery: The fetal head will difficultly pass through the narrow pelvic inlet leading to prolonged delivery and morbidity to mother and fetus.

2.2 Midpelvic inlet contraction

This condition occurs if the sum of the inter-ischial spinous diameter and the posterior sagittal diameter equals 13.5 cm. or less. However, the distance between the ischial spines(less than 10 cm.) is commonly used due to its easy measurement (12, 13).

Impact on delivery: Although the midpelvic inlet is narrow, the normal vaginal delivery is still possible depending on the pelvic size, the fetal head size, type and shape of the pelvis.

2.3 Pelvic outlet contraction

The pelvic outlet contraction means the length between both sides of ischial tuberosity equals 8 cm or less (12, 13).

Impact on delivery: In general, the pelvic outlet contraction does not cause dystocia. However, this may possibly injure the perineal soft tissue.

2.4 General pelvic contraction

The general or mixed pelvic contraction occurs when the pelvis is broken or deformed by previous injuries or some diseases. The mother who has general pelvic contraction usually also has the abnormality of the vertebrae.

Pelvic inlet assessment

1) The vaginal examination or abdominal examination during the labor pain shows that the fetal head fails to move down into the pelvis. This may imply either the abnormal size of the fetal head or the pelvic contraction.

2) The x-ray pelvimetry is an unreliable method to predict normal vaginal delivery due to other factors.

3) The computed tomography scanning gives more accurate result than the x-ray pelvicmetry.

4) The magnetic resonance imaging (MRI) is more accurate and advantageous due to lack of radiation exposure.

3. Abnormality of presentation, posture, size, and body of fetus

Dystocia may be caused by the abnormalities of the fetus's presentation or posture.

3.1 Face presentation

Face presentation means that the fetus used its face as the presentation so that its occiput touches its own back and its chin tilts up. The occurrence of face presentation is about 0.175% (12).

3.2 Breech presentation

Breech presentation referred to the position of fetus whereby its body lies parallel to the longitudinal axis of the mother and its cephalic pole situates at the fundus. The occurrence of breech presentation is about 3-4% (14).

Breech presentation can be sub-divided into three types as below (11).

1) Frank breech (extended breech): The fetus fully flexes its hip with the extended knees lies in front its chest and abdomen.

2) Complete breech (flexed breech, full breech, double breech): The fetus fully flexes its hip and knee joints.

3) Incomplete breech: the fetus incompletely flexes its hips or knees such as single footing, double footing, footing-frank and kneeling breech presentation.

3.3 Brow presentation

The fetal head aligns between a full flexion and a full extension. This presentation is rarely found, namely, about 1:3200 of all cases (14).

The fetus with brow presentation usually changes its posture during the progression of labor.

3.4 Shoulder presentation or transverse lie

The body of the fetus lies perpendicular to the mother's body. So, the shoulder will be the presentation. The incidence of this position is approximately 1:300 of all cases (15).

3.5 Compound presentation

The condition where a part of the arms, hands, or legs of the fetus, is attached with the other presentation. This condition is normally found at 1:1200 of all cases (15).

3.6 Shoulder dystocia

Shoulder dystocia occurs when the delivery stops after the fetal head is delivered out of the birth canal but its shoulder is still stuck. Thus, the fetus is highly risky to die or to be disabled. Meanwhile, the mother will suffer a severe pain. Emergency surgical intervention is therefore desperately needed to save the lives of both mother and fetus. The incidence relates to the size of the fetus. It is found 0.15% in the fetus with the birth weight of over 2500 grams; 1.7% in the fetus with the birth weight of over 4000 g; and 13.6% in those whose weight is over 4500 g (16).

3.7 Hydrocephalus

Hydrocephalus occurs when the fetus has excessive cerebrospinal fluid in the ventricular system. As a result, the fetal head will expand and sequentially obstruct the delivery. This case is found 1:2000 of the total deliveries(12).

3.8 Conjoined twins

At present, this dystocia is rarely found during the delivery because it can be mostly diagnosed before the delivery. If the bodies of the twins are small, the normal vaginal delivery is possible or the cesarean section is required.

3.9 Large fetal abdomen

The fetal body expands significantly and leads to dystocia. Mostly, the fetus of this type of dystocia is congenitally disabled and cannot survive.

4. Other reproductive organs' dysfunction obstructing the delivery (11-13)

The abnormalities of reproductive organs both the internal reproductive organs and the external reproductive organs may cause the dystocia.

4.1 Vulvar abnormality

4.1.1 Contracted vulva: This rare condition can be congenial or occurs after an accident or an inflammation. The delivery under this condition will severely tear a perineum. Thus, the perineum should beat first protected.

4.1.2 Swollen vulva: This condition is possibly caused by the nephrotic syndrome, pregnancy-induced hypertension, venous thrombosis or hematoma.

4.1.3 Rigid perineum: This is frequently found in women having the first delivery or women with torn or infected perineum scar.

4.1.4 Inflammation and tumor such as condyloma acuminata, Bartholin abscess and Bartholin cyst.

4.2 Vaginal abnormality

Contracted vagina: Like the contracted vulva, this condition usually occurs after an inflammation or an accident.

4.2.1 Contracted or congenially-narrowed septal vagina: This condition will obstruct the labor process. Generally, the tear is spontaneously caused during the normal vaginal delivery or during the cesarean section in some cases.

4.2.2 Tumors such as Gartner duct cyst: The puncture and suction of the fluid will facilitate the labor process.

4.3 Cervix dysfunction

4.3.1 Contracted cervix: This condition is rarely found, except in mothers with previous cervix treatment, for example, the conization,

cryosurgery, laser therapy, and so on. Such treatments may contract the cervix. In some cases with sticky cervix, the cesarean section is required.

4.3.2 Cervical cancer: The cervix dilatation will be prolonged during the labor pain. Thus, the cesarean section is finally required. If cervical cancer is early diagnosed, it will be deemed as the indication for cesarean delivery.

4.4 Abnormality of uterus

4.4.1 Anteflexion: The anterior bending of uterus along with the weakness of abdominal wall will make the uterus moving forward. As a result, the contraction force of uterus will be inadequate to dilate the cervix and the presentation cannot move to pelvic cavity as usual.

4.4.2 Myoma uteri: This is the main causes of premature labor, abortion and abruption of placenta. The tumor larger than 6 cm will result in dystocia.

4.5 Ovary dysfunction

4.5.1 The ovarian tumor or ovarian cyst can lead to dystocia if such tumor situates in the pelvic cavity. Cesarean section along with the removal of ovarian cyst is required.

Diagnosis:

The diagnosis of dystocia is usually performed during the labor process using the following symptoms, signs and other evidences.(11)

1. Graphic analysis of labor curve

The rate of cervix dilatation and fetal descent, so called Friedman curve, can be used to monitor labor progression. When any abnormality occurs, the causes must be promptly investigated for the proper intervention to protect mother and fetus.

2. Fetal condition

The fetal condition can be used to predict dystocia; for instance, the abnormal presentation or position and abnormal fetal heart rate in a prolonged labor.

3. Maternal condition

The symptoms of mother in a prolonged labor pain, namely, restlessness, severe pain, and dehydration indicate dystocia. In some cases, the over-contracted

uterus creating a retracting part called Bandl ring indicating the pending rupture of uterus.

4. Vaginal examination

4.1 Cervix condition: The rate of cervix dilatation should be assessed. Moreover, the cervix characteristics must be assessed, e.g., swelling, dilatability or resistance.

4.2 Presentation and posture of fetus: The abnormal presentations such as face presentation or brow presentation found during the labor pain can result in dystocia.

4.3 Level of presentation: The level of presentation must be assessed to find out whether there is a caput succedaneum - a sign of dystocia.

5. Monitoring on the contraction of uterus

The weakness of uterine contraction force despite adequate medication along with other dystocia symptoms can be a sign of dystocia.

6. X-ray and ultrasonography

These imaging techniques can be used to assess the presentation, posture, level of presentation and size of mother's pelvic cavity. However, these methods are not practical and the results are unreliable enough. So, these methods become less popular nowadays.

Treatment: (11)

1. Initial and supportive measures:

1.1 Supplementing adequate diet and intravenous fluid to prevent dehydration. In some cases, the correction of acid-base and electrolyte imbalance must be also provided.

1.2 Avoiding full bladder or full rectum. In case of prolonged amniotic fluid sac rupture, the infection must be investigated. If the infection is detected, appropriate antibiotics should be given immediately.

1.3 Providing adequate analgesic drugs to relieve pain and to encourage relaxation and rest.

1.4 Providing spiritual support, quick problem solving, advice and explanation to ease suffering, anxiety and exhaustion.

2. Specific therapy

Dystocia is commonly found among mothers with their first delivery because of insufficient uterine contraction and narrow birth canal. However, the disproportion of the fetal head and the mother's pelvic cavity, the posture and presentation of fetus and the uterine contraction force must be firstly assessed to diagnose dystocia. If the uterine contraction is inadequate, the medical treatment such as oxytocin should be given to stimulate the contraction. In case of intact amniotic fluid sac, the puncture of amniotic fluid sac may be done.

In cases of abnormal presentation or posture, such as a transverse lie, cesarean section should be promptly performed. However, in some cases of face presentation and chin presentation, normal vaginal delivery may be possible.

In case of disproportioned pelvic cavity, cesarean section must be done promptly.

Complications of dystocia (11-13)

Adverse effects of dystocia on mother:

1. Infection: The infection is caused by premature or prolonged amniotic fluid sac rupture. The infection is also caused by several vaginal examinations.

2. Birth canal trauma: The obstetric procedures such as forceps extraction or vacuum extraction may cause dystocia due to birth canal injury.

3. Hemorrhage: Dystocia can cause abnormal hemorrhage due to prolonged and exhausted uterus. Obstetric procedures used in dystocia cases can lead to tear or birth canal injury.

4. Late complications:

4.1 Genital prolapse: This is usually caused by prolonged labor, incorrect procedures, or obstetric techniques.

4.2 Genital fistula: The fistula is found between the vagina and bladder. It is usually caused by prolonged labor or dystocia. If the fetus presses against the bladder for a long period of time, the gangrene of surrounding soft tissue will inevitably occur.

4.3 Maternal distress: The mother with dystocia will use a lot of energy and suffer from severe pain. As a result, they will be exhausted and stressful.

Adverse effects of dystocia on fetus:

1. Fetal distress: The fetus will expose to inadequate oxygenation leading to stillbirth or neonatal death. Moreover, in those who can survive the labor, they are risky to face several abnormalities like physical and mental growth retardation.

2. Infection: The infection of mother especially in the uterine cavity will be contagious to fetus.

3. Birth injury: The prolonged and obstructed labor process may cause cephalhematoma. Furthermore, obstetric procedures can be harmful leading to intracranial hemorrhage or epidural hemorrhage, fracture, etc.

4. Neonatal complications (11)

4.1 Low apgar scores: The newborn with prolonged or obstructed labor will suffer from insufficient oxygenation for a long time. So, their Apgar scores will be affected.

4.2 Jaundice: Jaundice can be frequently found in the newborn with dystocia.

4.3 Neurological sequel: Obstetric procedures may injure neurological system of fetus such as Erb-Duchenne paralysis, Klumpke's paralysis, facial palsy, and so on. In some cases, delayed mental growth and development can be found in case of prolonged asphyxia.

2.1.3 Cesarean delivery

Definitions

Cesarean delivery is the labor of fetus through abdominal wall of mother, namely, laparotomy and hysterotomy. However, cesarean delivery does not include the delivery in cases of uterine rupture, ectopic pregnancy, and hysterotomy for therapeutic abortion.

Incidence

Cesarean section is recognized as the popular and the most important obstetric operation as it can save the life of mother and newborn. Over the last 30 years, the number of cesarean section has risen nationwide and worldwide. The rate of cesarean section in Siriraj Hospital increased from 23.89% in 1998 to 32.82% in 2003 and reached 39.7% in 2008 (3). In the United States, the rate of cesarean section had risen to 32% in 2007 whereas the rate of cesarean section in 1991 was only 23% (1).

Causes of increasing popularity in cesarean delivery (13, 17. 18)

1. At present, the married couples tend to have smaller number of children. So, they do not want their fetus to be stressful during the delivery.
2. Women with late marriage lead to elderly pregnancy, especially among women aged 35 years old or more. Hence, these women prefer cesarean section.
3. With new electronic technology of fetal monitoring, the fetal distress can be detected earlier than before. This facilitates an early decision to perform cesarean section to save the fetus from hypoxia.
4. The cesarean delivery is performed in breech presentation to reduce the possible risks against the fetus.
5. Some obstetric procedures such as forceps extraction and vacuum extraction become unpopular due to the possible complication among mothers and fetus. Hence, the cesarean section is more preferred.
6. With the increasing medical law suit, the obstetricians prefer cesarean delivery to avoid abnormal mental development of the baby in terms of cerebral palsy or epilepsy caused by the asphyxia.
7. Mothers with higher economic and social status who want to choose their own delivery time and to avoid labor pain prefer cesarean section especially at the private hospitals.
8. Previous cesarean section may be the indication for subsequent delivery.

Indications of cesarean delivery

Absolute indications (19)

1. An unsuccessful induction of labor pain
2. The disproportion of fetal head and mother's pelvic cavity
3. The interrupted labor process
4. Fetal distress
5. Placenta previa
6. Abruptio placenta and the fetus cannot be delivered though the birth canal in a short period of time
7. Prolapsed umbilical cord
8. Tumor blocking the delivery channel
9. Herpes simplex lesion at the birth canal and delayed rupture of the amniotic fluid sac for more than four hours
10. Previous cesarean section
11. Siamese twins
12. Cervical cancer

Relative indications (19):

1. Breech presentation
2. Congenital abnormalities
3. Previous vaginal repair
4. Large genital warts around the birth canal

The four most common indications of cesarean section are (3):

1. Previous cesarean section
2. Disproportion between the fetal head and the pelvic cavity of mother or failure of labor progression
3. Fetal distress
4. Breech presentation

These four indications accounted for 85% of the total cesarean section cases.

Two types of cesarean section

1. Elective cesarean section is a planned delivery due to specific indications such as cephalo-pelvic disproportion, transverse lie, placenta previa, herpes simplex at genital organs, and so on. The patients will be well prepared before the operation such as fasting and intravenous fluid to reduce the post-delivery complications. However, at present, the elective cesarean section without specific indications has been increased.

2. Emergency cesarean section is an emergency delivery performed when mother cannot deliver fetus through the normal birth canal due to some indications such as abruption of placenta, fetal distress, uterine rupture, or cephalopelvic disproportion diagnosed during the labor stage. Without any prior preparation, like other emergency operations, the mother may be risky and physically and mentally exhausted from the complications or prolonged delivery. In some cases, elective cesarean section has been planned but unexpectedly the preterm delivery by emergency cesarean section has to be done without proper preparation.

2.2 The postpartum period or Puerperium

Postpartum period or puerperium refers to the period starting from the time when the placenta is delivered to the time when organs and systems are back to normal condition. Generally, postpartum period lasts for six weeks. During the postpartum period, many changes occur anatomically, physiologically, and psychosocially. Some physiological changes can be normalized to the conditions before the pregnancy while some changes are special such as lactation, adaptation to maternal roles and fulfillment of tasks as being a house wife. However, abnormal postpartum changes occur if mother is not well educated or wrongly treated.

Changes of postpartum mothers

1. Anatomical and physiological changes

1.1 Uterus: The involution of uterus occurs due to uterus ischemia and autolysis. The size of uterus decreases. The fundus of uterus is at the

lower level of umbilicus and moves back into the pelvic cavity being unable to be palpated through the abdominal examination after two weeks of delivery. The size of uterus will be generally normalized within the first four weeks after delivery (20, 21).

1.2 Cervix: The size of cervix will gradually decrease to one inch in a week after delivery. At the same time, the uterus will be thicker to recreate the cervical canal. In this process, the external os will be reshaped to a circle form which is not round like before the delivery.

1.3 Endometrium: After the delivery, the endometrim is torn apart and turns into the lochia whereas the remaining parts of decidual basalis is divided into two layers. The superficial layer will be disintegrated and ripped out along with the lochia while the basal layer consisting of the endometrium and endometrial grand will create the new endometrium to cover the missed part within the first ten days after the delivery.

1.4 Location of placenta: The location of the hanged placenta will be shrunk to the size of a palm and will be rapidly shorten to 3-4 cm^2 within two weeks (21, 22).

1.5 Vagina and vaginal orifice: The vagina after delivery will be expanded and contracted. However, it will be a little broader than it was before the pregnancy. Hymen will be permanently shredded and remain as a small polyp known as the myrtiform caruncles while the vagina will be soft and the wrinkles in the rugae are reduced.

1.6 Perineum: In vaginal delivery, the episiotomy will be fixed by surgical sutures. So, the perineum may be swollen and wounded. Such symptoms will be healed within 5-7 days (27). Somehow, the mothers with too-narrow vagina will encounter the rectocele or cystocele when their perineum muscles are incompetent.

1.7 Urinary system (20, 23): When the fetus is delivered through the birth canal, the urinary bladder and the urethra will be injured and swollen. The capacity of the bladder increases with lower sensitivity. This leads to the over-distention and/or the retention of urine in the urinary bladder and finally the bladder infection. Such infection is mostly found in women with operation procedures or

epidural anesthesia. Generally, the postpartum mothers will be able to urinate within the first 6-8 hours after the delivery.

Excess water and sodium chloride will be excreted by kidney especially in 2-5 days after delivery. The body weight can be lost around 2.2 kg. The reason for such great amount of urination is that the water is accumulated outside the cells in the amount of 2,000-3,000 ml during the pregnancy.

The size of ureter and renal pelvis will decrease to the normal size within 2-8 weeks. Some pregnant women may have urinary incontinence. Such symptom will be recovered within three months after the delivery.

1.8 Intestine and anus: Postpartum mothers may have the symptoms of flatulent and constipation due to decreased colon movement. The effects of progesterone hormone still remain in the first week (20) along with the blood loss, episiotomy pain or hemorrhoid. All these changes can create fear of fecal excretion resulting in constipation.

1.9 Cardio-vascular system: The system will be restored within 2-3 weeks. One third of the increasing blood will be lost within the first three days after delivery. This usually occurs in an hour right after delivery. Mothers with normal vaginal delivery may lose their blood around 300-500 ml. Those who had cesarean section may lose 1000 ml of blood during the delivery (21, 22).

1.10 Body weight: In the early postpartum period, mother will lose approximately 5-6 kg due to the dramatic decrease of uterus weight including the weight of fetus, amniotic fluid, placenta, along with the blood loss during the delivery. The body weight during the first week after the delivery will be decreased for another 2-4 kg through the urine and sweat excretion. The weight will be constantly decreased and mothers will turn to the weight before their pregnancy. However, in some cases, the weight of mothers will be heavier than the pregnancy (23).

1.11 Abdominal wall: The abdominal wall of the postpartum mothers is flat and soft since the elastic fiber of the skin is expanded whereas the uterus is enlarged for a long period during the pregnancy. All changes will be recovered within several weeks with the help of exercise. However, the stria will be seen vaguely (20).

1.12 Skin system: The skin of postpartum mother changes due to the decrease of estrogen and progesterone. The areolars, nipples, inner thighs, linea nigra, facial chloasma, which were once prominent during the pregnancy, will get lighter. However, the striae gravidarum on the abdomen will be obviously seen. Postpartum mother also encounters alopecia during the 4-20 weeks after the delivery which will be automatically disappeared.

1.13 Breasts: Breasts and nipples will change since pregnancy to prepare the mammary glands for lactation for the newborn:

Breasts consist of 15-25 secondary buds. Each bud is divided with the two cuboidal layers and a space in the middle. The internal layer will be turned into secretory epithelium whereas the external layer will be turned into myoepithelium which excretes milk for newborn (21).

The mammary gland is radially shaped and filled with the lobes. Each lobe contains 20-40 lobules; each of them contains 10-100 alveoli which will be connected with the tube to nipples. So, in the postpartum period, the vascular tubes will be ramified with high blood congestion. The breast engorgement can be obviously noticed in 2-4 days after the delivery (21, 23).

For the lactation mechanism, the nipples and the posterior pituitary grand will be stimulated to secret more oxytocin. Such hormone will speed the contraction of the mammary muscles for the lactation. However, the lactation period may be temporarily suspended by the stress, fatigue, pain, fear and smoking habits (21).

2. Postpartum psychological reactions (20)

These three common conditions can be mostly found in the postpartum period:

2.1 Maternity blues (postpartum blues) is the most common psychological change of postpartum mother, namely, around 15-45% of all cases. The symptoms of this condition are anxiety, stress, depression, headache, insomnia and negative attitudes towards the responsibility for the newborn. The maternity blues are not severe and usually occurs in the first week after the delivery. The symptoms last

for a while i.e. only 2-3 days and will be automatically disappeared within ten days. If the symptoms last longer, the mother should seek medical advice.

2.2 Postpartum depression: The postpartum depression is very similar to maternity blues. However, the postpartum depression is usually found in mother with previous maternity blues. According to some reports, this condition is caused by hormonal imbalance or family problems. Mother with previous records of psychiatric disorders prior to the pregnancy tend to suffer more from postpartum depression. Antidepressants should be used along with psychiatrist consultation. Besides, the patient should be also spiritually supported by their family and medical staffs.

