THE EFFECTS OF THE SQUATTING POSITION ON THE SECOND STAGE OF LABOR IN TERM PRIMIGRAVIDA

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ABSTRACT

The purpose of this experimental research was to study the effects of squatting position on women in the second stage of labor who were admitted to the labor room at Charoenkrungprajarak Hospital, Bangkok during March-April 2004. The pregnant women were 20-35 years old. The gestational age was 37-41 weeks. The pregnant women were without complications. By random sampling, 50 pregnant women were recruited for the experimental groups who were in squatting position during the second stage of labor and 50 pregnant women as the control group who were in supine position with lifted knees. Data was collected from records of labor and interview questionnaires. Data analysis was done by using mean, standard deviation, frequency, percentage, chi-square test and student t-test.

The mean duration of the second stage of labor among parturients in the experimental group who were in squatting position was 32.00 $\pm$ 21.95 minutes compared to 40.54$\pm$26.62 minutes among the control group but with no statistical significance. Parturients in squatting position felt significantly less pain and were more satisfied with the process during second stage of labor when compared with parturients who were supine position. For neonatal outcomes, there were no statistically significant differences in birthweight and Apgar score at 1st and 5th minute between two groups.

Care during second stage of labor should be modified to provide comfort and satisfaction to the parturient. One of the modifications should be that of position during the second stage of labor. Other positions than normal supine, such as a squatting position should be more suitable.

KEY WORDS : PRIMIGAVIDA/ POSITION/ SECOND STAGE OF LABOR

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ผลของท่านั่งยองของการคลอดต่อระยะที่ 2ในหญิงตั้งครรภ์แรก ครบกำหนด (THE EFFECTS OF THE SQUATTING POSITION ON THE SECOND STAGE OF LABOR IN TERM PRIMIGRAVIDA)

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บทคัดย่อ

การวิจัยครั้งนี้เป็นการวิจัยแบบทดลองเรื่อง ผลของท่านั่งยองของการคลอดต่อระยะที่ 2 ในหญิงตั้งครรภ์แรกโดยกลุ่มตัวอย่างในห้องคลอดโรงพยาบาลเจริญกรุงประชารักษ์กรุงเทพมหานคร ตั้งแต่เดือน มีนาคม-เมษายน 2547 โดยมีอายุ 20-35 ปี อายุครรภ์ 37-41 สัปดาห์และไม่มีภาวะแทรกซ้อนในระหว่างการตั้งครรภ์ กลุ่มตัวอย่างได้จากการจับฉลากโดยท่านั่งยอง 50 ราย ท่านอนราบ ชันเข่าซึ่งเป็นท่าที่ใช้อยู่ประจำจำนวน 50 ราย และเก็บข้อมูลโดยใช้แบบบันทึกข้อมูลและจากการสัมภาษณ์ การวิเคราะห์ข้อมูลใช้ ค่าร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐานทดสอบความแตกต่างของค่าเฉลี่ยโดยใช้ t-test, chi-square test และการวิเคราะห์ตัวแปรอิสระ (Independent t-test)

ผลการวิจัยพบว่า ระยะเวลาในระยะที่ 2 ของการคลอดในทั้ง 2 กลุ่มตัวอย่างเปรียบเทียบคือ 32.00$\pm$21.95 นาทีและ 40.54$\pm$26.62 นาที แต่ไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ ผู้คลอดที่อยู่ในท่านั่งยองจะรู้สึกเจ็บปวดน้อยกว่าและมีความพึงพอใจมากกว่าผู้คลอดที่อยู่ในท่านอนราบชันเข่า ในด้านของน้ำหนักของทารกและคะแนนการประเมินทารกแรกคลอดในนาทีที่ 1 และนาทีที่ 5 นั้นไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติในทั้ง 2 กลุ่ม

ในการดูแลหญิงตั้งครรภ์ในระยะที่ 2 ของการคลอดนั้นควรมีปรับปรุงเพื่อให้หญิงตั้งครรภ์รู้สึกสุขสบายและพึงพอใจมากที่สุด และอาจใช้ท่านั่งยองกับท่านอนราบชันเข่าในระยะอื่นของการคลอด

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CHAPTER I
INTRODUCTION

Significance of Problem

Childbirth is a physical and emotional experience. It is also an irrevocable event that changes a woman forever. Families describe the births of their children as they describe other pivotal events in life: marriages; anniversaries, religious events, an even deaths. The more realistic a woman's expectations about the birth are, the more likely she is to have a positive experience. The factors that initiate labor remain unknown despite much research on the subject. Labor begins when forces favoring continuation of pregnancy are overcome by forces favoring its end. Before labor begins, woman usually notice one or more premonitory, or warning, signs that labor is about to begin.(1) In the stage of labor have four stage of labor: The first stage of labor begins when the uterine contractions until the cervix is fully dilatation, the second stage begins when dilatation of the cervix is complete and ends with delivery of the fetus, the third stage begins after delivery the fetus and ends with delivery of the placenta and fetal membranes and the fourth stage is lasts from delivery of the placenta through the first 1 to 4 hours after birth. (1,2)

Pain in the second stage of labor occur from besides the physical, emotional and cognitive factors affecting pain quality and perception, abnormalities of labor may cause and increase in the pain perceived. Pain may be increased in labor complicated by prolongation, occipitoposterior position and borderline cephalopelvic disproportion. Understanding of pain parthways and perception allows a reasonable range of interventions. Care may include pharmacological and non- pharmacological methods of pain relief. (3) In the second stage of labor, position for birth is important no one position is ideal. Each position must be evaluated according to the particular circumstances. Modern delivery tables allow a variety of positions for delivery that promote the woman comfort and give the birth attendant a clear view and good access to the perineum. The woman's body should be supported so she can curl forward and

pull on handles with bearing-down efforts yet relax between contractions. The research has revealed positive and negative aspects of birth in a squatting or sitting position and with the use of the birthing chair. Birthing beds and birthing chairs that permit convension to the traditional lithotomy position are beingused increasingly in labor and delivery units today. In may the traditional delivery table is often for high-risk birth. (4)

In 1743, (5) the obstetrician Pierre Dionis observed that some women were in the habit of giving birth standing, their elbows on a table; others in a chair, others on their knees, others on a mattress by the fire and others in bed. The position taken up by a woman in labor has not only physiological causes, but socio-cultural ones as well. It is indeed only to be expected that certain everyday habits, like squatting or kneeling, should be adopted straight way by women in childbirth. In this way every human group tends to prefer one or two positions which the women pass on from generation to generation. Therefore, childbirth draws on ancient thoughts and feelings about the body. A woman will not always spontaneously adopt the same position in each of her confinements, and that the same woman can take up different positions in the course of a single labor: a change of positions can reduce fatigue and the movement can stimulate the contraction of the abdominal muscles and the progress of the baby through the pelvis. Four positions can be considered as vertical: crouching, kneeling, squatting and standing.

At the labor room in Charoenkrungpracharuk Hospital, Bangkok the pregnant women were mostly primigravidarum and they have little knowledge of labor. This research studied the effects squatting position on the second stage of labor in primigravida, then to describe of the differences between squatting and supine position during second stage of labor.

Objective of the Study

1. To compare maternal outcome i.e. duration of the second stage, pain, satisfaction and type of delivery between parturients deliverd their babies in squatting position and supine position.
2. To compare neonatal outcome i.e. birtweight, Apgar score at 1st and 5th minute between newborn delivered between squatting position and supine position.

Scope of Study

This research studied the effect