2.3 Postpartum psychosis: This condition is very rare. The symptoms of schizophrenia or manic-depressive reactions such as tendency to suicide and illusions occur. The patient needs to be treated by the psychiatrists with the medications of tricyclic antidepressants, neuroleptics, lithium carbonate whereas the electroconvulsive therapy is required in some cases.

Psychosocial changes and adaptation of postpartum mothers

Postpartum mothers usually face several psychosocial changes. Hence, they need to have the good preparation and adaptation. If the postpartum mother can adapt herself well, the family will be happy. If not, she will suffer postpartum blues.

Maternal adaptation

The maternal adaptation including the adjustment of responsibilities, relationship with other people, and child familiarity of postpartum mother can be divided into the following six domains:

1. Spouse/partner relationship: Child-having affects the relationship between husband and wife. For instance, the time spent for husband will be reduced as most of the time will be allocated for the newborn. In addition, the sexual intercourse in the postpartum period will be temporarily refrained. Thus, the husband may not have an opportunity to discuss about the family matters whereas the mother must try to adjust herself to sustain the great relationship with her husband. To avoid any possible problems, the couple must understand each other.

2. Perceived involvement of husband on taking care of the newborn: Postpartum mothers usually require understanding, attention, assistance, and hospitality of their spouse on child caring. Helping on child caring implies the bond between husband and wife. As a result, postpartum mothers will be more spiritually encouraged to raise the newborn.

3. Satisfaction of mother with labor pain and delivery: Postpartum mothers must adapt themselves to the experience of labor pain and delivery. Generally, most mothers prefer and expect the positive experience on the delivery and the newborn. For example, they want a healthy newborn, good services and support from the medical staffs, and participation in making a decision on the delivery method which may be in turn not met with their expectation. If mothers fail to adapt themselves to such experience, they will be frustrated, unconfident, and uncertain on their future maternal roles.

4. Satisfaction of mother with living conditions and family financial status: Having a baby changes the daily routine and living conditions and will also increase the expenses. In some families, as mothers have to stop working outside, their family income decreases. Some single mothers have to raise the baby alone as they are neglected by their husband. This may result in the insufficient income. Added with the economical problems, if postpartum mothers cannot adjust themselves properly to the changing environment, they will be dissatisfied with life and family. In addition, they will be insecure and cannot properly perceive the maternal roles.

5. Confidence of mother in maternal roles and activities: In the postpartum period, to adapt themselves well, mothers must be confident that they can take care of their infant. Mothers who can sufficiently adjust themselves will learn to reduce their stress and anxiety caused by their maternal roles. As a result, such mothers will understand the needs of their baby and can take care of their baby in accord with the baby's needs and satisfaction.

6. Satisfaction with child caring: Postpartum mothers must happily learn to adapt themselves to the activities related to the child caring such as breast feeding, hygienic cares and response to the baby.

Maternal roles (23)

Maternal roles can be divided into four aspects as follows:

1. An adaptation to the new roles, the learning of what missions the mothers need to do in taking care of their babies, which cannot be avoided even a second.

2. A creation of a good relationship between parents and babies. Mothers need to learn their babies' behaviors. They should admire their babies and feel happy to raise and talk to them. At the same time, mothers must still maintain the relationship with their spouse as well.

3. A division of responsibilities among family members must be appropriate so that the babies can be properly raised to fulfill their needs in accord with their development stages.

4. A family planning is extremely necessary. Mothers and fathers should mutually discuss on an interval of child-having and suitable birth-control methods.

2.3 Quality of life

Concepts related to the quality of life

Quality of life consists of sophisticated, complicated and different components due to several reasons:

1. As the quality of life is a mental perception process that is interpreted through different concepts and languages, it may be hence deviated and differentiated based on the experience, the fundamental knowledge, and the presentation of the individuals.

2. The conceptual frameworks of the studies on the quality of life must be clearly defined as such frameworks must be accepted among the similar social groups and can be evaluated efficiently.

3. The definition of the quality of life depends on several factors such as values, social classes, occupation, age and education. As such, the definition is

differentiated. If the definition is stated with only one meaning, such definition will be used to all individuals without any consideration on human differences.

From these reasons, it is quite difficult to find the corresponding definition. However, many researchers have given a variety of definitions related to the quality of life as follows:

Definitions of quality of life

The World Health Organization (WHO) (24) has defined that quality of life is the personal perception in accord with the position, environment, culture, and social value including the aims and standards of the individuals. The quality of life can be divided into six domains: Physical health, psychological state, levels of independence, social relationships, environmental features, and spiritual concerns.

For UNESCO (25), quality of life is a cozy feeling caused by the satisfaction or dissatisfaction towards the states or environments people live in and such perception can be judged by the individuals.

According to Ferrans & Powers (26), quality of life is a cozy feeling caused by the satisfaction or dissatisfaction towards the states or environments people live in and such perception can be judged by the individuals.

Yupa Udomsak (27) mentioned that quality of life is referred to the quality in terms of health, society, education, politics and religion. As the quality is not fixed with any standards, each country or each individual establishes different standards based on its needs. As a result, the quality of life is changed through times and states.

Orem (28) defined that quality of life is a perception of a coziness in the current states of the individuals through the experience of satisfaction, pleasure, and happiness in terms of spirit, life determination, and personal identity. Quality of life is thus related to health, success and life benefit sources. People can have a better quality of life even they are disabled.

For Niphon Khanthasewee (29), quality of life is a level of living states of the individuals based on the living elements physically, mentally, socially and conceptually.

Siri Hamsupho (30) mentioned that quality of life is the state when the individuals can properly live in the society without causing social burdens or problems. The life is complete physically and mentally whereas people can live with righteous life in accord with the environmental conditions and social values. Besides, people can solve problems and achieve the goal properly under available resources.

From the definitions above, it can be concluded that quality of life is a proper living of people in the suitable environment and society. Such living can sufficiently satisfy the life components physically, mentally, emotionally, socially, and conceptually. The quality of life is hence reflected as a satisfaction of a living which can be perceived by the individuals in such conditions.

Components of quality of life

Quality of life has several meanings and can be changed based on the environment the individuals live in. Thus, the components of the quality of life, like its meanings, are various; for instance:

Yupa Udomsak (27) stated that the components of the quality of life include physical, mental health, educational, economic, occupational, political, religious, environmental and social facilities, and so on.

For Sharma (31), there are five components of the quality of life:

1. Standard of living: This means the standard of a daily living of the individuals in terms of the personal income, health, education, housing, and social welfares. These components can remarkably change the quality of life.

2. Population dynamics: The changes of population can be caused by the birth, death and re-settlement resulting in the increase of decrease of population scales. Population dynamics can affect several situations in terms of economy, society, and public utilities. All of these, in turn, affect the quality of life.

3. Socio – cultural factors: As human beings live as a group, the rules and systems of the government, laws and practical norms derived from the faith and belief are required for peaceful living and a good quality of life.

4. Process of development: Development is a process to a better living. The development must be therefore continual and associated with the social factors,

environment, and resources. To achieve the good quality of life, the individuals and the members of the family, community, and nation should be continually developed.

5. Resources: Resources can be also recognized as the crucial component. Countries with abundant natural resources usually have qualified human resources and higher quality of life and vice versa. Therefore, resources can be used as an indicator determining the wealthy and the poor countries.

6. Physical components: These are referred to the components of a daily life that affect the quality of life such as food, water, housing, and clothing.

According to Flanagan (32), the following five components of the quality of life are the basic needs of human beings:

1. Physical and material comfort: Physical comfort is referred to the healthy body whereas the material comfort includes a living in a nice house with good food and facilities, for example.

2. Relationship: This covers the relationship with spouse, parents, relatives, friends and others. This also includes having children and parenting them as well.

3. Social and community activities: This also includes the opportunity to help or support other persons.

4. Development of personality and development success: For example, the development of intelligence, learning, self-understanding, having a great job with good returns as well as expressing oneself creatively.

5. Recreation: Recreation includes book reading, listening to music, sports and other entertainment including a participation in social activities.

Zhan (33) divides the quality of life into four aspects as below:

1. General life satisfaction: This is a satisfaction with all aspects of life that can be perceived for the difference by a comparison between expectation and reality.

2. Self-concept: This is the feeling or belief about one-self for overall or specific domains in a period of time that is derived from the perception on the reaction of other persons. This, in turn, determines the behaviors of the individuals.

3. Health and functioning: People with good health and ability can achieve the goals.

4. Economy and society: This is the social status associated with the psychological well-being that results in the feeling of self-esteem. Such psychological well-being is generated from three aspects, namely, education, occupation, and income.

For Ferrans & Powers (26), there are four areas of the quality of life:

1. Health & functioning: This is involved with the physical health and ability of the individuals to perform their duties or activities or provide services for other people in accord with their social roles.

2. Socio-economic aspects: The social and economic status of the individuals comprises the standard of living, financial self-reliance, housing, employment, relation with neighbors, friendship, psychological support and education.

3. Psychology/spiritual; The perception or awareness of emotional or spiritual responses to the things in life consist of life satisfaction, general happiness, self-satisfaction, goal achievement, peace of mind, satisfaction with physical appearance, and religious faith.

4. Family: The family relationship of the individuals comprises family happiness, spouse/partner relationship, success of children, and health conditions of family members.

According to UNESCO (34), various factors are associated with the quality of life such as foods, health, nutrition, education, environment, resources, accommodation, settlement, occupation, religion, moral values, and psychological factors.

From the above examples, it can be concluded that the quality of life consists of different components. Thus, to study on the quality of life, the suitable components should be chosen and analyzed in accord with the purpose of the study.

Assessment of quality of life

The assessment of the quality of life is different and depends on the purpose of the study. However, today, two indications have been used:

1. Objective indications: The assessment will be concrete such as the assessment of income, occupation, education, physical functions, food, and environment.

2. Subjective indications: Such indications are usually used in the assessment of feelings, attitudes towards the life experience, living, life satisfaction, happiness, and self-esteem.

Assessment of personal quality of life in terms of health and happiness (35)

The four domains are assessed as follows:

1. Physical domain

The physical domain is the perception of the individuals on the impact on their daily life. This domain can be divided into seven groups as below:

1.1 Pain and inconvenience: This is the perception of the individuals that their health conditions affect the daily life including the perception on the ability to manage stress or anxiety caused by the pain that affect the quality of life.

1.2 Energy and fatigue: This includes the strength, enthusiasm, and patience which are necessary for a daily life and recreation. It is also related to the enthusiasm and sufficient energy for dealing with fatigue caused by some problems like diseases and pressure.

1.3 Sleep and rest: This is related to the perception of the impact on the quality of life in terms of sleep and relaxation such as insufficient sleep and relaxation, insomnia, waking in the middle of the night, doziness, non-refreshed feeling after waking up, taking sleep medicines to solve the sleep problems.

1.4 Movement ability: This means the ability of the individuals to move from place to place without any help from other persons. The dependence on others for the movement significantly affects the quality of life. However, in some cases, having no movement ability may not affect the quality of life of such people prefer using their wheelchair.

1.5 Daily routine: This is referred to the ability of the individuals to perform their daily routine such as taking care of themselves, their properties and belongings, and doing the various daily activities.

1.6 Chemical dependence and Personal Medical Aids: This is involved with the personal perception on the drug dependence or other medical interventions such as acupuncture or using herbs to comfort their body and mind.

1.7 Working ability: This is related to the energy used for working, whether paid or unpaid, in terms of the social services, education, child care and home care.

2. Psychological domain

This domain is divided into six groups:

2.1 Positive feelings: This is the positive personal experience such as peacefulness, happiness, success, and joyfulness including the perspectives and feeling of the future.

2.2 Ideas, learning, memorizing, and personal attention: These are the views of ideas, learning, memorizing and personal attention. This is also referred to the ability to make decisions on the stability and clarity of thoughts. However, the assessment is not related to the level of awareness and personal realization.

2.3 Self-esteem: Self-esteem is a personal feeling that can be either positive or negative. The self-esteem is involved with the self-value, efficiency, capability to achieve the goals by oneself, and self-control. In addition, this is also associated with the feeling of existing with other people in terms of education, career success, behaviors, family relationship, reputation, and self-acceptance.

2.4 Image and expression: The expression of the individuals can be positive or negative depending on their satisfaction with conceptual framework, learning, and disabilities.

2.5 Negative feelings: The negative feelings include the desperate, sorrow, regret, fear, anxiety, and loss of life satisfaction can affect the daily life.

2.6 Spiritual, religious and personal belief: This means the spirit, religion, and belief that affect the life of the individuals.

3. Social relationship domain

This domain describing the interpersonal relationship between the individuals giving the helps and the ones receiving the helps can be divided into three aspects as follows:

3.1 Personal relationship: This means the expression of friendliness, good wishes, love and bond that can be physically and emotionally expressed through hugging, touching, giving and receiving of love, sharing of happiness and sufferings.

3.2 Social support: This is involved with the assistance and support received from family and friends for solving personal problems, family problems, work problems, and negative feelings.

3.3 Sexual intercourse: This is referred to the proper sexual stimulation and needs. This also includes the sexual drive, sexual activity and successful sexual intercourse. The sexual intercourse is different in accord with age and gender. However, this topic is very difficult for discussion because some societies believe that sex is very personal and should not be disclosed in public

4. Environmental domain

The environmental domain can be divided into the following four groups:

4.1 Independence, physical safety and security: These are the feelings against the physical threat such as being forced by others or politics. Safety and stability are expressed through the freedom, independence, and living in a safe place. Some people may not be stable, for example, the disaster victims who became homeless and tortured, as well as the prisoners.

4.2 Residential environment: This is referred to the residence where people sleep and store their things. Such place affects a living of the individuals. The quality of residence can be assessed by the convenience, privacy, safety, cleanliness, and strong physical structure. Besides, a good relationship with the neighbors is also considered as one of the main factors of the quality of life.

4.3 Income: This means the concept of the individuals to the financial status, sufficiency to ensure a healthy and good life, as well as the satisfaction of the received income. However, this excludes the occupational satisfaction.

4.4 Health condition and social welfare: This implies the ability to access the health care and efficient social services expected. This also includes the quality of health care, access difficulty, and service mind.

4.5 Opportunity to gain new knowledge and skills: This means an opportunity and necessity of human beings in learning new skills or knowledge. Such skills and knowledge can be learned from the organized education institutes or by oneself.

4.6 Participation in recreational and leisure activities: This is a personal ability and voluntary willing to spend free times for hobbies and recreational activities such as meeting with friends, reading, sports, watching TV and spending times with family.

4.7 Physical environment: This means the surrounding environment like pollution, noise, traffic, air, and so on, that affect the quality of life.

4.8 Transportation: This is involved with the personal convenience when travelling by any sorts of vehicles to the desired destination. However, this does not include the types of transportation and travelling within the residential areas.

The conceptual framework of Ferran s& Power (Ferran CE. 1985) is assessed in two dimensions: (1) Satisfaction and (2) Importance due to the belief that the individuals having no satisfaction and importance will have the lower quality of life than those having higher satisfaction with what they pay importance.

Quality of life assessment tools

There are different methods to assess the quality of life as many institutes have created a variety of indications to evaluate the quality of life; for instance:

According to Nattita (36), the quality of life assessment tools should have the following characteristic:

1. The contents should be consistent with the studied population. For example, the assessment of Thai quality of life should be consistent with Thai values and culture.

2. The assessment should be quantitative. Namely, the data should be scored in numbers.

3. The assessment can be used in several situations with a variety in terms of gender, age, occupation, and types of diseases, with least restrictions.

4. The tool is verified for its reliability before implementation.

5. The tool is accepted by especially the clinical experts.

6. The assessment is sensitive for the changes based on the health conditions of the population.

7. The tool can clearly demonstrate the differences of the groups with different quality of life.

8. The assessment is rationally reliable.

For Spitzer et al.(37), the good quality of life assessment tool should contain the following ten characters:

1. The items of the tool are short and easy to understand and use.

2. The contents cover all aspects of the quality of life with enough items to assess the quality of life in each domain.

3. The contents are appropriate to the target population.

4. The assessment should be quantitative.

5. The assessment can be adapted for several situations with a variety in terms of gender, age, occupation, and types of diseases, with least restrictions.

6. The tool is verified and certified before implementation.

7. The tool is accepted by especially the clinical experts.

8. The assessment is sensitive for the changes based on the health conditions of the population.

9. The tool can clearly demonstrate the differences of the groups with different quality of life.

10. The assessment is rationally reliable.

In this study, the researcher used the quality of life assessment of postpartum mothers of Pamela D. Hill et al (38) developed from the quality of life index of Ferrans and Powers (Quality of Life Index Generic Version-III). The assessment was divided into two parts: (1) Satisfaction and (2) Importance. The both parts contain 39 items in five domains: 1. Psychological/baby, 2.Socio-economic, 3. Relation/spouse – partner, 4. Relation/family – friend, and 5. Health & function. The reliability of the whole assessment calculated by Cronbach' Alpha Correlation Coefficient was 0.96 whereas the reliability of the psychological/baby domain was 0.91, the socio-economic domain 0.90, the relation/spouse – partner domain 0.85, the relation/family - friend domain 0.90,and the health & function domain was 0.82,

respectively. The above assessment was translated into Thai and adapted to be suitable assessment for the Thai postpartum mothers. The researcher believed that this quality of life assessment could correctly assess the quality of life with the reflection of the reality since it was the tool that matched with the studied population.

Factors related to the quality of life and the research

According to the literature review, there are only a few studies on the postpartum quality of life of mothers. Most of them focus on the adjustment of mothers to the maternal roles or the mental health of the postpartum mothers. Most of the researches emphasize the quality of life of the patients suffered from AIDS, cancer, chronic diseases, and also the patients who just had the operation. Hence, in this study, the researcher chose only some factors that are correlated with the postpartum quality of life of mothers.

1. Age

The age of mothers is a crucial factor influencing the adjustment of mothers to the maternal roles. Age also indicates the emotional maturity, mental conditions, interest, care, and responsibility of mothers for caring their children and family.

Wilaiphan (23) stated that most of the mothers aged under 20 years old have lower emotional maturity. As such mothers are still in the teen age, they are very sensitive to the changes and temptations. Therefore, these young mothers slowly or slightly adjust themselves to the motherhood when compared with the mothers aged over 20 years old.

Wanna et al. (39) studied the factors affecting the mental health of the postpartum mothers and found that age is the factor that affects the mental health of the postpartum mothers with the statistical significance of 0.05.

Semiha et al. (40) studied and compared the quality of life of between the pregnant adolescents and the pregnant adults in Turkey and revealed that the quality of life scores of the pregnant adolescents were lower than those of the pregnant adults.

Lastly, Somkid (35) studying the postpartum quality of life of the HIV mothers in Phetchaburi and Ratchaburi Province discovered that age was not related to

the postpartum quality of life of HIV mothers. So, only the factor of age may not be correlated to the postpartum quality of life of mothers since other factors such as spouse/partner relationship, income, and so on, must be considered.

2. Education level

Education level is correlated to the satisfaction of life because it affects the occupation, income, health, and value. Besides, education provides experience for people and help people use their intellectual processes reasonably. According to Orem (28), education is crucial for the development of knowledge, skills, and attitudes towards the self-care. In other words, education is a part that supports and improves the good quality of life.

Wilaiphan (23) stated that people with higher education can adapt themselves to the motherhood better than those with lower education. Obviously, mothers with higher education usually have better opportunity to learn, adjust and search for diverse knowledge than those with lower education.

Wanna et al. (39) studied the factors affecting the mental health of postpartum mothers and indicated that education level is correlated with the level of anxiety and depression of the postpartum mothers, especially among the uneducated ones.

Nutcharat Siridumrong (41) studied the factors related to the health problems of mothers during the postpartum period at home and revealed that education level is associated with the problems of post-partum mothers when they returned to home with the statistical significance of .001.

Chutima(42) studied the relationship between the maternal self-efficacy, social support and maternal depression among Thai adult mothers having children aged under one year and concluded that the education level was significantly correlated to the depression.

Naiyana (43) studied the correlation between the personal factors, self-care ability, and quality of life of the patients with chronic renal failure treated with hemodialysis and found that education was correlated to the self-care ability with the statistical significance of 0.05.

Saifon (44) studied the quality of life of the elderly with coronary heart disease and indicated that the education level was positively associated with the quality of life with the statistical significance ($p < 0.001$).

Prapa (45) studied the factors affecting the quality of life of the patients with myocardial infarction and revealed that education was positively related to the quality of life with the statistical significance ($p < 0.001$).

However, in the study of Manlika (46) on the perception of AIDS and self-care capability to prevent AIDS among the prostitutes, education was not related to the quality of life of the AIDS infected patients.

3. Income

Income is a basic economic factor that is important to a living. It is also an indicator of social and economic status with a correlation with education and occupation. The individuals with sufficient income will be able to satisfy their basic needs such as adequate food, safe and suitable housing, and quality medical treatment when needed. In contrast, the individuals with lower income do not sufficiently satisfy their basic needs and usually encounter the economic instability and living anxiety. After the delivery, income will play a vital role on the postpartum mothers' mental conditions resulting in an increase or a decrease of as more expenses must be paid to the baby and the mothers.

Nutcharat (41) studied the factors related to the health problems of mothers during the postpartum period at home and found that income was correlated to several problems of the postpartum mothers when they returned home with the statistical significance of .001.

Chutima (42)conducting the research on the relationship between maternal self-efficacy, social support and maternal depression among Thai adult mothers with children aged under one year found that sufficient family income was significantly related to the postpartum depression.

Panida (47) studying the spouse support and maternal role adaptation of the postpartum mothers indicated that average family income was positively related to maternal role adaptation in the postpartum period ($r = 0.1964$, $p < 0.01$).

Saifon (44) studied the quality of life of the elderly with coronary heart disease and found that income was positively related to the quality of life with the statistical significance ($p < 0.001$).

In contrast, the study of Naiyana Piphatvanitcha (43) on the correlation between the personal factors, self-care ability, and quality of life of the patients with chronic renal failure treated with hemodialysis indicated that income was not correlated to the self-care ability.

4. Marital relationship

Marital status, a factor indicating the receiving of social support, influences the postpartum mothers. In case of spouses who love, understand and concern each other, when the wife has given birth, the husband will support his wife's mind to adapt herself to the role of a wife and a mother simultaneously. This promotes and generates warmness, life security, and finally the good quality of life. Therefore, the postpartum mothers with spouse tend to have better quality of life than divorced postpartum mothers or those without spouse.

Nutcharat (41) studied the factors related to the health problems of mothers during the postpartum period at home and revealed family relationship was correlated to the problems of the postpartum mothers with the statistical significance of .001.

Bang-orn (48)studying the marital relationship and maternal adaptation among mothers with low-birth weight infants found that the samples had a well maternal adaptation with normal spouse relationship.

Sutinee (49)studied the influence of marital relationship, complications during pregnancy, and separation time from baby and mother-baby bond in postpartum mothers and found that the samples had overall spouse relationship scores in a good level with the high scores of mother-baby affectionate bond.

Saifon (44)studied the quality of life of the elderly with coronary heart disease and indicated that the elderly with marital status had better quality of life than those who were single, divorced, widowed, and separated.

Kitinan (50) conducting the research on the perception of health conditions, spouse support and health-promoting behaviors of mothers with HIV

found that perception of health conditions and spouse support were related to the health behaviors of HIV mothers.

Piyanan (51) conducting the study on the relationship between social support and maternal adaptation of HIV mothers indicated that social supports was associated with the maternal adaptation of HIV mothers with the statistical significance ($p < 0.001$).

However, according to Somkid (35) and Prapa (45), marital status was not related to the quality of life.

5. Occupation

Occupation or paid-working is an activity resulting in income. Occupation includes full-time and part-time jobs, extra jobs or private business. Working is a factor that brings a life satisfaction. The individuals with occupation are accepted and valued and can create the economic stability to themselves and their family. In contrast, a resignation implies the loss of the role of working and leads to the lower life satisfaction. The postpartum mothers have the maternal role and in the mean time they have to perform their works effectively like before their pregnancy. Hence, this leads to the pressure of the postpartum mothers and also stress.

Premruethai (52) studying the social support, self-care deficits, and quality of life of HIV patients and revealed that occupation was significantly correlated to the quality of life of HIV patients.

Wanna et al. (39) studied the factors affecting the mental health of the postpartum mothers and found that occupation influenced women's mental health in the postpartum period with the statistical significance of 0.05.

In contrast, according to Somkid (35), his study on the quality of life of the postpartum mothers with HIV in Phetchaburi and Ratchaburi Province indicated that occupation was not correlated to the quality of life of the HIV postpartum mothers.

6. Social support

Obtaining social support is associated to the quality of life since love, concern, care, advice and helps from family, friends, and social welfares can provide safety, value, and sufficient strength to face any problems in life and also encourage mothers to adapt themselves better.

For Reece (53), his study on the mothers with the first pregnancy at the age over 35 years old indicated that spouse and family support affected positively the maternal role and helped reduce the postpartum stress well.

Ratchanee (54)studying the factors related to the maternal role attainment of the first-time adolescent mothers found that the close bond between teenage mothers and their mothers was positively related to the successful maternal role of the young mothers with the statistical significance.

Chutima (42) studying the relationship between maternal self-efficacy, social support and maternal depression among Thai adult mothers with children aged under one year indicated that social support was significantly correlated with maternal depression.

For Supaporn(55) studying the self-esteem, spouse support, mother-daughter relationship, and maternal role adaptation during pregnancy of the adolescents exhibited that spouse support and mother-daughter relationship contributed to the variance of maternal role adaptation among the teenage mothers with the statistical significance of 0.001.

According to Prapa (45), her study on the factors affecting the quality of life of the patients with myocardial infraction revealed that social support was positively related to the quality of life with the statistical significance ($p < 0.001$).

7. Types of delivery

Types of delivery influence the maternal adaptation. Mothers with cesarean section may feel that they face the operation crisis. Such feeling affects not only the physical health but also the psychological tension and emotion of the mothers. In addition, mothers with cesarean section usually have lower self-satisfaction than those with normal vaginal delivery because the postpartum mothers with cesarean section still remain the post-operation patients. At the same time, these mothers have to take care of their children and husband as well as the house works. Hence, the postpartum mothers have to deal with the pain and inconvenience caused by the surgery wound while doing their duties.

Monika Schindl et al. (8) studying the elective cesarean section and the normal vaginal delivery for the comparative study of birth experience, found that the

mothers with normal vaginal deliver had significantly less pain than those with cesarean section during the first three days after the delivery.

Behnaz Torkan et al. (8) studied the postpartum quality of life of mothers with normal vaginal delivery and caesarean section and revealed that mothers with normal vaginal delivery had a better and significant quality of life in terms of vitality and mental health than those with cesarean section ($p = 0.03$).

According to Jansen AJ et al. (56) conducting a depth-study on the fatigue and health–related quality of life after the delivery exhibited that the postpartum mothers with normal vaginal delivery earned higher physical scores than those with cesarean section.

In the research of Panida (47), the postpartum mothers with cesarean section took longer time in adapting themselves than those with normal vaginal delivery (Clark and Affonso, 1979, May & Mahlmmeister, 1990: 118, Sherwen et al., 1991: 728, cited in Janya Norkaew). However, in her study on the spouse support and maternal role adaptation of the postpartum mothers, types of delivery did not affect the adaptation of postpartum mothers.

8. Number of children

The number of children affects the adaptation of mothers and also reflects the experience in raising children of mothers. In families with several children, fathers and mothers have a duty and responsibility to take care of all children physically and emotionally. Mothers having the first child are not responsible for the previous child. As a result, they have more time to take care of their present child and house works than those having several children. Thus, the number of children inevitably affects the postpartum quality of life of mothers.

From the study of Lemaster (59), mothers having the first child usually face severe crisis related to the self-adaptation.

Sompit (58) studied the personal factors, adaptation to the maternal roles, and postpartum depression among the adolescent mothers with first child. The study results showed that the adolescent mothers with first child were risky to the postpartum depression.

However, Panida (47) studying on the spouse support and maternal role adaptation of the postpartum mothers found that the number of children was not involved with the adaptation of mothers.

9. Health of mothers

The health and strength of postpartum mothers depend on the complications occurred during the pregnancy, during the delivery and after the delivery including the types of delivery. All of these result in the stress or anxiety of mothers. For example, the postpartum mothers with severe blood loss, uterine surgery, infected wounds, perineum pain, and fatigue will be stressful and anxious. Besides, the bond between mothers and children will be affected whereas the costs are increased as well.

Wanna et al. (39) studying on the factors affecting the mental health of postpartum women found that the physical health problems affected the mental health of the postpartum women with the statistical significance of < 0.001.

Honda et al. (59) studied the impact of fecal and urinary incontinence on the quality of life during six months after the delivery and stated that mothers with fecal and urinary incontinence had lower mental scores (SF-12).

Forger et al. (60) investigating the quality of life of the pregnant women with rheumatic diseases using SF – 36 health survey found that the postpartum patients during 12 and 14 weeks after the delivery were suffered from the worse rheumatoid. This resulted in higher quality of life scores in terms of pain and functions with the statistical significance ($p < 0.001$, $p = 0.019$) when compared with the healthy patients.

Mautner E et al. (61) studied the quality of life of the pregnant women and their postpartum quality of life with the complications of hypertensive disorders, gestational diabetes, and preterm birth. The study results showed that women with the risk of preterm birth significantly had higher depression scores and lower HRQL scores than those without any complications during the pregnancy.

10. Health of children

Health of children is an essential factor for the building of familiarity and relationship between children and mother. The successful delivery of a healthy baby will bring the happiness to the family. In contrast, delivering a baby with disability,

illness, low weight, and raising difficulty will result in maternal stress, concerns, sadness and postpartum depression.

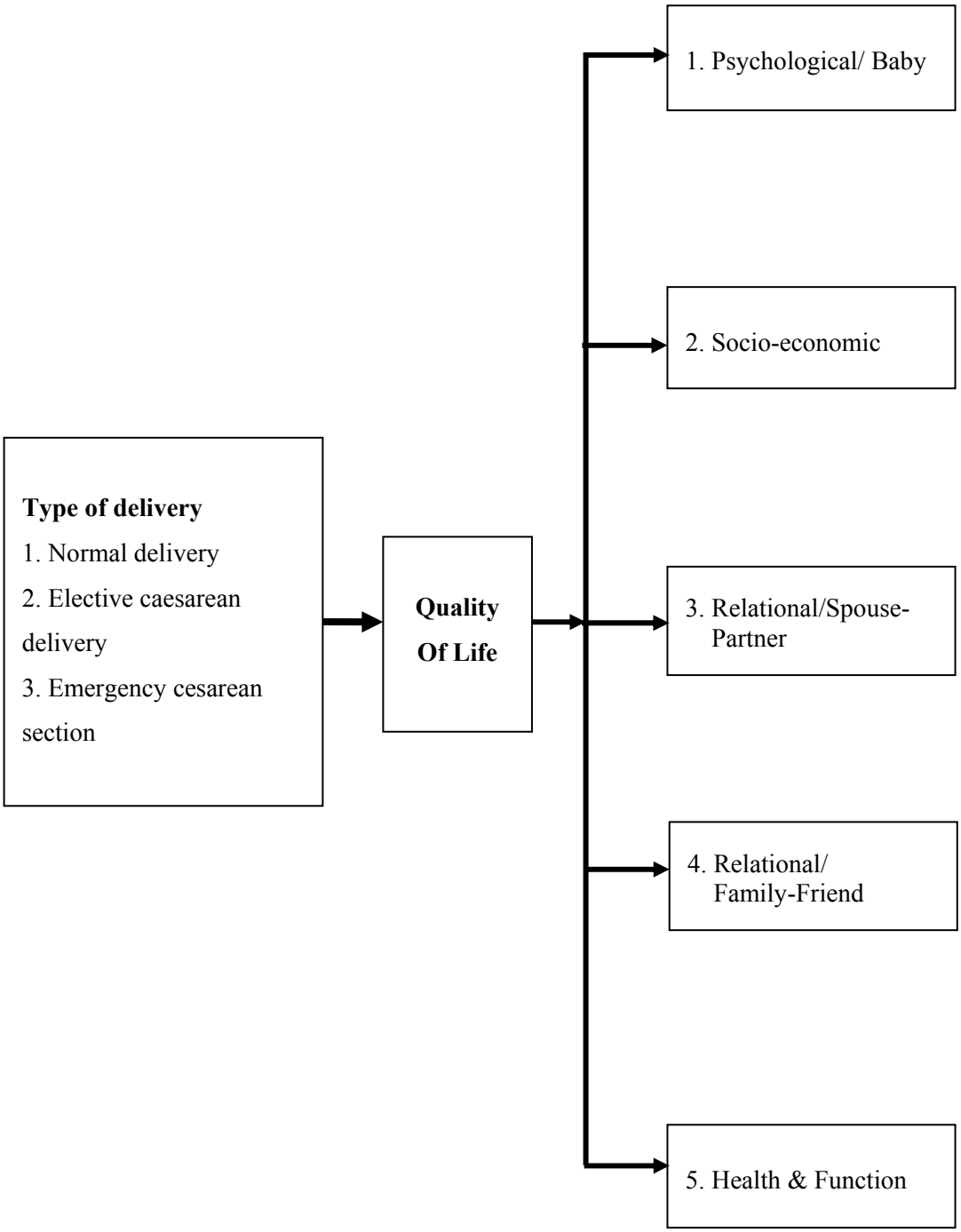
Wanna et al. (39) investigating the factors affecting the mental health of the postpartum mothers stated that child health influenced the overall mental health of the postpartum mothers with the statistical significance ($p < 0.05$).

Lee and Lee (62) studying and comparing the sleep and fatigue of the postpartum mothers with normal vaginal delivery and cesarean section found that all postpartum mothers experienced bad sleep during the first 3-5 days after the delivery and while staying in the ICU.

Hill and Aldag (63) studied the perception on the postpartum quality of life of mothers. The study results indicated that mothers with preterm birth significantly had lower scores in terms of psychological/baby than those with nearly full-term and full-term pregnancy.

From the related literature review, it can be concluded that the postpartum period is very crucial to the mothers because in such period, the postpartum mothers encounter the changes physically, mentally and emotionally including various feelings. At this time, mothers have to adapt themselves for the maternal roles and also spouse relationship. The postpartum mothers must adapt themselves properly for the family happiness and good quality of life. Achieving the good quality of life is associated with several factors e.g. age, education, income, spouse relationship, occupation, social support, types of delivery, number of children, and health of mothers and children. In this research, the researcher focused on the typed of delivery to investigate whether and how the different types of delivery affect the postpartum quality of life of mothers. As the current rate of cesarean delivery has been continually increased, it was expected that the research findings would be beneficial and could be used as the guidelines in reducing the unnecessary cesarean section in the future and also in improving the postpartum quality of life of mothers.

Conceptual frameworks



CHAPTER III
RESEARCH METHODOLOGY

3.1 Research design

This prospective cohort study aimed to analyze and compare the postpartum quality of life of women between those who had normal vaginal delivery and those who had cesarean section at Siriraj Hospital consisting of the following methods:

3.2 Study population

The population of this study, namely, the postpartum women delivered at Siriraj Hospital, was divided into three groups based on their delivery methods as follows:

3.2.1 Normal vaginal delivery

3.2.2 Elective cesarean section

3.2.3 Emergency cesarean section

3.3 Selection criteria

Inclusion criteria

1. Postpartum women aged between 20 -35 years old
2. Gestational age of 37 - 42 weeks
3. Women with pregnancy care
4. Pregnant women delivered at the Common Room, Siriraj Hospital

Exclusion criteria

1. Pregnant women without antenatal care
2. Pregnant women with underlying medical diseases such as hypertension, diabetes, or autoimmune disease
3. Pregnant women with complications such as preeclampsia/eclampsia, gestational DM, antepartum hemorrhage
4. Pregnant women with drug addiction
5. Pregnant women with psychological diseases or stress-inducing experiences such as divorce, family problems, or loss of family member
6. Infants with congenital anomalies, perinatal mortality, morbidity needing treatment or baby under the observation over 24 hours

3.4 Sample size

The samples were derived from the inclusion criteria whereas the Multiple-Sample One-Way ANOVA and Simultaneous Comparison were used to calculate the sample size as below:

$$\mathbf{N} = \lambda/\Delta$$

$$\Delta = \frac{1}{\sigma^2}\sum_{i=1}^{k}(\mu_i - \bar{\mu})^2, \qquad \bar{\mu} = \frac{1}{k}\sum_{j=1}^{k}\mu_j.$$

whereas,

N = Sample size of this research

λ = Values from the table with the confidence of 0.05, power of test (1- β) of 0.80, and k = 3

σ^2 = Variance of the data within each group

μ = Mean scores of quality of life of the first, second, and third population group

k = Numbers of group

From the related literature review, no research was conducted on the postpartum quality of life of women using the Maternal Postpartum Quality of Life Questionnaire (MAPP-QOL); a few researches were conducted by the means of other instruments. Since the scoring of each instrument was different, the values could not be used for the calculation of sample groups. As a result, the researcher used the data from the studies with similar values and the same instruments [66] in the calculation of sample groups instead.

Reviewing the related literature on the postpartum quality of life of women, it was found that:

$$\sigma^2 = 4,\ \mu_1 = 18.9,\ \mu_2 = 21 \text{ and } \mu_3 = 20.8\ \lambda = 9.64$$

Therefore, the sample size was 58. Since 30% of the samples might be lost, the sample size was increased to 76.

3.5 Research instrument

3.5.1 Research instrument

The research instrument used in this study to collect data was the questionnaire developed by the researcher from the relevant concepts, theories, and relevant researches. The contents used for the evaluation of the quality of life were translated from the Maternal Postpartum Quality Of Life Questionnaire (MAPP-QQL) of Pamela D. Hill et al (38) with some adjustments. The contents of the developed questionnaire were verified by the obstetrics experts whereas the questionnaire was divided into the four parts as follows:

Part I: Demographic characteristics of the samples in terms of age, marital status, education, occupation, family income, number of children, history of abortion, and health of the previous child.

Part II: The data and attitudes towards the delivery were sub-divided into the two parts as follows: 1) The data related to the delivery in terms of delivery method, duration of labor pain, medicines used during the delivery, and postpartum

complications; and 2) The reasons for the delivery method chosen before the delivery date.

Part III: Pain score

The pain score was used to assess the pain using the facial scales and visual rating scales (VRS) as below:

1) For facial scales, the pain was evaluated by using the photos of face expression from smiling (no pain), frowning (moderate pain) to crying (severe pain).

2) Regarding the visual rating scales (VRS), the pain was assessed by checking/ticking the number indicating the pain scores provided in the ten columns from 0 (no pain) to 10 (severe pain).

Part IV: The Maternal Postpartum Quality Of Life Questionnaire (MAPP-QOL) being divided into two parts of satisfaction and importance consisted of five domains as follows:

1. Psychological/baby (8 items):
    1) Your capability to control everything in the daily life
    2) Peace of your mind
    3) General happiness of your life
    4) General living at the present time
    5) Level of stress or anxiety
    6) Time spent to this baby
    7) Your daily life
    8) Your neighbors (in nearby areas)
2. Socio-economic aspects (8 items):
    1) Your lodging
    2) Your neighbors (in nearby areas)
    3) Financial security
    4) Ability to manage your finance
    5) Access to health and nursing services
    6) Travelling convenience
    7) Household livelihood
        - Possession of assets and properties
        - Financial status

8) Occupation of yourself

3. Spouse/partner relationship (4 items):

3.1) Help, sympathy or encouragement received from:

- Your husband/partner (boyfriend)

3.2) Relationship with your husband/partner (boyfriend)

3.3) Health of your husband/partner (boyfriend)

3.4) Household livelihood in terms of:

- Environment e.g. no loud noise, quarrels, fighting, etc.

4. Family and friend relationship (8 items)

4.1) Help, sympathy or encouragement received from:

- Relatives
- Friends, or any persons

4.2) Your ability and responsibility to manage the family

4.3) Getting the help on caring this baby and other child (children)

4.4) Time spent to this baby

4.5) Time spent for house works

4.6) Time for friends/relatives

4.7) Time for husband/partner (boyfriend)

4.8) Time for yourself

5. Health and function (8 items):

5.1) Your health

5.2) Severity of your current pain

5.3) Your energy for daily-life activities

5.4) Your ability to take care of yourself without any help from others

5.5) Your current physical appearance and body competence

5.6) Your current breast

5.7) Characteristics of section or perineum scar

5.8) Sexual intercourses

3.5.2 Scoring criteria

MAPP-QOL was divided into two parts; each part contained 39 items and sorted with Likert Scale Rating from 1-6.

Part 1: Items on the satisfaction of postpartum women:

1 = Totally dissatisfied 2 = Moderately dissatisfied

3 = Slightly dissatisfied 4 = Slightly satisfied

5 = Moderately satisfied 6 = Totally satisfied

Part 2: Importance of items in the opinion of the postpartum women:

1 = Totally unimportant 2 = Moderately unimportant

3 = Slightly unimportant 4 = Slightly important

5 = Moderately important 6 = Totally important

Evaluation: The calculation of scores was balanced between the satisfaction scores and the importance scores of the items whereas the overall and specific scores of the quality of life were calculated.

Calculation of overall quality of life

1. For the satisfaction scoring, the satisfaction mean was set as 0. The satisfaction scores of each item was deducted 3.5 (the results were -2.5, -1.5, -5, +5, +1.5, +2.5, respectively).

2. The satisfaction scores and the importance scores of the items were balanced by multiplying the satisfaction scores with the raw scores of the matched items.

3. The overall balanced gross scores were summed from all results obtained from Step 2.

4. For the overall final scores, to prevent the errors due to the incomplete data, the results from Step 3 were divided by the items responded by the respondents. (The results were between -15 to +15).Then, the scores were added with 15 to eliminate the negative scores whereas the possible scores were 0-30.

Calculation of specific quality of life

1. For the satisfaction scoring, the satisfaction mean was set as 0. The satisfaction scores of each item was deducted 3.5 (the results were -2.5, -1.5, -5, +5, +1.5, +2.5, respectively).

2. The satisfaction scores and the importance scores of the items were balanced by multiplying the satisfaction scores with the raw scores of the matched items.

3. The overall balanced gross scores were summed from all results obtained from Step 2.

4. For the overall final scores, to prevent the errors due to the incomplete data, the results from Step 3 were divided by the items responded by the respondents. (The results were between -15 to +15). Then, the scores were added with 15 to eliminate the negative scores whereas the possible scores were 0-30.

3.5.3 Interpretation of quality of life scoring

The possibility of the scores were 0 – 30. For the interpretation of the scores of the quality of life, the overall and specific scores were determined first. Later, the scores of the quality of life between the two groups were compared.

3.5.4 Construction and validation of the instrument

1) The questionnaire was developed from the study of theories and literature reviews related to the quality of life.

2) The Maternal Postpartum Quality Of Life Questionnaire (MAPP-QOL) was developed by Pamela D. Hill et al. The researcher has asked for the permission in writing to use such questionnaire. Upon an approval, the questionnaire was translated into Thai and verified by the first Thai and English specialist for the correctness of the translated contents and meanings. The Thai-version of Maternal Postpartum Quality Of Life Questionnaire was later re-translated into English by the second Thai and English specialist. The two questionnaires were then compared using the back translation method to achieve the instrument that was accepted for the accuracy and validity.

3) Content validity: The developed questionnaire was considered and verified by the following three experts in terms of the appropriateness of language, clarity, and comprehensiveness:

1. Ajarn Supachoke Singhakant Psychiatrist
2. Ajarn Chanon Neungton Obstetrician
3. Dr.Wanna Phahuwattanakorn Obstetric Nurse

After the verification of the experts, the questionnaire was calculated for the Content Validity Index (CVI). By this study, the CVI was 0.9.

4) Reliability: Upon the approval of ethics, the questionnaire was tried out with 30 postpartum mothers having similar characteristics with the samples. Using the Cronbach's Alpha Coefficient, the reliability of the questionnaire was 0.88.

3.6 Data collection

The following procedures were used in the data collection:

1. The research project was proposed to the Ethical Review Committee for Research in Human Subjects, Faculty of Medicine, Siriraj Hospital, Mahidol University, for the consideration and approval.

2. The recommendation letter issued by the dean of the Graduate School, Mahidol University was submitted to the dean of the Faculty of Medicine, Siriraj Hospital, Mahidol University for the permission on the data collection.

3. Upon the approval on the data collection, the researcher personally met the head of the Obstetrics and Gynecology Department and the head nurse of obstetrics and gynecology for the introduction of oneself and presentation of details, and research objectives.

4. The data were collected. All participants were interviewed by the researcher for two times as follows;

First interview: Two days after the delivery at the Postpartum Care Unit.

Second interview: 4-6 weeks after the delivery at the Postpartum Check-up Unit, Outpatient Building; provided that the postpartum mothers were absent on the appointment date, they were called by the researcher for the data collection instead.

3.7 Data analysis

Descriptive statistics

The personal factors of postpartum women, attitudes towards the delivery, and pain scores were analyzed with frequency, percentage, mean, and standard deviation whereas the data related to the quality of life were analyzed using mean, and standard deviation of the specific scores of quality of life.

Analytic statistics

The distribution of data was tested with the original Kolmogorov-Sminov Test and the one with the adjusted p-value of Bonferroni.

The postpartum pain between the normal vaginal delivery group, the elective cesarean section group, and the emergency cesarean section group was compared using the statistics of Mann-Whitney U Test.

The postpartum quality of life of women in the normal vaginal delivery group, the elective cesarean section group, and the emergency cesarean section group was compared using the ANOVA. In case that the data distribution was not normal, the Kruskal-Wallis Test and One-Way ANOVA were used instead.

The correlation between the factors and the quality of life were analyzed with the univariable analysis using t-Test, ANOVA, Spearman Rank Correlation. The multivariable analysis was also conducted using the multiple linear regression.

CHAPTER IV
RESULTS

This research aimed to investigate and compare the postpartum quality of life between patients having normal vaginal delivery and cesarean section using the Maternal Postpartum Quality of Life Questionnaire (MAPP-QOL) as the research instrument. In addition, 228 postpartum patients were interviewed on the second day and 4-6 weeks after the delivery; among them 176 patients were fully interviewed. The patients were divided into three groups based on their delivery method, see Table 4.1.

Table 4.1 Distribution of 176 postpartum patients into three types of delivery

Types of delivery	Number (%)
Normal vaginal delivery	59 (33.5)
Elective cesarean section	58 (33.0)
Emergency cesarean section	59 (33.5)

The study results were divided into five parts as follows:

1. Demographic data of the sample subjects
2. Delivery details and reasons for the normal vaginal delivery before the delivery
3. Pain scores on the second day and during 4-6 weeks after the delivery
4. Comparison of the postpartum quality of life of the patients for the overall and specific domains on the second day and during 4-6 weeks after the delivery
5. Factors associated with the postpartum quality of life

1. General data of samples

On the second day after the delivery, 228 postpartum women passing the inclusion criteria were interviewed. They were divided into three groups based on the types of delivery, namely, 76 patients per group, in the normal vaginal delivery (normal Delivery), elective cesarean section (elective C/S), and emergency cesarean section (emergency C/S) groups. However, in the follow-up interview during 4-6 weeks after the delivery, 52 postpartum patients from the three groups (i.e. 17 patients from normal delivery group, 18 from elective C/S group, and 17 from emergency C/S group, respectively) due to the following reasons:

1) The postpartum patients were inconvenient for the telephone interview.

2) The postpartum patients returned to their home and could not be contacted with the given telephone number.

3) The given phone numbers of the patients were invalid.

Hence, 30% of the samples were lost. The general data of the lost samples were analyzed and compared with the final samples to determine whether the data were different. This might be partially a reason why the postpartum quality of life of the patients was different. However, it was turned out that the data characteristics of the samples were not different.

The general data of the three groups of samples were exhibited in Table 4.2.

By this study, the samples were aged 20-35 years old. The average age of the patients with elective C/S was highest (Mean = 29.1; SD = 4.4), followed by those with emergency C/S (Mean = 28.1; SD = 4.4), and those with normal delivery (Mean = 25.2; SD = 4.5), respectively.

The samples of the three groups were married/having spouse.

Over a half of the samples in the three groups similarly had the secondary/vocational education, followed by the bachelor's degree/equivalent, respectively. (64.4% and 16.9% for the normal delivery group; 77.6% and 15.5% for the elective C/S group; and 62.7% and 16.9% for the emergency C/S group, respectively). Among the three groups, the samples of the emergency C/S group and the ones in the normal delivery group had equally the primary education (13.6% each), followed by those in the elective C/S group (1.7%), respectively. In addition, the

samples in the elective C/S group had the education over the bachelor's degree most (5.2%), followed by those with normal delivery and emergency C/S (3.4% each). None of the samples in the elective C/S group was non-educated whereas some of those in the emergency C/S group and normal delivery group were non-educated (3.4% and 1.7%, respectively).

In terms of the occupation, the samples were the state/private company employees (normal delivery group and emergency C/S group, 35.6% each; and elective C/S group, 25.9%), housewife (elective C/S group, 41.4%; emergency C/S group, 30.5%; and normal delivery group, 27.1%), workers (normal delivery group, 25.4%; emergency C/S group, 23.7%); civil servants (three groups, not exceeding 5%), business owner (elective C/S group, 10.3 %; normal delivery group, 5.1%; and emergency C/S group, 3.4%).

Over 70% of the three groups had sufficient family income whereas saving was found in the elective C/S group (17.2%) and the other two groups (approximately 8.5%). The three groups had insufficient family income (not exceeding 5%).

Over a half of the postpartum samples in the normal delivery group (52.5%) and the emergency C/S group (50.8%) delivered their first baby, followed by the second, third, and fourth baby, respectively. However, most of the samples in the elective C/S group (80%) delivered their second baby, followed by the third, and the first baby, respectively.

The postpartum patients with previous baby in the three groups were healthy.

Miscarriage was found in the samples of the normal delivery group (n =9, 15.3%) especially in the first pregnancy (n = 8, 13.6%) and second pregnancy (n = 1, 1.7%). The samples in the elective C/S group (n = 16, 27.6%) and emergency C/S group (n = 15, 25.4%) also had the miscarriage especially in the first pregnancy and second pregnancy. The miscarriage of the third pregnancy was found in the emergency C/S group (n = 3, 5.1%). The multiple miscarriages were found in the samples of the emergency C/S group (n = 2, 3.4%) and the elective C/S group (n = 1, 1.7%).

Table 4.2 Numbers and percentages of general data of the three groups of postpartum patients

Characteristics	Normal delivery (n = 59) N (%)	Elective C/S (n = 58) N (%)	Emergency C/S (n = 59) N (%)
Average age (years) ± SD	25.2 ± 4.5	29.1 ± 4.4	28.1 ± 4.4
Marital status (Spouse)	59 (100)	58 (100)	59 (100)
Education			
Non-educated	1 (1.7)	0 (0)	2 (3.4)
Primary education	8 (13.6)	1 (1.7)	8 (13.6)
Secondary /vocational education	38 (64.4)	45 (77.6)	37 (62.7)
Bachelor's degree/equivalent	10 (16.9)	9 (15.5)	10 (16.9)
Higher than bachelor's degree	2 (3.4)	3 (5.2)	2 (3.4)
Occupation			
Housewives	16 (27.1)	24 (41.4)	18 (30.5)
Workers	15 (25.4)	12 (20.7)	14 (23.7)
Civil servants	3 (5.1)	1 (1.7)	3 (5.1)
State/private company employees	21 (35.6)	15 (25.9)	21 (35.6)
Business owners	3 (5.1)	6 (10.3)	2 (3.4)
Others	1 (1.7)	0 (0)	1 (1.7)
Family income			
Insufficient	0 (0)	3 (5.2)	1 (1.7)
Sufficient	54 (91.5)	45 (77.6)	53 (89.8)
With saving	5 (8.5)	10 (17.2)	5 (8.5)
Number of children			
One	31 (52.5)	5 (8.6)	30 (50.8)
Two	21 (35.6)	47 (81)	23 (39)
Three	5 (8.5)	6 (10.3)	4 (6.8)
Four	2 (3.4)	0 (0)	2 (3.4)
Health of previous child (if any)			
Healthy	28 (100)	53 (100)	29 (100)

Table 4.2 Numbers and percentages of general data of the three groups of postpartum patients (cont.)

Characteristics	Normal delivery (n = 59) N (%)	Elective C/S (n = 58) N (%)	Emergency C/S (n = 59) N (%)
Miscarriage	9 (15.3)	16 (27.6)	15 (25.4)
First pregnancy	8 (13.6)	9 (15.5)	7 (11.9)
Second pregnancy	1 (1.7)	6 (10.3)	3 (5.1)
Third pregnancy	0 (0)	0 (0)	3 (5.1)
First and second pregnancy	0 (0)	1 (1.7)	2 (3.4)

2. Delivery details and reasons for delivery method

Table 4.3 presented the cesarean delivery indications. Only two indications were found in the elective C/S group, namely, the previous cesarean section (previous C/S, 87.9%) and breech presentation. For the emergency C/S group, the indications included the cephalopelvic disproportion (CPD, 45.5%), previous C/S (30.5%), fetal heart rate abnormality (20.3%), and breech presentation (3.4%), respectively.

Table 4.3 Indications of cesarean delivery

Cesarean indications	Elective C/S (n = 58) N (%)	Emergency C/S (n = 59) N (%)
CPD	0 (0)	27 (45.8)
FHR abnormality	0 (0)	12 (20.3)
Breech presentation	7 (12.1)	2 (3.4)
Previous C/S	51 (87.9)	18 (30.5)

CPD = cephalopelvic disproportion

FHR = fetal heart rate

C/S = cesarean section

The duration of labor pain was exhibited in Table 4.4. From the table, the labor pain of the samples in the emergency C/S group was longer than the one of the normal delivery group approximately two hours with statistical significance of $p = 0.02$. In the normal delivery group and the emergency C/S group, syntocinon was

used to activate the delivery (66.1% each). However, pethidine was applied to the emergency C/S group(35.6%) and the normal delivery group (16.9%).

Table 4.4 Duration of labor pain, numbers and percentages of medications during the delivery

Delivery details	Normal delivery (n = 59)	Emergency C/S (n = 59)	p-value
Duration of labor pain			
Mean ± SD (hours)	7.48 ± 4.0	9.82 ± 6.4	0.02
Medications used during delivery			
Syntocinon N (%)	39 (66.1)	39 (66.1)	-
Pethidine N (%)	10 (16.9)	21 (35.6)	-

The intention before the delivery and the reasons for the chosen delivery method of the samples were shown in Table 4.5. It could be seen that the postpartum samples in the normal delivery group and the emergency C/S group preferred the normal delivery rather than the cesarean section before the delivery (96.6: 3.4 and 77.9: 22.1). In contrast, the postpartum samples in the elective C/S group preferred the cesarean section rather than the normal delivery before the delivery (55.2; 44.8).

The first three reasons of the three groups of samples for the normal delivery were as follows:

Normal delivery Group: 1) Quick postpartum recovery (88.1%); 2) Preference of natural process (88.4%); and 3) Presentation of complete motherhood (66.1%).

Elective C/S group: 1) Quick postpartum recovery (43.1%); 2) Preference of natural process (31%); and 3) Fewer postpartum complications when compared with the cesarean section (29.9%).

Emergency C/S group: 1) Quick postpartum recovery (71.2%); 2) Preference of natural process (59.3%); and 3) Fewer postpartum complications when compared with the cesarean section (35.69%).

The first three reasons of the three groups of samples for the cesarean section were as follows:

Normal delivery group: 1) Anxiety/Fear of labor pain (3.4%); and 2) Avoidance of vaginal tear/perineum, and Fear of possible danger caused to the baby (1.7% each).

Elective C/S group:1) Previous cesarean section (72.4%); 2) Anxiety/Fear of labor pain (12.1%); and 3) Bad experience from normal vaginal delivery e.g. prolonged labor pain, injured baby (5.2%).

Emergency C/S group: 1) Anxiety/Fear of labor pain (6.8/%); 2) Preference of delivery date appointment, Avoidance of vaginal tear/perineum, Fear of possible danger caused to the baby (3.4% each); and 3) Bad experience from normal vaginal delivery e.g. prolonged labor pain, injured baby (1.7%).

Table 4.5 Pre-attitudes of pregnant women towards the delivery and reasons for chosen delivery method before the delivery

Delivery method	Normal delivery (n = 59) N (%)	Elective C/S (n = 58) N (%)	Emergency C/S (n = 59) N (%)
Intention before the delivery			
Normal delivery	57 (96.6)	26 (44.8)	46 (77.9)
Cesarean section	2 (3.4)	32 (55.2)	13 (22.1)
Reasons for normal delivery (Multiple choices are allowed)			
Fear of operation and anesthesia	25 (42.2)	8 (13.8)	14 (23.7)
Preference of natural process	48 (81.4)	18 (31)	35 (59.3)
Quick postpartum recovery	52 (88.1)	25 (43.1)	42 (71.2)
Presentation of complete motherhood	39 (66.1)	12 (20.7)	19 (32.2)
Fewer postpartum complications when compared with the cesarean section	30 (50.8)	17 (29.9)	21 (35.6)
Baby delivered by the normal vaginal delivery is healthier than the one with cesarean section	26 (44.1)	8 (13.8)	10 (16.9)
Lower costs	35 (59.3)	15 (25.9)	20 (33.9)
Reasons for cesarean section (Multiple choices are allowed)			
Previous cesarean section	0 (0)	42 (72.4)	0 (0)
Abnormal presentation or posture of baby	0 (0)	2 (3.4)	0 (0)
Placenta previa	0 (0)	0 (0)	0 (0)
Preference of delivery date appointment	0 (0)	2 (3.4)	2 (3.4)
Anxiety/Fear of labor pain	2 (3.4)	7 (12.1)	4 (6.8)
Avoidance of vaginal tear/perineum	1 (1.7)	2 (3.4)	2 (3.4)
Reducing the risks of prolapsed uterus	0 (0)	1 (1.7)	0 (0)
Bad experience from normal vaginal delivery e.g. prolonged labor pain, injured baby	0 (0)	3 (5.2)	1 (1.7)
Possible impact of normal vaginal delivery on sexual intercourses	0 (0)	1 (1.7)	0 (0)
Fear of possible danger caused to the baby	1 (1.7)	2 (3.4)	2 (3.4)
Increasing tendency of cesarean section	0 (0)	2 (3.4)	0 (0)

Table 4.6 Feeling and experience obtained from the delivery and preferable delivery method for the future pregnancy of the three postpartum patients

Attitudes towards delivery	Normal delivery (n = 59) N (%)	Elective C/S (n = 58) N (%)	Emergency C/S (n = 59) N (%)
Delivery experience feelings			
Totally satisfied	39 (66.1)	34 (58.6)	31 (52.5)
Moderately satisfied	17 (28.8)	23 (39.7)	17 (28.8)
Slightly satisfied	2 (3.4)	1(1.7)	5 (8.5)
Dissatisfied	1 (1.7)	0 (0)	6 (10.1)
Preferred delivery method in the future			
Normal vaginal delivery	57 (96.6)	45 (77.6)	41 (69.5)
Cesarean delivery	2 (3.4)	13 (22.4)	18 (30.5)

From Table 4.6, the postpartum patients with the three types of delivery had similar delivery experience feelings. Most of them were totally satisfied, moderately satisfied, slightly satisfied, and dissatisfied with the experience, respectively. The samples in the emergency C/S groups were slightly satisfied with the delivery experience. In the future, the samples of the three groups still preferred the normal vaginal delivery although they were performed with cesarean section in the current pregnancy.

3. Pain score on the second day and during 4-6 weeks after the delivery

The postpartum pain of the three groups of samples on the second day and 4-6 weeks after the delivery was evaluated using the facial scales and visual scales (VRS). The data were collected from the samples using only the visual rating scales (VRS). As the abnormal postpartum pain distribution was indicated, the postpartum pain scores were then compared using the Kruskal Wallis Test. The pain scores on the second day and during 4-6 weeks after the delivery of the three groups were different with statistical significant of $p < 0.001$. So, the Mann-Whitney U Test was applied to determine the group difference. The average pain scores on the second day after the

delivery between the normal delivery group and the elective C/S group, and the normal delivery group and the emergency C/S group were different with statistical significance ($p < 0.001$). The pain scores of the elective C/S group were equal with the ones of the emergency C/S group (Median = 5, IQR = 4-6, IQR = 3-6). The pain scores of the normal delivery group were lowest (Median = 3, IQR = 2-4). In addition, the average pain scores during 4-6 weeks after the delivery between the normal delivery group and the elective C/S group, and the normal delivery group and the emergency C/S group were different with statistical significance ($p < 0.001$ and $p < 0.003$, respectively). The pain scores of the elective C/S group were equal with the ones of the emergency C/S group (Median = 1, IQR = 0-2) whereas the pain scores of the normal delivery group were lowest (Median = 0, IQR = 0-1). However, no difference of postpartum pain scores between the elective C/S group and the emergency C/S group both on the second day and 4-6 weeks after the delivery was found, see Table 4.7.

Table 4.7 Comparison of pain score on the second day and during 4-6 weeks after the delivery using Mann-Whitney U Test

Delivery method/ pain Scores	Two days after delivery Median (IQR)	P value	4-6 Weeks after delivery Median (IQR)	P value
Normal delivery	3 (2-4)[a]		0 (0-1)[a,b]	
Elective C/S	5 (4-6)[a]	< 0.001	1 (0-2)[a]	< 0.001
Emergency C/S	5 (3-6)[a]	< 0.001	1 (0-2)[b]	0.003

C/S = cesarean section

[a] The normal delivery group was different from the elective C/S group whereas the normal delivery group was different from the emergency C/S group

[b] The normal delivery group was different from the emergency C/S group

4. Overall and specific comparison of the postpartum quality of life on the second day and 4-6 weeks after the delivery

The postpartum quality of life of the three groups of samples on the second day and 4-6 weeks after the delivery was evaluated using the Maternal Postpartum Quality of Life Questionnaire (MAPP-QOL), developed by Pamela D. Hill [41]. Such

questionnaire was divided into two parts, namely, satisfaction and importance and the five domains of (1) Psychological/Baby, (2) Socio-economic, (3) Spouse/Partner Relationship, (4) /Family-Friends Relationship, and (5) Health & Functioning. The possibility of the scores was 0 – 30. For the interpretation, the obtained quality of life scores were determined for the average of the overall and domains used in the comparison of the quality of life among the three groups.

The postpartum quality of life scores in the overall and for each domain were normally distributed whereas One-way ANOVA was used to compare the postpartum quality of life scores among the three groups.

Comparison of postpartum quality of life on the second day after the delivery:

The overall postpartum quality of life (MAPP-QOL (Overall) was different with statistical significance ($p < 0.05$) between the normal delivery group and the emergency C/S group. However, no difference was found between the normal delivery group and the elective C/S group and between the elective C/S group and the emergency C/S group. The postpartum quality of life scores of the normal delivery group were highest (Mean = 24, SD = 2.9), followed by the elective C/S group (Mean = 22.7, SD = 3.1), and the emergency C/S group (Mean = 22.4, SD = 2.9), respectively.

Difference of quality of life domains:

1. Psychological/baby: The difference was found between the normal delivery group (Mean = 24.8, SD = 3.6) and the elective C/S group (Mean = 22.5, SD = 4.4), and between the normal delivery group and the emergency C/S group (Mean = 22.6, SD = 4.2), ($p < 0.05$).

2. Family-friends relationship: Difference between the normal delivery group and the elective C/S group ($p < 0.05$).

3. Health & functioning: Difference between the normal delivery group and the elective C/S group, and between the normal delivery group and the emergency C/S group ($p < 0.05$).

Comparison of postpartum quality of life during 4-6 weeks after the delivery:

The difference of the postpartum quality of life domain with statistical significance was found in terms of the health & functioning (p = 0.001) between the normal delivery group (Mean = 25.4) and the elective C/S group (Mean = 23.9) as exhibited in Table 4.8.

Table 4.8 Comparison of postpartum quality of life of patients on the second day and during 4-6 weeks after the delivery using One-Way ANOVA

Types of delivery	QOL scale	Two days after delivery Mean (± SD)	4-6 weeks after delivery Mean (± SD)
Normal delivery (n=59)	**MAPP-QOL(Overall)**	24.0 (2.9)[a]	26.2 (1.8)
	Psychological/baby	24.8 (3.6)[b]	26.6 (2.1)
	Socio-economic	23.6 (4.0)	25.9 (2.3)
	Spouse/partner relationship	24.3 (3.8)	26.5 (2.8)
	Family-friends relationship	26.4 (2.6)[c]	27.0 (2.0)
	Health and functioning	22.4 (3.8)[d]	25.4 (2.4)[c]
Elective C/S (n=58)	**MAPP-QOL(Overall)**	22.7 (3.1)	25.6 (2.3)
	Psychological/baby	22.5 (4.4)[b]	26.6 (5.4)
	Socio-economic	23.7 (3.6)	25.5 (2.6)
	Spouse/partner relationship	23.0 (3.7)	25.9 (2.7)
	Family-friends relationship	25.2 (2.8)[c]	26.6 (2.7)
	Health and functioning	19.0 (4.6)[d]	23.9 (3.2)[c]

Table 4.8 Comparison of postpartum quality of life of patients on the second day and during 4-6 weeks after the delivery using One-Way ANOVA (cont.)

Types of delivery	QOL scale	Two days after delivery Mean (± SD)	4-6 weeks after delivery Mean (± SD)
Emergency C/S (n=59)	**MAPP-QOL(Overall)**	22.4 (2.9)[a]	25.5 (1.9)
	Psychological/baby	22.6 (4.2)[b]	26.2 (2.4)
	Socio-economic	23.1 (3.5)	24.9 (2.4)
	Spouse/partner relationship	22.9 (3.5)	25.6 (2.8)
	Family-friends relationship	25.3 (2.7)	26.7 (2.3)
	Health and functioning	18.7 (5.2)[d]	24.8 (2.9)

MAPP-QOL = maternal postpartum quality of life

[a] The normal delivery group was different from the emergency C/S group ($p < 0.05$)

[b] The normal delivery group was different from the elective C/S group and the emergency C/S group ($p < 0.005$)

[c] The normal delivery group was different from the elective C/S group ($p < 0.005$)

[d] The normal delivery group was different from the elective C/S group and the emergency C/S group ($p < 0.001$)

Table 4.9 Comparison of postpartum quality of life of patients in terms of their delivery consistency on the second day and during 4-6 weeks after the delivery using Mann-Whitney U Test

	QOL scale	Consistent with intention before delivery n = 101 Mean (± SD)	Inconsistent with intention before delivery n = 75 Mean (± SD)	p-value
Two days after the delivery	**MAPP-QOL (Overall)**	23.4 (2.9)	22.6 (3.1)	0.086
	Psychological/baby	24.1 (3.7)	22.3 (4.5)	0.004
	Socio-economic	23.3 (4.0)	23.6 (3.1)	0.607
	Spouse/partner relationship	23.4 (3.9)	23.4 (3.5)	0.996
	Family-friends relationship	25.9 (2.6)	25.3 (2.8)	0.158
	Health and functioning	20.8 (4.5)	19.0 (5.1)	0.014
4-6 weeks after the delivery	**MAPP-QOL (Overall)**	25.9 (2.0)	25.6 (2.1)	0.483
	Psychological/baby	26.7 (4.3)	26.1 (2.3)	0.226
	Socio-economic	25.5 (2.5)	25.3 (2.5)	0.683
	Spouse/partner relationship	25.9 (3.0)	26.1 (2.5)	0.757
	Family-friends relationship	26.8 (2.2)	26.7 (2.1)	0.663
	Health and functioning	24.9 (2.5)	24.4 (3.4)	0.285

QOL = quality of life

MAPP-QOL = maternal postpartum quality of life

Table 4.9 exhibited the comparison of the postpartum quality of life between the patients delivered with the delivery consistency and the ones with delivery inconsistency on the second day and 4-6 weeks after the delivery using the Mann-Whitney U Test. It was found that on the second day after the delivery, the MAPP-QOL (Overall) of the two groups was similar but the postpartum quality of life in terms of the psychological/baby and health and functioning was significantly different ($p = 0.004$, $p = 0.014$, respectively). The samples with delivery consistency

had higher postpartum quality of life than those who did not in terms of psychological/baby (Mean = 24.1) and health and functioning (Mean = 20.8).

However, the difference of MAPP-QOL both for overall and domains during 4-6 weeks after the delivery was not found.

5. Factors related to the quality of life

Apart from the types of delivery and delivery consistency/inconsistency with the intention before the delivery that were associated with the postpartum quality of life, as analyzed above, there were also other factors related to the postpartum quality of life according to the literature review e.g. age, marital status, education, occupation, family income, health of previous child, number of children, history of miscarriage, delivery experience feelings, and labor pain. All variables were analyzed to determine the correlation with the postpartum quality of life. Marital status and health of the previous child were excluded before the analysis as these two variables were similarly found among the three groups of samples. To gain the appropriate analysis, the variables were re-arranged and analyzed by the t-Test, ANOVA, and Spearman Rank Correlation based on the data characteristics. The following factors were found to be correlated with the postpartum quality of life on the second day and 4-6 weeks after the delivery with statistical significance both for the overall and for each domain:

1) Occupation was associated with the postpartum quality of life in terms of spouse/partner relationship ($p = 0.048$) on the second day after the delivery in accord with the comparison between the samples who were housewives/others and those who were workers.

2) Family income was correlated with the postpartum quality of life for the overall and the domains of health and functioning on the second day, and the socio-economic aspects on the second day and during 4-6 weeks after the delivery ($p < 0.05$) in accord with the comparison between the samples with insufficient/ sufficient income and those with saving.

3) Age was associated with the postpartum quality of life with the statistical significance for the overall and for the domain of psychological/baby both on the second day and 4-6 weeks after the delivery whereas the association with the

domains of spouse/partner relationship, family-friends relationship and health and functioning was found on the second day after the delivery.

4) Postpartum pain was correlated with the postpartum quality of life for the overall and almost all domains except the spouse/partner relationship on the second day after the delivery and the psychological/baby and health and functioning 4-6 weeks after the delivery.

The aforementioned factors and their correlation were presented in Table 4.10 and Table 4.11.

Table 4.10 Factors associated with the postpartum quality of life of patients on the second day and during 4-6 weeks after the delivery: Univariate analysis using t-Test and One-Way ANOVA

Variables	N (%)	QOL(Overall): Two days after delivery Mean (± SD)	p-value	QOL(Overall): 4-6 weeks after delivery Mean (± SD)	p-value
Education					
≤ Primary education	21 (11.9)	23.4 (3.3)	0.780	25.9 (1.9)	0.461
Secondary education	120 (68.2)	22.9 (3.1)		25.6 (2.2)	
≥ Bachelor's degree	35 (19.9)	23.2 (2.8)		26.1 (1.7)	
Occupation					
Housewives/Others	61 (34.7)	22.6 (3.1)	*0.321*[a]	25.3 (2.0)	0.800
Workers	41 (23.3)	23.3 (3.1)		25.9 (2.0)	
Civil servants/officials/ State/private company employees/ business owners	74 (42.0)	23.3 (2.9)		26.1 (2.0)	
Family income					
Sufficient	156 (88.6)	22.8 (3.0)	*0.018*[b]	25.7 (2.1)	*0.077*[c]
With saving	20 (11.4)	24.6 (2.7)		26.5 (1.8)	
Number of children					
One	67 (38.1)	23.3 (3.1)	0.521	25.9 (1.8)	0.375
Two	90 (51.1)	22.8 (3.1)		25.7 (2.2)	
≥ 3	19 (10.8)	23.3 (2.9)		25.3 (1.9)	
History of miscarriage					
Yes	136 (77.3)	23.2 (3.0)	1.002	25.8 (2.0)	0.642
No	40 (22.7)	22.6 (3.1)		25.6 (2.3)	

Table 4.10 Factors associated with the postpartum quality of life of patients on the second day and during 4-6 weeks after the delivery: Univariate analysis using t-Test and One-Way ANOVA (cont.)

Variables	N (%)	QOL(Overall): Two days after delivery Mean (± SD)	p-value	QOL(Overall): 4-6 weeks after delivery Mean (± SD)	p-value
Feeling to delivery					
< Very satisfied	72 (40.9)	23.7 (2.9)	0.652	25.5 (2.2)	0.680
Very satisfied	104 (59.1)	22.1 (3.1)		26.0 (1.9)	

QOL = Quality of Life

[a] The correlation of spouse/partner relationship was found (p = 0.048)

[b] The correlation of health and functioning, and socio-economic was found (p < 0.05)

[c] The correlation of socio-economic, spouse/partner relationship was found (p < 0.05)

Table 4.11 Spearman rank correlation (r_s) between age, pain score and quality of life

	QOL scale	Age	p-value	Pain score	p-value
Two days after the delivery	**MAPP-QOL(Overall)**	-0.17	*0.027*	-0.29	*<0.001*
	Psychological/baby	-0.20	*0.007*	-0.24	*0.001*
	Socio-economic	-0.10	0.21	-0.18	*0.016*
	Spouse/partner relationship	-0.18	*0.018*	-0.15	0.053
	Family-friends relationship	-0.24	*0.001*	-0.19	*0.011*
	Health and functioning	-0.22	*0.003*	-0.452	*<0.001*
4-6 weeks after the delivery	**MAPP-QOL(Overall)**	-0.16	*0.038*	-0.13	0.077
	Psychological/baby	-0.20	*0.007*	-0.16	*0.036*
	Socio-economic	-0.13	0.075	-0.01	0.994
	Spouse/partner relationship	-0.13	0.08	-0.07	0.355
	Family-friends relationship	-0.14	0.065	-0.08	0.293
	Health and functioning	-0.14	0.074	-0.25	*0.001*

Factors associated with quality of life after controlling other confounders

There were six factors associated with the postpartum quality of life of the postpartum samples both for the overall and specific domains with the statistical significance of $p < 0.05$ when analyzed by the univariable analysis, that is, age, occupation, family income, earlier intention before the delivery, types of delivery, and labor pain. These six variables were analyzed further by the multiple linear regression (i.e. all-enter method) and control of confounders to determine the correlation of the variables with the postpartum quality of life both for the overall and specific domains.

Table 4.12 Results of multiple linear regression analysis of quality of life (overall) on the second day and during 4-6 weeks after the delivery

Variables	Quality of life (Overall) Two days after delivery (p-value)	Quality of life (Overall) 4-6 weeks after delivery (p-value)
Age (years)	-.04 (0.428)	-.06 (0.077)
Occupation		
Housewives/Others	-	-
Workers	.50 (0.397)	.55 (0.175)
Civil servants/officials/ state/private company employees/ business owners	.39 (0.447)	.71 (0.042)
Family income		
Sufficient	-	-
With saving	1.37 (0.887)	.66 (0.781)
Earlier intention to delivery		
Inconsistent with the intention	-	-
Consistent with the intention	.08 (0.871)	-.11 (0.785)
Types of delivery		
Emergency C/S	-	-
Normal delivery	1.01 (0.165)	.49 (0.310)
Elective C/S	.39 (0.964)	.32 (0.427)
Pain score	-.36 (0.006)	-.18 (0.235)

"-" = Reference

Table 4.12 presented the analytical results of the MAPP-QOL (Overall) analyzed by the multiple linear regression on the second day and 4-6 weeks after the delivery. Controlling other cofounders, it was found that the factors associated with the postpartum quality of life on the second day after the delivery included the pain score (p = .006) and occupation (p = 0.042) during 4-6 weeks after the delivery with the following correlation:

Pain score was inversely associated with the postpartum quality of life. Namely, the samples with higher pain scores had lower overall postpartum quality of life on the second day after the delivery when compared with those with lower pain scores (< 0.36 scores).

Occupation was correlated with the postpartum quality of life. The postpartum samples who were civil servants, state/private company employees or business owners had higher overall postpartum quality of life during 4-6 weeks after the delivery than those who were housewives (> 0.7 scores).

Table 4.13 Results of multiple linear regression analysis of each domain of quality of life on the second day after the delivery (Factors affecting the postpartum quality of life of the patients on the second day after the delivery after controlling other cofounders)

Variables	Quality of life domains (p-value)				
	1	2	3	4	5
Age (years)	-.06 (0.394)	-.03 (0.673)	-.08 (0.212)	-.08 (0.100)	-.07 (0.314)
Occupation					
Housewives/Others	-	-	-	-	-
Workers	.72 (0.377)	1.08 (0.144)	1.70 (0.023)	0.54 (0.325)	-.91 (0.283)
Civil servants/officials/ state/private company employees/ business owners	.67 (0.344)	1.09 (0.088)	.80 (0.212)	.13(0.783)	-.78 (0.288)
Family income					
Sufficient	-	-	-	-	-
With saving	1.72 (0.082)	1.33 (0.137)	.68 (0.447)	.10(0.884)	2.61 (0.012)
Earlier intention to delivery					
Inconsistent with the intention	-	-	-	-	-
Consistent with the intention	1.30 (0.103)	-.69 (0.340)	-1.12(0.113)	.12(0.825)	.12 (0.883)

Table 4.13 Results of multiple linear regression analysis of each domain of quality of life on the second day after the delivery (Factors affecting the postpartum quality of life of the patients on the second day after the delivery after controlling other cofounders) (cont.)

Variables	Quality of life domains (p-value)				
	1	2	3	4	5
Types of delivery					
Emergency C/S	-	-	-	-	-
Normal delivery	.68 (0.497)	.59 (0.512)	1.85(0.042)	.58(0.390)	2.21 (0.035)
Elective C/S	-.27 (0.744)	1.12 (0.131)	.84 (.256)	.10(0.855)	.88 (0.301)
Pain score	-.33 (0.065)	.14 (0.422)	-.19 (.227)	-.08(0.637)	-.97 (< 0.001)

"-"= Reference

1 = Psychological/baby

2 = Socio-economic

3 = Spouse/partner relationship

4 = Family-friends relationship

5 = Health and functioning

Table 4.13 exhibited the analytical results of each domain of the postpartum quality of life analyzed by the multiple linear regression on the second day after the delivery. Controlling other cofounders, the following correlation was found:

1. The domain of spouse/partner relationship was correlated with occupation and types of delivery:

1.1 Occupation: The postpartum samples who were workers had higher postpartum quality of life scores in terms of spouse/partner relationship (> 1.7 scores) when compared with those working as housewives (p = 0.023).

1.2 Types of delivery: The samples with normal delivery had higher postpartum quality of life scores in terms of spouse/partner relationship (> 1.8 scores) when compared with those with emergency C/S (p = 0.042).

2. The domain of health and functioning was associated with family income, types of delivery, and pain scores:

2.1 Family income: The postpartum samples with sufficient/ insufficient family income had the lower postpartum quality of life scores in terms of health and functioning than those with saving (2.6 scores, $p = 0.012$).

2.2 Types of delivery: The samples with normal delivery had higher postpartum quality of life scores in terms of health and functioning than those with emergency C/S (2.2 scores, $p = 0.035$).

2.3 Pain score: The samples with higher pain scores had the worse postpartum quality of life in terms of health and functioning than those with lower pain scores (0.97 scores, $p < 0.001$).

Table 4.14 showed the analytical results of each domain of the postpartum quality of life analyzed by the multiple linear regression during 4-6 weeks after the delivery. Controlling other cofounders, the following correlation was indicated:

1. The domain of socio-economic aspects was associated with occupation, family income, and types of delivery:

1.1 Occupation: The postpartum patients who were civil servants, state/private company employees and business owners had higher postpartum quality of life scores (0.89 scores) than those working as housewives/others ($p = 0.032$).

1.2 Family income: The postpartum samples with saving had better postpartum quality of life scores than those with sufficient/insufficient family income (1.8 scores, $p = 0.001$).

1.3 Types of delivery: The postpartum samples with normal delivery had higher postpartum quality of life scores than those with emergency C/S (1.2 scores, $p = 0.029$).

2. The domain of spouse/partner relationship was correlated with family income and types of delivery:

2.1 Family income: The postpartum patients with saving had the higher postpartum quality of life scores than those with sufficient/insufficient income (1.7 scores, $p = 0.008$).

2.2 Types of delivery: The samples with normal delivery had higher postpartum quality of life scores when compared with those with emergency C/S (1.5 scores, $p = 0.027$).

3. The domain of health and functioning was associated with family income and pain scores:

3.1 Family income: The postpartum samples with saving had the higher postpartum quality of life than those with sufficient/insufficient family income (scores - 1.4, p = 0.042).

3.2 Pain scores: The samples with higher pain scores had the worse postpartum quality of life than those with lower pain scores (< scores – less than 0.5, p < 0.014).

Table 4.14 Results of multiple linear regression analysis of each domain of quality of life during 4-6 weeks after the delivery (Factors affecting the postpartum quality of life of the patients during 4-6 weeks after the delivery after controlling other cofounders)

Variables	Quality of life domains (p-value)				
	1	2	3	4	5
Age (years)	-.11 (0.078)	-.07 (0.106)	-.04 (0.346)	-.04 (0.352)	-.04 (0.406)
Occupation					
Housewives/Others	-	-	-	-	-
Workers	.78 (0.280)	.65 (0.177)	.01 (0.983)	.22 (0.618)	-.02 (0.967)
Civil servants/ company employees/business owners	1.22 (0.051)	.89 (0.032)	.40 (0.407)	.12 (0.750)	-.07 (0.889)
Family income					
Sufficient	-	-	-	-	-
With saving	.91(0.862)	1.85(0.001)	1.75(0.008)	.34(0.521)	1.40(0.042)
Earlier intention to delivery					
Inconsistent with the intention	-	-	-	-	-
Consistent with the intention	.91(0.203)	-.43(0.362)	-.95(0.084)	-.01(0.983)	.18(0.756)
Types of delivery					
Emergency C/S	-	-	-	-	-
NL. delivery	-.78(0.374)	1.23(0.029)	1.50(0.027)	.19(0.723)	.09(0.896)
Elective C/S	.48(0.508)	.77(0.109)	.72(.199)	-.01(0.987)	-.91(0.115)
Pain score	-.46(0.092)	.14(0.422)	-.14(.513)	-.08(0.637)	-.53(0.014)

"-"= Reference
1 =Psychological/baby 2 = Socio-economic 3 = Spouse/partner relationship
4 = Family-friends relationship 5 = Health and functioning

CHAPTER V
DISCUSSION

This prospective cohort study aimed to investigate and compare the postpartum quality of life between 176 patients having normal vaginal delivery and cesarean section on the second day and 4-6 weeks after their delivery. Questionnaire developed by the researcher in accord with the objective framework was used as the research instruments whereas the quality of life assessment items were translated from the Maternal Postpartum Quality of Life Questionnaire (MAPP-QOL)of Pamela D. Hill .The study results indicated that the overall postpartum quality of life on the second day after the delivery of patients having the normal vaginal delivery was higher than those with the emergency cesarean section in terms of the psychological/ baby, health & functioning, and family-friend relationship. During 4-6 weeks after the delivery, the postpartum quality of life of patients having the normal vaginal delivery was higher than those with the emergency cesarean section in terms of health & functioning with the statistical significance. In addition, the worst scores of the postpartum quality of life among the three groups belonged to the health & functioning when compared with the other domains on the second day and during 4-6 weeks after the delivery. According to the univariable analysis, the variables correlated with the postpartum quality of life included the occupation, family income, age, and labor pain. Besides, when controlling the other variables and using the multiple linear regression analysis to find out the correlation between the delivery method and the postpartum quality of life, it was found that the delivery method still affected the postpartum quality of life. That is, the patients with normal delivery had better postpartum quality of life than those with elective or emergency cesarean section in terms of the socio-economic aspects and health & functioning on the second day after the delivery and spouse/partner relationship during 4-6 weeks after the delivery, respectively, with the statistical significance ($p < 0.05$).

Discussion

Delivery details and attitudes towards the delivery

At present, the cesarean section has been widely performed due to the safety of mothers and babies. However, the cesarean section indications are required. The general indications of the elective C/S are the previous C/S and breech presentation whereas those of the emergency C/S are the cephalopelvic disproportion, previous C/S, fetal heart rate anomality, and breech presentation, which are regarded as the top-four indications (19). It can be obviously seen that the previous C/S is the most important indication for the cesarean delivery because the obstetricians are afraid of the uterine rupture during the labor pain. To reduce the high rate of cesarean delivery, the reasons and indications of the cesarean section done in the first pregnancy should be considered whether they are appropriate or they are required by the pregnant women. Obviously, the rate of cesarean delivery performed by private hospitals is higher than the public hospitals (6) because mothers can choose their type of delivery more flexibly. Moreover, the mothers with good financial status prefer choosing the delivery time whereas some mothers are afraid of normal vaginal delivery and the severe pain. As a result, they prefer the cesarean delivery (18). The above findings are consistent to the current researches indicating mothers prefer the normal delivery and cesarean section due to their feeling rather than the knowledge related to the complications possibly caused to the mothers and babies. The first three reasons for the normal delivery are 1. Quick postpartum recovery, 2. Preference on natural process, and 3. Complete motherhood presentation whereas the top three reasons for the cesarean section are 1. Previous cesarean section, 2. Anxiety/Fear of labor pain, and 3. Avoidance of vaginal tear/perineum, danger possibly caused to the baby during the delivery, and bad experience on the normal vaginal delivery e.g. prolonged labor pain, injury caused to the baby.

Pain score

The study results indicated that the postpartum pain of the patients with normal delivery on the second day and during 4-6 weeks after the delivery was less than the pain derived from the elective C/S and emergency C/S with the statistical significance. However, the difference between the two types of cesarean delivery was not found. For the normal delivery, the perineum wound will be rapidly healed within 5-7 days after the delivery (23) whereas by the elective C/S or emergency C/S, the delivery wound is on the abdominal wall and myometrium. In the postpartum period, the uterus will be contracted to prevent the hemorrhage. Hence, the pain might not be so different but this influences the feeling of mothers. For example, the patients with emergency C/S usually encounter the prolonged labor pain at the vagina. According to the research findings, the patients with emergency C/S were slightly satisfied or dissatisfied with their delivery experience whereas those with normal delivery and elective C/S did not. This is consistent with the study of Monika et al. who revealed that the patients with normal delivery had the pain on the third day after the delivery than those with cesarean delivery. Again, the difference between the cesarean delivery groups was not found. Furthermore, the patients with emergency C/S had a worse feeling towards the delivery experience when compared with the ones with normal delivery and elective C/S (7). For Kainu et al. and Eisenbach, the persistent pain might last a year after the delivery especially among women with cesarean delivery whereas the severe postpartum pain was associated with the persistent pain (65) (66).

Postpartum quality of life

According to the comparison of the postpartum quality of life both for the overall and the specific domains on the second day and during 4-6 weeks after the delivery, the scores were not much different, namely, only 1-2 marks. The patients with normal delivery had higher quality of life scores than those with cesarean delivery. The difference was statistically significant. Such findings were consistent with the research findings of Abbas et al. and Huang indicating that the overall postpartum quality of life of women with vaginal delivery was better than those with cesarean delivery (67, 68).

The overall quality of life scores on the second day after the delivery were different (between the normal delivery group and the emergency C/S group) with the specific difference in the domains of health & functioning, psychological/baby (between the normal delivery group and the elective C/S group, and between the normal delivery group and the emergency C/S group), and family-friend relationship (between the normal delivery group and the elective C/S group)with the statistical significance of $p < 0.05$. The postpartum quality of life during 4-6 weeks after the delivery was different with statistical significance in terms of health & functioning of $p = 0.011$ (between the normal delivery group and the elective C/S group). The three groups had the lowest postpartum quality of life scores on the health & functioning when compared with the other domains on the second day and during 4-6 weeks after the delivery. This finding was in accord with the research of Torkan et al. and Seyed et al. comparing the postpartum quality of life of patients with vaginal delivery and cesarean delivery using the SF 36, WHOQL-BREF. Torkan found that the postpartum quality of life of patients with vaginal delivery was better than those with cesarean delivery in terms of vitality, mental health, and physical functioning. For Seyed Abbas, the postpartum quality of life of women with vaginal delivery was higher than those with cesarean delivery in terms of physical, psychological, and social domains (8, 67). The difference found might be due to the postpartum pain or fatigue. The pain caused by the normal vaginal delivery was less than the one of the cesarean delivery and such pain could be recovered more rapidly. As a result, the patients with normal delivery could rely on themselves, take care of and breast-feed the baby better. Besides, their mental health and family relationship was better as well. This was consistent with the research of Christopher revealing that the postpartum cesarean delivery pain was correlated with the postpartum quality of life. Namely, the postpartum pain worsened the quality of life in terms of the physical and mental domains(69).

However, in this study, the difference of postpartum quality of life in terms of the socio-economic aspects and spouse-partner relationship was not found implying that the types of delivery did not affect the occupation, family income, and spouse/partner relationship of the postpartum patients. From the literature review, these variables were associated with the quality of life (44, 45, 52) because the

purposive sampling was applied. Namely, the postpartum women with mental problems, stress, divorce or family problems were excluded. Therefore, the samples were ready for their pregnancy, financially well prepared and cared by their husbands. As such, the difference of the quality of life in this domain was not found. So, the other variables should be controlled so that the relationship can be obtained.

According to the study results, the postpartum quality of life between the patients with elective C/S and emergency C/S was not found and slightly found during 4-6 weeks after the delivery. This was inconsistent with other researches finding the difference of the postpartum quality of life during 6-8 weeks after the delivery (8, 67). Such inconsistency might be caused by the research instruments used that had different domains and measurements. As a result, the results were different accordingly. This might be also caused by the obstetricians having different obstetric experience and expertise e.g. extern or resident. In fact, the delivery method might perhaps not affect the postpartum quality of life. This was in accord with the study of Huang revealing that the delivery method did not influence the postpartum quality of life (68). The difference might be caused by other factors such as the pain. For example, the pain on the second day was higher than the one during 4-6 weeks after the delivery. In addition, the postpartum pain scores between the elective C/S and emergency C/S was not statistically different. This was consistent with the research of Christopher finding that the postpartum pain caused by the cesarean delivery was associated with the quality of life and worsened the physical and mental health (69). Nathaniel found that the pain relief enhanced the postpartum quality of life of the patients (70). This could be explained by a comparison of the postpartum quality of life between the delivery method consistent and inconsistent with the intention before the delivery. The overall difference of the quality of life was not found and little difference was found in the domain of health & functioning and psychological/baby ($p < 0.05$) on the second day after the delivery. However, the difference was not found during 4-6 weeks after the delivery. Hence, it could be mentioned that the delivery method consistent or inconsistent with the intention before the delivery was not correlated with the postpartum quality of life.

Factors affecting the quality of life

Apart from the types of delivery and the delivery methods consistent or inconsistent with the intention before the delivery that were associated with the postpartum quality of life, the other related factors from the literature review included age, marital status, education, income, family income, health of previous child, number of children, miscarriage, delivery experience, and labor pain. Such variables were analyzed using the univariable analysis to find out the factors affecting the postpartum quality of life. It was found that the six factors affecting the postpartum quality of life included age, income, family income, intention of delivery method before the delivery, delivery method, and labor pain. Using the multiple linear regression to find out the correlation between the variables and the quality of life with the control over other variables, it was found that occupation, delivery method, family income, and labor pain were associated with the postpartum quality of life.

In this study, the correlation between occupation and family income and the postpartum quality of life was described as the correlation between the types of delivery and labor pain was early explained.

Occupation was related with the overall postpartum quality of life and in the domain of spouse/partner relationship when the other variables were controlled. This finding was consistent with the researches finding that occupation was correlated with the postpartum quality of life(39,52). The postpartum patients who were the civil servants, state/private company employees or business owners had better postpartum quality of life than those who were the housewives. This was because occupation produced income, life satisfaction, acceptance, valuation, economic stability to oneself and family. However, this was inconsistent with the research of Somkid stating that occupation was not associated with the postpartum quality of life of the HIV-infected mothers (35).

The delivery method was correlated with the postpartum quality of life in terms of the health &Functioning, socio-economicaspects, and spouse/partner relationship. Namely, the patients with normal delivery had higher quality of life scores than those with emergency C/S.

Family income was associated with the postpartum quality of life in terms of health & functioning, socio-economic aspects, and spouse/partner relationship. Income indicating the social and economic status was also correlated with education and occupation. People with sufficient income usually satisfy their basic needs. Most of the postpartum patients of this research were housewives with sufficient family income. This was in accord with other researches finding that family income was associated with the depression of postpartum women (42). Family income was also positively related to the adaptation of maternal roles [50]. Such finding was consistent with the research of Seyed et al. indicating that income was associated with the postpartum quality of life in terms of mental health (67).

Labor pain was correlated to the overall postpartum quality of life and also in terms of the health & functioning.

However, other variables of this study i.e. age, education, number of children, miscarriage, and delivery experience feeling were not correlated with the postpartum quality of life.

Age was not associated with the postpartum quality of life. This was consistent with the study of Somkid finding that age was not correlated with the postpartum quality of life of the HIV-infected mothers (35). However, such finding was inconsistent with several researches indicating that these factors were related to the quality of life. This might be explained that the samples were aged 20-35 years old and such ages were appropriate for the pregnancy. As a result, the postpartum quality of life of these women was similar. According to many studies, postpartum mothers aged below 20 years old or teen mothers usually encountered the problems related to the adaptation of maternal roles and also had lower postpartum quality of life than adult mothers (23, 40).

Education was not related to the postpartum quality of life ($p = 0.780$, $p = 0.460$) implying that the postpartum mothers had similar postpartum quality of life despite the difference of education. This was not consistent with the research of Seyed Abbas et al mentioning that education was associated with the postpartum quality of life in terms of the physical, mental, and social domains. In addition, Wanna et al. (39) studying the factors affecting the mental health of the postpartum women found that education was associated with the anxiety and depression of the postpartum women especially among those with lower education or the non-educated ones.

Number of children was not associated with the postpartum quality of life. This was consistent with the research of Somkid finding that number of pregnancy was not correlated with the postpartum quality of life (35) whereas Panida indicated that number of children was not associated with the adaptation of maternal roles (47). In contrast, Lemasters (57) found that mothers with first child encountered the crisis of maternal role adaptation. Theoretically, number of children affected the adaptation of maternal roles and also indicated the experience of child raising. Mothers with first child could take care of the baby and house works more efficiently than those with several children. This therefore affected the postpartum quality of life of women. Provided that women were sufficiently assisted with child care, the number of children would not affect the postpartum quality of life.

Miscarriage was not correlated with the postpartum quality of life. In other words, the postpartum quality of life of the patients with previous miscarriage was still similar to those without miscarriage. From the literature review, there was still no research studying on the correlation between the miscarriage and the postpartum quality of life.

The delivery experience feeling was not correlated with the postpartum quality of life. Besides, according to the literature review, there was still no research studying on the correlation between the delivery experience feeling and the postpartum quality of life. However, it was found that types of delivery led to different feeling towards the delivery (7) and also affected the postpartum mental health. The samples had several feelings towards their delivery experience. Most of them were totally satisfied sand moderately satisfied while a little of them were slight satisfied or dissatisfied with their delivery experience. As a result, the correlation might not be found.

Hence, it could be concluded that the types of delivery affected the postpartum quality of life. Namely, the patients with normal delivery had better postpartum quality of life than those with cesarean delivery in terms of health &functioning, socio-economic aspects, and spouse/partner relationship. However, the postpartum quality of life of the patients with elective C/S or emergency C/S was not different whereas the domain of health & functioning had the lowest scores of the postpartum quality of life.

CHAPTER VI
CONCLUSION AND RECOMMENDATION

This prospective cohort study aimed to investigate and compare the postpartum quality of life between patients having normal vaginal delivery and cesarean section on the second day and 4-6 weeks after their delivery. The purposive samples of this research consisted of 228 postpartum patients of the Postpartum Care Unit during June – December 2013. Among them, 52 patients were lost; hence, there were finally 176 patients. The patients were divided into three groups based on their delivery method, namely, normal vaginal delivery group (normal delivery, n = 59), elective cesarean section group (elective C/S, n = 59), and emergency cesarean section group (emergency C/S, n = 59).

Questionnaire developed by the researcher in accord with the objective framework was used as the research instruments whereas the quality of life assessment items were translated from the Maternal Postpartum Quality of Life Questionnaire (MAPP-QOL) of Pamela D. Hill (38). Such questionnaire was divided into four parts: Part 1 - the general data of the respondents, Part 2 - the delivery details and reasons for choosing such type of delivery, Part 3 - the pain score assessment using the visual rating scales (VRS), and Part 4 - the postpartum quality of life interview divided into two parts: satisfaction and importance sub-divided into the five domains of 1. Psychological/Baby, 2. Socio-economic aspects, 3. Spouse/partner relationship, 4. Family/friend relationship, and 5. Health & function.

The descriptive statistics were used with the general data, delivery details, and attitudes towards the delivery of the respondents, the pain scores, and the quality of life scores. The data were analyzed by the distribution of frequency to find out the percentage, average, and standard deviation. The analytical statistics of Kruskal Walis Test and Mann-Whitney U Test were used to compare the postpartum pain whereas One-way ANOVA was used to compare the postpartum quality of life while the t-test was used to compare the postpartum quality of life between patients with and without

chosen delivery. In addition, the univariable analysis, t-test, ANOVA, Spearman Rank Correlation, and multiple linear regression were used to obtain the factors related to the quality of life.

6.1 Conclusion

Study population

The total 176 samples were aged 20-25 years old. The samples of the elective C/S group had highest average age (Mean = 29.1, SD = 4.4). Most of the three sample groups obtained the secondary/vocational education and had sufficient income. They were aborted in the first pregnancy. The samples had different occupation. Namely, the samples in the normal delivery group and the emergency C/S group were the employees of the state/private companies whereas the samples in the elective C/S group were the housewife or worked at home.

Delivery details and attitudes towards delivery

The indications of the elective C/S and emergency C/S were previous C/S and cephalopelvic disproportion, respectively. For the normal delivery group, the labor pain duration was less than the emergency C/S group about two hours. In terms of the medications used during the delivery, syntocinon was equally applied in the normal delivery group and the emergency C/S group. However, pethidine was used more in the emergency C/S group when compared with the normal delivery group. Most of the samples, for this and future pregnancy, preferred the normal delivery. They were satisfied with the current delivery experience. They preferred the normal delivery due to the three reasons, namely, 1) Quick recovery after the delivery, 2) Natural process, and 3) Complete maternal representation and less risky to the postpartum complications. On the other hand, some patients preferred the cesarean section due to the following reasons: 1) Previous cesarean delivery experience, 2) Anxiety/fear of delivery pain, and 3) Avoidance of vaginal tear/perineum/baby danger during the delivery including the bad delivery experience e.g. prolonged labor pain, injured baby, and so on.

Pain score

The average pain scores on the second day and during 4-6weeks after the delivery between the normal delivery group and the elective C/S group and between the normal delivery C/S group and the emergency C/S group were obviously different with the statistical significance ($p < 0.05$). Namely, the pain scores of the normal delivery group were least whereas the pain scores of the elective C/S group and the emergency C/S group were equal.

Quality of life

The overall quality of life scores on the second day and during 4-6weeks after the delivery of the normal delivery group were higher than those of the elective C/S group and the emergency C/S group. The quality of life scores on the second day after the delivery were obviously different both overall and for the specific domain of the health & functioning, psychological/baby, and family/friend relationship with the statistical significance ($p < 0.05$). Most of the difference was found between the normal delivery group and the elective C/S group and between the normal delivery group and the emergency C/S group. The quality of life scores during 4-6 weeks after the delivery were obviously different with the statistical significance only in terms of the health &functioning ($p = 0.011$) between the normal delivery group and the elective C/S group.

The postpartum quality of life of the patients with and without the delivery satisfaction on the second day and during 4-6 weeks after the delivery was different with statistical significance in the domains of health and functioning and psychological/baby($p = 0.014$, $p = 0.004$)

Controlling the variables affecting the quality of life, it was found that the postpartum quality of life of the patients with normal delivery was better than those with cesarean delivery especially in terms of health &functioning, socio-economic, and spouse-partner relationship with the statistical significance of $p < 0.05$.

Factors affecting the quality of life

From the univariable analysis to find out the factors affecting the quality of life, six variables were found i.e. age, occupation, family income, prior delivery intention, delivery method, and labor pain. Using the multiple linear regression to obtain the correlation of the variables with the quality of life, the factors affecting the quality of life included the occupation, family income, and labor pain.

6.2 Recommendations

Recommendations/implications

Having studied the postpartum quality of life between patients having normal vaginal delivery and cesarean section on the second day and 4-6 weeks after their delivery the following suggestions were proposed:

1. The research findings can be used as the fundamental and referential postpartum data of Thai women in terms of their postpartum quality of life and attitudes towards the delivery.

2. The proper education and knowledge should be provided for the medical staffs including the ordinary persons having the duty to take care of the pregnant and postpartum patients. Besides, the benefits and advantages of the normal vaginal delivery and the cesarean delivery including the possible complications to mothers and baby should be also provided so that the patients can properly and sufficiently gain the delivery details.

3. The research results can be used in standardizing the obstetric cares to reduce the unnecessary cesarean delivery rates in the first pregnancy. Most women prefer the normal vaginal delivery rather than the cesarean section. However, most of them have to be performed with the cesarean section because they had cesarean section from the first pregnancy.

4. The study results can be used in establishing postpartum plans both short-term and long-terms plans. For the short-term plan, the postpartum patients should be provided with the health care and self-reliance when they return home. As the research results indicated that the postpartum quality of life scores in terms of

health &functioning and socio-economic were lower than the other domains, this domains should be efficiently improved.

5. The research findings revealed that a difficulty in pain management affected the postpartum quality of life. Hence, if the obstetricians and nurses can manage the pain more efficiently, the postpartum quality of life will be improved accordingly.

Recommendations for further researches

1. The knowledge and attitudes towards the cesarean delivery of the first pregnancy performed by the public and private hospitals should be investigated.

2. The postpartum quality of life between the patients with normal vaginal delivery and cesarean delivery performed by the private hospitals should be explored.

3. The postpartum quality of life of patients with various problems should be assessed with the MAPP-QOL.

6.3 Limitations of the study

1. According to the literature review, the cesarean delivery rate was constantly increased especially among the private hospitals. However, since this research was conducted at the public hospital, the reasons why the cesarean delivery rate was constantly increased might not be completely explained. In addition, as there are still a few researches related to the postpartum quality of life, such data could not be referred in accord with the research findings.

2. Since the MAPP-QOL was just translated by the researcher, the tool should be used to test with other groups of postpartum mothers.

3. Since the samples of this research were quite small, some correlations between the variables related to the quality of life might not be found.

4. The MAPP-QOL still had some scoring disadvantages and had to be improved more for the assessment of the postpartum quality of life.

Advantages

1. According to the literature review, there is no comparative study of postpartum quality of life between patients having normal vaginal delivery and cesarean section among Thai women before.

2. Since the research instrument is very specific to the assessment of the postpartum quality of life of the patients, their quality of life and related problems could be inclusively evaluated and analyzed.

REFERENCES

1. Menacker F, Hamilton BE. Recent trends in cesarean delivery in the United States. NCHS Data Brief.2010; 35: 1-8.
2. ยศ ตีระวัฒนานนท์, วิโรจน์ ตั้งเจริญเสถียร, สัญญา ศรีรัตนะ, ปรัศนี ทิพยโสถติ. Twelve Years of Pattern of Hospital Delivery in Thailand: 1990-2001: a national survey. Journal of Health Science.2003; 12: 1-18.
3. สุชาดา อินทวิวัฒน์, สมศักดิ์ ไหลเวชพิทยา.การผ่าตัดคลอดบุตรทางหน้าท้อง.ใน: มานี ปิยะอนันต์, ชาญชัย วันทนาศิริ, ประเสริฐ ศันสนีย์วิทยกุล,บรรณาธิการ. ตำราสูติศาสตร์. กรุงเทพมหานคร: พี. อี. ลีฟวิ่ง จำกัด; 2548. หน้า 177-82.
4. DeMott RK, Sandmire HF. The Green Bay cesarean section study. I. The physician factor as a determinant of cesarean birth rates. Am J Obstet Gynecol. 1990 ;162(6)**:**1593-9.
5. Hansen AK, Wisborg K, Uldbjerg N, Henriksen TB. Risk of respiratory morbidity in term infants delivered by elective caesarean section: cohort study. BMJ. 2008; 336 (7635):85-7.
6. Piya Hanvoravongchai, Jongkol Letiendumrong, Yot Teerawattananon, Viroj Tangcharoensathien. Implications of private practice in public hospitals on the cesarean rate in Thailand. HRD.2000; 4(1):2-12.
7. Schindl M, Birner P, Reingrabner M, Joura E, Husslein P, Langer M. Elective cesarean section vs. spontaneous delivery: a comparative study of birth experience. Acta Obstet Gynecol Scand. 2003; 82(9): 834-40.
8. Torkan B, Parsay S, Lamyian M, Kazemnejad A, Montazeri A. Postnatal quality of life in women after normal vaginal delivery and caesarean section.BMC Pregnancy Childbirth.2009; 9(1): 1-7.
9. เกสรา ศรีพิชญาการ. การพยาบาลผู้ที่มีคลอดยาก. พิมพ์ครั้งที่ 3. เชียงใหม่:โครงการตำราคณะพยาบาลศาสตร์มหาวิทยาลัยเชียงใหม่; 2541.

10. กอบจิตต์ ลิมปพยอม, กระเษียร ปัญญาคำเลิศ. การเจ็บครรภ์และการคลอด (Labor and Delivery). *ใน สุขิตเผ่าสวัสดิ์, ศุภวัฒน์ ชุติวงศ์, ดำรง เหรียญประยูร, สุทัศน์* กลกิจโกวินท์, บรรณาธิการ. สูติศาสตร์.พิมพ์ครั้งที่ 2. กรุงเทพมหานคร: โอ. เอส. พริ้นติ้งเฮาส์; 2538. หน้า 48-59.

11. วิทยา ถิฐาพันธ์, สายฝน ชวาลไพบูลย์. การคลอดยาก. ในมานี ปิยะอนันต์, ชาญชัยวันทนาศิริ, ประเสริฐ ศันสนีย์วิทยกุล, บรรณาธิการ. ตาราสูติศาสตร์. กรุงเทพมหานคร: พี. เอ. ลีฟวิ่ง; 2548. หน้า 127-62.

12. สุรางค์ ตรีรัตนชาติ. การคลอดยาก. ใน: ธีรพงศ์ เจริญวิทย์, บุญชัย เอื้อไพโรจน์กิจ, ศักนัน มะโนทัย, สมชาย ธนวัฒนาเจริญ, กระเษียร ปัญญาคำเลิศ, บรรณาธิการ.สูติศาสตร์. กรุงเทพมหานคร: โอ. เอส. พริ้นติ้งเฮาส์; 2551. หน้า 193-206.

13. อรุณ อมาตยกุล, สมชาย ธนวัฒนาเจริญ.การคลอดยาก (Dystocia). ใน:สุขิต เผ่าสวัสดิ์, ศุภวัฒน์ ชุติวงศ์, ดำรง เหรียญประยูร, สุทัศน์ กลกิจโกวินท์, บรรณาธิการ. สูติศาสตร์. กรุงเทพมหานคร: โอ. เอส. พริ้นติ้งเฮาส์; 2551. หน้า 183-93.

14. Cunningham FG, Gant NF, Levono KJ, Gilstrap III LC,Hauth JC, Wenstrom KD. Williams obstetrics. 21sted. New York: McGrawHill; 2001:509-35.

15. Friedman E. The graphic analysis of labor.Am J Obstet Gynecol. 1954; 68(6): 1568-75.

16. Titapant V, Swasdimongkol P, Hansiriratanaskul N, Suvonnakote T. Annual statistical report 1998. Bangkok; 2000: 34-5.

17. สุทัศน์ กลกิจโกวินท์. การผ่าท้องทำคลอด (Cesarean section). ใน:สุขิต เผ่าสวัสดิ์, ศุภวัฒน์ ชุติวงศ์, ดำรง เหรียญประยูร, สุทัศน์ กลกิจโกวินท์, บรรณาธิการ. สูติศาสตร์. พิมพ์ครั้งที่ 2. กรุงเทพมหานคร: โอ.เอส. พริ้นติ้งเฮาส์; 2538. หน้า 325-37.

18. อรรณพ ใจสำราญ. การผ่าท้องทำคลอด. ใน: ธีรพงศ์ เจริญวิทย์, บุญชัยเอื้อ ไพโรจน์กิจ, ศักนัน มะโนทัย, สมชาย ธนวัฒนาเจริญ, กระเษียร ปัญญาคำเลิศ, บรรณาธิการ. สูติศาสตร์. กรุงเทพมหานคร: โอ.เอส. พริ้นติ้งเฮาส์; 2551. หน้า 87-98.

19. Scott JR. Cesarean Delivery. In: Scott JR, Di Saia PJ, Hamnoud CB, Spellacy WN, editors. Danforth's obstretrics and gynecology. 8th ed. Philadelphia: Lippincott Williams and Wilkins; 1999.p. 457-70.

20. ประเสริฐ ศันสนีย์วิทยกุล. ภาวะหลังคลอดบุตร. ใน: มานี ปิยะอนันต์, ชาญชัย วันทนาศิริ, ประเสริฐ ศันสนีย์วิทยกุล, บรรณาธิการ. ตำราสูติศาสตร์. กรุงเทพมหานคร: พี. อี. ลีฟวิ่ง จำกัด; 2548. หน้า 217-24.

21. กอบจิตต์ ลิมปพยอม, กระเษียร ปัญญาคำเลิศ. ระยะหลังคลอด (The puerperium), ใน: สุขิต เผ่าสวัสดิ์, ศุภวัฒน์ ชุติวงศ์, ดำรงเหรียญ ประยูร, สุทัศน์ กลกิจโกวินท์, บรรณาธิการ. สูติศาสตร์.พิมพ์ครั้งที่ 2. กรุงเทพมหานคร: โอ. เอส. พริ้นติ้งเฮาส์; 2538. หน้า 69-78.

22. สุวิทย์ บุณยะเวชชีวิน. ระยะหลังคลอด. ใน: ธีรพงศ์ เจริญวิทย์, บุญชัย เอื้อไพโรจน์กิจ, ศักนัน มะโนทัย, สมชาย ธนวัฒนาเจริญ, กระเษียร ปัญญาคำเลิศ, บรรณาธิการ. สูติศาสตร์. กรุงเทพมหานคร: โอ.เอส. พริ้นติ้งเฮาส์; 2551. หน้า 135-44.

23. วิไลพรรณ สวัสดิ์พาณิชย์.การพยาบาลมารดาหลังคลอด. พิมพ์ครั้งที่ 6. ชลบุรี: ศรีศิลปการพิมพ์. 2552.

24. Marcia MG, Grace D. Evolution of quality of life in oncology and oncology nursing. In: King CR, Hinds PS, editors. Quality of life from nursing and patient perspectives. United States of America: Jones and Bartlet; 2003: 3-15.

25. UNESCO, Indicator of Environment Quality of Life, Research and paper in social science. (No.38), Paris.

26. Ferrans CE, Powers MJ. Quality ofLife index: development and phychometric properties. Adv Nurs Sci. 1985; 8(1):15-24.

27. ยุพา อุดมศักดิ์. แนวความคิดหลักการและวิธีการทางประชากรศึกษา. เอกสารประกอบการประชุมเรื่องบทบาทของสุขศึกษาประชากรศึกษาในการแก้ปัญหาสาธารณสุข. โครงการประชากรศึกษา. 2516: มหาวิทยาลัยมหิดล.

28. Orem DE. Nursing concepts of practice. New York: McGraw-Hill Book. 2001.

29. นิพนธ์ คันธเสวี. คุณภาพชีวิตสำหรับสังคมไทย. เอกสารประกอบการสัมนาระดับชาติเรื่องภาวะสังคมไทย. 2525.โรงแรมสยามแบเชอร์รีสอร์ทพัทยาชลบุรี.

30. ศิริ ฮามสุโพธิ์. เทคโนโลยีที่เหมาะสมกับการดำรงชีวิตในท้องถิ่น.กรุงเทพมหานคร: โอเดียนสโตร์; 2536.

31. Sharma RC. Meaning of quality of life in population, resources, environmentand quality of Life.1988; 24.

32. Flanagan JC. A research approach to improving our quality of life. American Psychologist.1982; 31(8):138-47.

33. Zhan LC. Conceptual and measurement issues. J Advanced Nursing. 1992; 17(7):795-8.

34. UNESCO. Quality of Life: An Orientation to Population Education. Bangkok. UNESCO; 1981.

35. Somkid Kongyu. Quality of life of postpartum mothers with HIV, Phetchaburi and Ratchaburi Province (The Degree of Master of Science (Epidemiology)). Bangkok: Faculty of Graduate Studies, Mahidol University Bangkok; 2006.

36. ณัฐฐิตา เพชรประไพ.ปัจจัยที่มีผลกระทบต่อคุณภาพชีวิตของผู้ป่วยโรคลิ้นหัวใจพิการ(วิทยานิพนธ์ คณะพยาบาลศาสตร์มหาบัณฑิตสาขาการพยาบาลผู้ใหญ่). ขอนแก่น: มหาวิทยาลัยขอนแก่น; 2541.

37. Speziale G, Bilotta F, Ruvolo G, Fattouch K, Marino B. Return to work and quality of life measurement in coronary bypass grafting. Eur J Cardiothoracic Surg. 1996; 10(10): 852-58.

38. Hill PD, Aldag JC, Hekel B, Riner G, Bloomfield P. Maternal postpartum quality of life questionnaire. J Nurs Meas. 2006; 14(3): 205-20.

39. วรรณา คงสุริยะ, เบญจวรรณ คุณรัตนาภรณ์, กิติรัตน์ เตชะไตรศักดิ์.ปัจจัยที่มีผลต่อสุขภาพจิตของหญิงหลังคลอด. วารสารสภาการพยาบาล. 2010; 25(1): 88-99.

40. Tasdemir S, Balci E, Gonay O. Comparison of life quality of pregnant adolescents with that of pregnant adults in Turkey. Ups J Med Sci. 2010; 115 (4): 275-81.

41. Nutcharat Siridumrong. Factors related to health problems of mothers during the postpartum period at home. (Master Nursing Science (Community Health Nursing)). Bangkok: Faculty of Graduate Studies, Mahidol University Bangkok; 1999.

42. Chutima Nitising. Relationship between maternal self-efficacy, social support and maternal depression among Thai adult mothers with children under one year (The Degree of Master of Primary Health Care Management). Bangkok: Faculty of Graduate Studies, Mahidol University; 2009.

43. Naiyana Piphatvanitcha. Relationship among basic conditioning factors, self-care agency, and quality of life in chronic renal failure patients treated with hemodialysis (M.N.S. Thesis in Medical Surgical Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1992.

44. Saifon JabJai. Quality of life in elderly with coronary heart disease (M.N.S. Thesis in Adult Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1997.

45. Prapa Ratanametanont. A study of some factors which have impact on the quality of life of myocardail infarction patients (M.S. Thesis in Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1989.

46. Manlika Thangjaroen. Perception in AIDS and self-care agency to prevent AIDS in prostitute (M.S. Thesis in Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1991.

47. พนิดา วาราชนนท์. การสนับสนุนจากคู่สมรสและการปรับตัวด้านบทบาทหน้าที่ของมารดา. การพยาบาลแม่และเด็ก.บัณฑิตวิทยาลัยมหาวิทยาลัยมหิดล: กรุงเทพมหานคร; 2541.

48. บังอร ต้อยติ่ง. สัมพันธภาพระหว่างคู่สมรสและการปรับตัวด้านบทบาทหน้าที่ในมารดาที่คลอดทารกน้ำหนักน้อย(พยาบาลศาสตร์มหาบัณฑิตสาขาวิชาการพยาบาลแม่และเด็ก). กรุงเทพ: บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล; 2543.

49. Sutinee Soakeaw. The influence of maternal relationship, complications during pregnancy, and separation time on maternal-newborn attachment in postpartum mothers (Maternal and Newbron Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 2007.

50. Kitinan Sittichai. The study of health perception, spouse support and health promoting behaviors of mothers with HIV seropositive (M.N.S. Thesis in Maternal and Child Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1997.

51. Piyanan Limruangrong. The relationship between social support and maternal adaptation of HIV-infection mother (M.N.S. Thesis in Maternal and Child Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1997.

52. Premreitai Noimuenwai. Social support, self-care deficit and quality of life in HIV infected persons (M.S. Thesis in Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 1993.

53. Reece SM. Social support and the early maternal experience of primiparas over 35. Matern Child Nurs J. 1993; 21(3): 91-8.

54. Ratchanee Krongrawa. Factors related to maternal role attainment in first-time adolescent mothers (The Degree of Master of Nursing Science (Maternal

and Newbron Nursing)). Bangkok: Faculty of Graduate Studies, Mahidol University; 2006.

55. Supaporn Tangsiri. Self-esteem, spouse support, mother-daughter relationships and maternal role adaptation during pregnancy of adolescent (M.N.S. Maternal and Newborn Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 2007.
56. Jansen AJ, Duvekot JJ, Hop WC, Essink-Bot ML, Beckers EA, Karsdorp VH, et al. New insights into fatigue and health-related quality of life after delivery. Acta Obstet Gynecol Scand.2007; 86(5): 579-84.
57. Lemasters EE. Parenthood as crisis. Marriage and family a living.1957;19: 352-55.
58. Sompit Ampai. Personal factors, maternal role adaptation and postpartum depression in primiparous adolescent mothers (M.N.S. Maternal and Newborn Nursing). Bangkok: Faculty of Graduate Studies, Mahidol University; 2007.
59. Handa VL, Zyczynski HM, Burgio KL, Fitzgerald MP, Borello-France D, Janz NK, et al. The impact of fecal and urinary incontinence on quality of life 6 months after childbirth. Am J Obstet Gynecol. 2007; 197(6): 636 e1-6.
60. Förger F, Østensen M, Schumacher A, Villiger PM.. Impact of pregnancy on health related quality of life evaluated prospectively in pregnant women with rheumatic diseases by the SF-36 health survey. Ann Rheum Dis. 2005;64(10):1494-9.
61. Mautner E, Greimel E, Trutnovsky G, Daghofer F, Egger JW, Lang U. Quality of life outcomes in pregnancy and postpartum complicated by hypertensive disorders, gestational diabetes, and preterm birth. J Psychosom Obstet Gynaecol. 2009; 30(4): 231-7.
62. Lee SY, Lee KA. Early postpartum sleep and fatigue for mothers after cesarean delivery compared with vaginal delivery: an exploratory study. J Perinat Neonatal Nurs.2007; 21(2):109-13.
63. Hill PD, Aldag JC. Maternal perceived quality of life following childbirth. J Obstet Gynecol Neonatal Nurs.2007; 36(4): 328-34.
64. Chow SC, Shau J, Wang H. Sample size calculations in clinical research. 2rd ed. New York: Chaman and Hall/CRC Taylor and Francis Group; 2008.

65. Kainu JP, Sarvela J, Tiippana E, Halmesmäki E, Korttila KT. Persistent pain after caesarean section and vaginal birth: a cohort study. Int J Obstet Anesth. 2010; 19: 4-9.

66. Eisenach JC, Pan PH, Smiley R, Lavand'homme P, Landau R, Houle TT. Severity of acute pain after childbirth, but not type of delivery, predicts persistent pain and postpartum depression. Pain. 2008; 140(1): 87-94.

67. Mousavi SA, Mortazavi F, Chaman R, Khosravi A. Quality of life after cesarean and vaginal delivery. Oman Jed J. 2013; 28(4): 245-51.

68. Huang K, Tao F, Liu L, Wu X. Does delivery mode affect women's postpartum quality of life in rural China.J Clin Nurs.2012; 21: 1534-43.

69. Wu CL, Naqibuddin M, Rowlingson AJ, Lietman SA, Jermyn RM, Fleisher LA.The effect of pain on health-related quality of life in the immediate postoperative period. 2003; 97(4):1078-85.

70. Katz N. The impact of pain management on quality of life. J Pain Symptom Manage. 2002; 24(1): S38-47.

APPENDIX

แบบสัมภาษณ์

เรื่อง

การเปรียบเทียบคุณภาพชีวิตของหญิงหลังคลอดระหว่างผู้ที่คลอดปกติและผู้ที่ผ่าตัดคลอดบุตร โรงพยาบาลศิริราช

คำชี้แจง

แบบสัมภาษณ์นี้ใช้สัมภาษณ์หญิงหลังคลอดเกี่ยวกับปัจจัยที่มีผลต่อคุณภาพชีวิต ประกอบด้วย 4 ส่วนคือ

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ถูกสัมภาษณ์

ส่วนที่ 2 ข้อมูลการคลอดและทัศนคติต่อการคลอด

ส่วนที่ 3 แบบประเมินความเจ็บปวด

ส่วนที่ 4 แบบสัมภาษณ์วัดระดับคุณภาพชีวิตของหญิงหลังคลอด

แบ่งเป็น 2 ตอน คือ ความพึงพอใจและความสำคัญ

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ถูกสัมภาษณ์

คำชี้แจง ขอให้ผู้สัมภาษณ์ทำเครื่องหมาย (✓) และเติมข้อความลงในช่องว่างให้ตรงกับความเป็นจริง

1. อายุ..... ปีบริบูรณ์ (เศษของปีไม่นับ)

2. สถานภาพสมรส

☐ สมรส/คู่ ☐ หม้าย

☐ หย่าร้าง ☐ แยกกันอยู่

3. ระดับการศึกษา

☐ ไม่ได้เรียน ☐ ประถมศึกษา

☐ มัธยมศึกษา/ปวช. ☐ ปริญญาตรี/เทียบเท่า

☐ สูงกว่าปริญญาตรี

4. การประกอบอาชีพ

☐ ทำงานบ้าน ☐ เกษตรกรรม

☐ รับจ้าง ☐ รับข้าราชการ

☐ พนักงานรัฐวิสาหกิจ/เอกชน ☐ ธุรกิจส่วนตัว

☐ อื่นๆ.....

5. รายได้ของครอบครัว

☐ ไม่เพียงพอ ☐ พออยู่ได้ (เพียงพอ)

☐ มีเหลือเก็บ

6. สุขภาพบุตรคนก่อน

☐ แข็งแรงดี ☐ ต้องการการดูแลเป็นพิเศษ

7. จำนวนบุตร (รวมบุตรที่คลอดในครั้งนี้ด้วย) ..... คน

8. ประวัติการแท้ง

☐ ไม่เคย

☐ เคยครรภ์ที่แท้ง.....(ระบุ)

ส่วนที่ 2 ข้อมูลการคลอดและทัศนคติต่อการคลอด

คำชี้แจง ขอให้ผู้สัมภาษณ์ทำเครื่องหมาย (✓) และเติมข้อความลงในช่องว่างให้ตรงกับความเป็นจริง

1. วิธีการคลอด

☐ คลอดเองทางช่องคลอด(คลอดปกติ)

☐ การผ่าตัดคลอดแบบเตรียมการไว้

☐ ผ่าตัดคลอดแบบฉุกเฉิน

ข้อบ่งชี้ในการผ่าตัดคลอด.....(ระบุ)

2. ระยะเวลาการเจ็บครรภ์คลอด

เวลาเริ่มเจ็บครรภ์..... (ระบุ)

เวลาคลอด..... (ระบุ)

3. ยาที่ใช้ระหว่างรอคลอด..... (ระบุ)

4. ภาวะแทรกซ้อนหลังคลอด

☐ ไม่มี

☐ มี (ตอบได้มากกว่า1ข้อ)

☐ 1. ตกเลือด

☐ 2. แผลฝีเย็บ/แผลผ่าตัดอักเสบ

☐ 3. เต้านมอักเสบ

☐ 4. ปวดหลัง

☐ 5. ท้องผูก

☐ 6. อื่น..... (ระบุ)

ทัศนคติต่อการคลอด

1. ในระยะก่อนคลอดท่านเคยมีความตั้งใจคลอดวิธีใด

☐ คลอดเองทางช่องคลอด (ทำต่อข้อ 1.1)

☐ ผ่าตัดคลอด (ทำต่อข้อ 1.2)

1.1 เหตุผลในการเลือกคลอดเองทางช่องคลอด (ตอบได้มากกว่า1ข้อ)

☐ 1. กลัวการผ่าตัดและการดมยาสลบ

☐ 2. ต้องการให้เป็นไปตามธรรมชาติ

☐ 3. ฟื้นตัวเร็วหลังคลอด

☐ 4. ได้แสดงบทบาทการเป็นมารดาอย่างสมบูรณ์

☐ 5. การคลอดเองมีความเสี่ยงต่อภาวะแทรกซ้อนหลังคลอดน้อยกว่าการผ่าตัดคลอด

☐ 6. ทารกที่คลอดทางช่องคลอดจะมีสุขภาพดีกว่าทารกที่ผ่าตัดคลอด

☐ 7. การคลอดเองเสียค่าใช้จ่ายน้อยกว่า

☐ 8. อื่นๆ..... (ระบุ)

1.2 เหตุผลในการเลือกผ่าตัดคลอด (ตอบได้มากกว่า1 ข้อ)

☐ 1. เคยมีการผ่าตัดคลอดในครรภ์ก่อน

☐ 2. ทารกมีส่วนนำหรือท่าผิดปกติ

☐ 3. มีภาวะรกเกาะต่ำ

☐ 4. ต้องการเลือกวันคลอด

☐ 5. วิตกกังวล/ กลัวการเจ็บครรภ์คลอด

☐ 6. หลีกเลี่ยงการฉีกขาดของช่องทางคลอด/ การผ่าตัดฝีเย็บ

☐ 7. ลดความเสี่ยงต่อการเกิดภาวะกระบังลมหย่อน

☐ 8. มีประสบการณ์การคลอดทางช่องคลอดที่ไม่ดีเช่นเจ็บครรภ์คลอดนาน, บุตรได้รับบาดเจ็บ

☐ 9. การคลอดทางช่องคลอดอาจมีผลต่อการมีเพศสัมพันธ์

☐ 10. กลัวบุตรได้รับอันตรายระหว่างคลอด

☐ 11. ในปัจจุบันผู้หญิงมีการเลือกผ่าตัดคลอดมากขึ้น

☐ 12. อื่นๆ.....(ระบุ)

2. ความรู้สึกจากประสบการณ์การคลอดครั้งนี้

☐ 1. พอใจมาก ☐ 2. พอใจปานกลาง

☐ 3. พอใจเล็กน้อย ☐ 4. ไม่พอใจ

3. ในอนาคตถ้าตั้งครรภ์อีกอยากคลอดแบบใด

☐ คลอดเองทางช่องคลอด

☐ ผ่าตัดคลอด

ส่วนที่ 3 แบบประเมินความเจ็บปวด

คำชี้แจง ขอให้ผู้สัมภาษณ์ทำเครื่องหมาย (✕) บนตัวเลขให้ตรงกับระดับความเจ็บปวดของท่านในปัจจุบัน

คำอธิบายระดับคะแนนความเจ็บปวด

0	1	2	3	4	5	6	7	8	9	10
ไม่มีอาการปวด	ปวดน้อย ไม่มีความทุกข์ทรมาน, ไม่รู้สึกกังวลใดๆ ต่ออาการปวดในขณะนี้			ปวดปานกลาง รู้สึกทุกข์ทรมานจากอาการปวดพอสมควรมีความกังวลไม่มากนัก ยังมีความรู้สึกว่าสามารถทนได้			ปวดมาก รู้สึกทุกข์ทรมานจากอาการปวดมากทำให้เกิดความกังวลมากและไม่สามารถนอนหลับพักผ่อนได้			ปวดรุนแรงจนทนไม่ไหว

ส่วนที่ 4 แบบสัมภาษณ์วัดระดับคุณภาพชีวิตของหญิงหลังคลอด แบ่งเป็น 2 ตอน คือ ความพึงพอใจและความสำคัญ

ตอนที่ 1

คำชี้แจง จากหัวข้อแต่ละหัวข้อต่อไปนี้โปรดเลือกคำตอบที่แสดงระดับความพึงพอใจในด้านต่างๆ ที่ตรงกับตัวคุณ โดยการทำเครื่องหมาย (×) ที่หมายเลข

คุณมีความพึงพอใจในสิ่งที่จะถามต่อไปนี้เพียงใด	ไม่พึงพอใจอย่างยิ่ง	ไม่พึงพอใจเล็กน้อย	ไม่พึงพอใจเล็กน้อย	พึงพอใจ	พึงพอใจมาก	พึงพอใจอย่างยิ่ง
1. สุขภาพของคุณ	1	2	3	4	5	6
2. ความรุนแรงของความเจ็บปวดที่คุณได้รับอยู่	1	2	3	4	5	6
3. พละกำลังที่คุณมีในการทำกิจวัตรประจำวัน	1	2	3	4	5	6
4. ความสามารถในการควบคุมสิ่งต่างๆในชีวิตประจำวัน	1	2	3	4	5	6
5. ความสามารถในการดูแลตนเองโดยไม่ต้องพึ่งพาความช่วยเหลือจากผู้อื่น	1	2	3	4	5	6
6. รูปร่างหน้าตาสภาพร่างกายของคุณในตอนนี้	1	2	3	4	5	6
7. หน้าอกของคุณในตอนนี้	1	2	3	4	5	6
8. ลักษณะแผลผ่าตัดคลอดบุตรที่หน้าท้องหรือแผลที่ฝีเย็บ	1	2	3	4	5	6
9. การมีเพศสัมพันธ์	1	2	3	4	5	6
10. ความสงบสุขภายในจิตใจของคุณ	1	2	3	4	5	6
11. ความสุขโดยทั่วไปในชีวิตตอนนี้	1	2	3	4	5	6
12. การดำรงชีวิตโดยทั่วไปในตอนนี้	1	2	3	4	5	6
13. ระดับความเครียดหรือความกังวลในชีวิตของคุณที่มีอยู่	1	2	3	4	5	6
14. ความช่วยเหลือความเห็นอกเห็นใจหรือกำลังใจที่คุณได้รับจาก						
a) สามีของคุณ/คู่รัก	1	2	3	4	5	6
b) ญาติ	1	2	3	4	5	6
c) เพื่อนหรือบุคคลอื่น	1	2	3	4	5	6
15. ความสัมพันธ์ของคุณกับสามี/คู่รัก	1	2	3	4	5	6

คุณมีความพึงพอใจในสิ่งที่จะถามต่อไปนี้เพียงใด	ไม่พึงพอใจอย่างมาก	ไม่พึงพอใจปานกลาง	ไม่พึงพอใจเล็กน้อย	พึงพอใจเล็กน้อย	พึงพอใจปานกลาง	พึงพอใจอย่างมาก
16. ความสามารถของคุณในการจัดการกับภาระความรับผิดชอบในครอบครัว	1	2	3	4	5	6
17. สุขภาพของทารกคนนี้	1	2	3	4	5	6
18. การได้รับความช่วยเหลือในการดูแลทารกและบุตรคนอื่นๆ	1	2	3	4	5	6
19. เวลาที่ให้กับบุตรคนนี้	1	2	3	4	5	6
20. เวลาที่ใช้ในการทำงานบ้าน	1	2	3	4	5	6
21. เวลาสำหรับเพื่อนๆ/ญาติพี่น้อง	1	2	3	4	5	6
22. เวลาสำหรับสามี/คู่รัก	1	2	3	4	5	6
23. เวลาสำหรับตัวคุณเอง	1	2	3	4	5	6
24. ความสามารถในการให้นมบุตร	1	2	3	4	5	6
25. สุขภาพของสามี/คู่รักของคุณ	1	2	3	4	5	6
26. ชีวิตประจำวันที่เกิดขึ้นในแต่ละวันของตัวคุณ	1	2	3	4	5	6
27. ที่อยู่อาศัยของคุณ	1	2	3	4	5	6
28. เพื่อนบ้านของคุณ (ในละแวกบ้าน)	1	2	3	4	5	6
29. ความมั่นคงทางการเงิน	1	2	3	4	5	6
30. ความสามารถในการรับภาระทางการเงินของคุณ	1	2	3	4	5	6
31. การเข้าถึงระบบการรักษาพยาบาล	1	2	3	4	5	6
32. ความสะดวกสบายในการเดินทาง	1	2	3	4	5	6
33. สภาพความเป็นอยู่ในบ้าน						
a) ด้านการมีทรัพย์สินไว้ในครอบครอง	1	2	3	4	5	6
b) เศรษฐกิจหรือสถานะการเงิน	1	2	3	4	5	6
c) สิ่งแวดล้อมรอบๆตัวเช่นไม่มีเสียงดังหรือการทะเลาะชกต่อยกัน	1	2	3	4	5	6
34. หน้าที่การงาน						
a) ของสามีหรือคู่รัก	1	2	3	4	5	6
b) ของตัวคุณเอง	1	2	3	4	5	6

ตอนที่ 2

คำชี้แจง จากหัวข้อแต่ละหัวข้อต่อไปนี้โปรดเลือกคำตอบที่แสดงระดับความสำคัญที่คุณให้กับชีวิตในด้านต่างๆ โดยการทำเครื่องหมาย (×) ที่หมายเลข

คุณให้ความสำคัญในสิ่งที่จะถามต่อไปนี้เพียงใด	ไม่สำคัญเลย	ไม่สำคัญมากนัก	ไม่สำคัญค่อนข้างน้อย	ค่อนข้างสำคัญ	สำคัญมาก	สำคัญที่สุด
1. สุขภาพของคุณ	1	2	3	4	5	6
2. ความรุนแรงของความเจ็บปวดที่คุณได้รับอยู่	1	2	3	4	5	6
3. พละกำลังที่คุณมีในการทำกิจวัตรประจำวัน	1	2	3	4	5	6
4. ความสามารถในการควบคุมสิ่งต่างๆในชีวิตประจำวัน	1	2	3	4	5	6
5. ความสามารถในการดูแลตนเองโดยไม่ต้องพึ่งพาความช่วยเหลือจากผู้อื่น	1	2	3	4	5	6
6. รูปร่างหน้าตาสภาพร่างกายของคุณในตอนนี้	1	2	3	4	5	6
7. หน้าอกของคุณในตอนนี้	1	2	3	4	5	6
8. ลักษณะแผลผ่าตัดคลอดบุตรที่หน้าท้องหรือแผลที่ฝีเย็บ	1	2	3	4	5	6
9. การมีเพศสัมพันธ์	1	2	3	4	5	6
10. ความสงบสุขภายในจิตใจของคุณ	1	2	3	4	5	6
11. ความสุขโดยทั่วไปในชีวิตตอนนี้	1	2	3	4	5	6
12. การดำรงชีวิตโดยทั่วไปในตอนนี้	1	2	3	4	5	6
13. ระดับความเครียดหรือความกังวลในชีวิตของคุณที่มีอยู่	1	2	3	4	5	6
14. ความช่วยเหลือความเห็นอกเห็นใจหรือกำลังใจที่คุณได้รับจาก						
a) สามีของคุณ/คู่รัก	1	2	3	4	5	6
b) ญาติ	1	2	3	4	5	6
c) เพื่อนหรือบุคคลอื่น	1	2	3	4	5	6
15. ความสัมพันธ์ของคุณกับสามี/คู่รัก	1	2	3	4	5	6

QUESTIONNAIRE
ON
POSTNATAL QUALITY OF LIFE OF WOMEN WITH NORMAL VAGINAL DILIVERY AND CAESAREAN SECTION
SIRIRAJ HOSPITAL

Description

This questionnaire having the contents of the factors affecting the postnatal quality of life of women consists of four parts as follows:

Part 1: General Data of Respondents

Part 2: Delivery Information and Attitudes towards the Delivery

Part 3: Pain Scale

Part 4: Postnatal Quality of Life divided into Satisfaction and Importance Sections

Part 1: General Data of Respondents

Instruction: Please make a tick (✓) and fill in the blank based on your information and facts

1. Age..... years(full)

2. Marital Status
   - □ Married
   - □ Widowed
   - □ Divorced
   - □ Separated

3. Education
   - □ Uneducated
   - □ Primary Education
   - □ Secondary Education/Vocational Education
   - □ Bachelor's Degree or Equivalent
   - □ Higher than Bachelor's Degree

4. Occupation
   - □ Housewife
   - □ Agriculturist/Farmer
   - □ Worker
   - □ Civil Servant/Official
   - □ State Enterprise/Private Company Employee
   - □ Business Owner
   - □ Others.....

5. Household Income
   - □ Insufficient
   - □ Sufficient
   - □ Sufficient with saving

6. Health of your first child
   - □ Healthy
   - □ He/She needs special care

7. Total number of children (including this baby)..... child/children

8. Abortion
   - □ Never
   - □ Yes Which one? ..... (Please specify)

Part 2: Delivery Information and Attitudes towards the Delivery

Instruction: Please make a tick (✓) and fill in the blank based on your information and facts

1. Method of Delivery
   - □ Spontaneous vaginal delivery (Normal delivery)
   - □ Prepared Caesarean section
   - □ Emergency Caesarean section

Indication of Caesarean section .....(Please Specify)

2. Duration of Parturition

   Beginning of Parturition..... (Please Specify)

   Delivery Time..... (Please Specify)

3. Drugs used during delivery waiting..... (Please Specify)

4. Postpartum Complications
   - □ No
   - □ Yes (You can choose several choices)
     - □ 1. Postpartum hemorrhage
     - □ 2. Inflamed perineal laceration
     - □ 3. Inflamed nipples
     - □ 4. Back ache
     - □ 5. Constipation
     - □ 6. Others..... (Please Specify)

Attitudes towards the Delivery

1. Before the delivery, how did you intend to be labored?

□ Spontaneous vaginal delivery (Go to 1.1)

□ Caesarean section (Go to 1.2)

1.1 Reasons for spontaneous vaginal delivery (You can choose several choices)

□ 1. I'm afraid of operation and anesthesia.

□ 2. I prefer natural delivery.

□ 3. The postpartum recovery is very quick.

□ 4. Spontaneous vaginal delivery is a real and complete maternal expression.

□ 5. The risks and complications of the spontaneous vaginal delivery are lower than the Caesarean section.

□ 6. The baby labored by the spontaneous vaginal delivery is healthier.

□ 7. Lower costs

□ 8. Others..... (Please Specify)

1.2 Reasons for Caesarean section (You can choose several choices)

□ 1. I used to give a birth by the Caesarean section.

□ 2. The baby is in the abnormal posture.

□ 3. Placenta previa

□ 4. I prefer choosing the delivery date.

□ 5. Anxiety / Fear of emergency delivery

□ 6. Avoidance of vaginal tear/perineal laceration

□ 7. Reducing the risks of prolapsed uterus

□ 8. I used to have a bad experience on the spontaneous vaginal delivery e.g. long parturition, injured baby etc.

□ 9. The spontaneous vaginal delivery may later affect the sexual intercourses.

□ 10. I fear that my baby will be injured during the delivery.

□ 11. Today, more women prefer the Caesarean section.

□ 12. Others.....(Please Specify)

2. How did you experience from this delivery?

□ 1. Totally satisfied □ 2. Moderately satisfied

□ 3. Slightly Satisfied □ 4. Dissatisfied

3. In the future if you get pregnancy, which delivery method do you prefer?

□ Spontaneous vaginal delivery

□ Caesarean section

Part 3: Pain Scale Evaluation

Instruction: Please make a cross (×) on the number based on the level/severity of your current pain

Description of Pain Level Scoring

0	1	2	3	4	5	6	7	8	9	10
No Pain	*Slight Pain* No suffering, no anxiety to the current pain			*Moderate Pain* Having moderate sufferings and a mild anxiety (tolerable)			*Severe Pain* Having severe sufferings with higher anxiety and cannot sleep or take a rest.			*Highest Pain*

Part 4: Postnatal Quality of Life divided into Satisfaction and Importance Sections

Section 1

Instruction: Please make a cross (×) on the number based on your level of satisfaction

How are you satisfied with the following statements?	Totally Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Totally Satisfied
1. Your health	1	2	3	4	5	6
2. Severity of your current pain	1	2	3	4	5	6
3. Your energy for daily-life activities	1	2	3	4	5	6
4. Your capability to control everything in the daily life	1	2	3	4	5	6
5. Your ability to take care of yourself without any help from others	1	2	3	4	5	6
6. Your current physical appearance and body competence	1	2	3	4	5	6
7. Your current breast	1	2	3	4	5	6
8. Episiotomy wound or perineal laceration	1	2	3	4	5	6
9. Sexual intercourses	1	2	3	4	5	6
10. Peace of your mind	1	2	3	4	5	6
11. General happiness of your life	1	2	3	4	5	6
12. General living at the present time	1	2	3	4	5	6
13. Level of stress or anxiety	1	2	3	4	5	6
14. Help, sympathy or encouragement received from: a) Husband/Partner (boyfriend)	1	2	3	4	5	6
b) Relatives	1	2	3	4	5	6
c) Friends or other persons	1	2	3	4	5	6
15. Relationship with your husband/partner (boyfriend)	1	2	3	4	5	6

How are you satisfied with the following statements?	Totally Dissatisfied	Moderately Dissatisfied	Slightly Dissatisfied	Slightly Satisfied	Moderately Satisfied	Totally Satisfied
16. Your ability and responsibility to manage the family	1	2	3	4	5	6
17. Health of this baby	1	2	3	4	5	6
18. Getting the help on caring this baby and other child (children)	1	2	3	4	5	6
19. Time spent to this baby	1	2	3	4	5	6
20. Time spent for house works	1	2	3	4	5	6
21. Time for friends/relatives	1	2	3	4	5	6
22. Time for husband/partner (boyfriend)	1	2	3	4	5	6
23. Time for yourself	1	2	3	4	5	6
24. Ability of breastfeeding	1	2	3	4	5	6
25. Health of your husband/partner (boyfriend)	1	2	3	4	5	6
26. Your daily life	1	2	3	4	5	6
27. Your lodging	1	2	3	4	5	6
28. Your neighbors (in nearby areas)	1	2	3	4	5	6
29. Financial security	1	2	3	4	5	6
30. Ability to manage your finance	1	2	3	4	5	6
31. Access to health and nursing services	1	2	3	4	5	6
32. Travelling convenience	1	2	3	4	5	6
33. Household livelihood in terms of: a) Possession of assets and properties	1	2	3	4	5	6
b) Economic or financial status	1	2	3	4	5	6
c) Environment e.g. no loud noise, quarrels , fighting, etc.	1	2	3	4	5	6
34. Occupation of: a) Your husband or partner (boyfriend)	1	2	3	4	5	6
b) Yourself	1	2	3	4	5	6

Section 2

Instruction: Please make a cross (×) on the number based on your level of satisfaction

How are the following statements important to you?	Totally Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Totally Important
1. Your health	1	2	3	4	5	6
2. Severity of your current pain	1	2	3	4	5	6
3. Your energy for daily-life activities	1	2	3	4	5	6
4. Your capability to control everything in the daily life	1	2	3	4	5	6
5. Your ability to take care of yourself without any help from others	1	2	3	4	5	6
6. Your current physical appearance and body competence	1	2	3	4	5	6
7. Your current breast	1	2	3	4	5	6
8. Episiotomy wound or perineal laceration	1	2	3	4	5	6
9. Sexual intercourses	1	2	3	4	5	6
10. Peace of your mind	1	2	3	4	5	6
11. General happiness of your life	1	2	3	4	5	6
12. General living at the present time	1	2	3	4	5	6
13. Level of stress or anxiety	1	2	3	4	5	6
14. Help, sympathy or encouragement received from:						
a) Husband/Partner (boyfriend)	1	2	3	4	5	6
b) Relatives	1	2	3	4	5	6
c) Friends or other persons	1	2	3	4	5	6
15. Relationship with your husband/partner (boyfriend)	1	2	3	4	5	6

How are the following statements important to you?	Totally Unimportant	Moderately Unimportant	Slightly Unimportant	Slightly Important	Moderately Important	Totally Important
16. Your ability and responsibility to manage the family	1	2	3	4	5	6
17. Health of this baby	1	2	3	4	5	6
18. Getting the help on caring this baby and other child (children)	1	2	3	4	5	6
19. Time spent to this baby	1	2	3	4	5	6
20. Time spent for house works	1	2	3	4	5	6
21. Time for friends/relatives	1	2	3	4	5	6
22. Time for husband/partner (boyfriend)	1	2	3	4	5	6
23. Time for yourself	1	2	3	4	5	6
24. Ability of breastfeeding	1	2	3	4	5	6
25. Health of your husband/partner (boyfriend)	1	2	3	4	5	6
26. Your daily life	1	2	3	4	5	6
27. Your lodging	1	2	3	4	5	6
28. Your neighbors (in nearby areas)	1	2	3	4	5	6
29. Financial security	1	2	3	4	5	6
30. Ability to manage your finance	1	2	3	4	5	6
31. Access to health and nursing services	1	2	3	4	5	6
32. Travelling convenience	1	2	3	4	5	6
33. Household livelihood in terms of: a) Possession of assets and properties	1	2	3	4	5	6
b) Economic or financial status	1	2	3	4	5	6
c) Environment e.g. no loud noise, quarrels , fighting, etc.	1	2	3	4	5	6
34. Occupation of: a) Your husband or partner (boyfriend)	1	2	3	4	5	6
b) Yourself	1	2	3	4	5	6

Domain and Items of the maternal postpartum quality of life

Subscale: Psychological/baby

Amount of control you have over your life.

Your peace of mind.

Your happiness in general.

Your life in general.

The amount of worries in your life.

Your baby's health.

Your ability to feed your new baby.

Your day to day life's routine.

Subscale: socio-economic

Your home/apartment/place where your live.

Your neighborhood.

Your financial independence.

Your ability to meet financial obligations.

Your access to medical care.

Your access to transportation.

Your living conditions in the home.

Your materialistic possessions.

Your economic or financial capacity.

Employment work.

Your own employment.

Subscale: relational/spouse-partner

The emotional support you get form your husband/partner.

Your relationship with your husband/partner.

Your husband/partner health.

Your living condition in the home.

Your overall environment/surrounding (no yelling, fights, squabbles)

Subscale: relational/family-friend

Your ability to meet family responsibilities.

The assistance with baby car and other children.

Time for children.

The emotional support your get form:

Your extend family.

Your friend or other people.

Time for maintaining the household.

Time for friends/relatives.

Time for husband/partner.

Time for yourself.

Subscale: health and function

Your health.

The amount of pain that you have.

Amount of energy for everyday activities.

Your ability to take care of yourself without help.

Your physical appearance.

Your breasts.

Your surgical incision or episiotomy.

Your sex life.

BIOGRAPHY

NAME	Miss Manatchanok Maneein
DATE OF BIRTH	May 6, 1981
PLACE OF BIRTH	Suphanburi, Thailand
INSTITUTION	Kuakarun Collage of Nursing, 1999-2003 Bachelor of Nursing Science Mahidol University, 1998-2014 Master of Science (Epidemiology)
SEARCH GRANTS	No research grants
HOME ADDRESS	House No. 126, Village No. 2, Yanyao Sub-district, Samchuk District, Suphanburi, Thailand, 72130 E-mail : mmanatchanok@yahoo.com
EMPLOYMENT ADDRESS	34/1 Thonburi Hospital, Issarapap Road, Bangkoknoi, Bangkok, Thailand, 10700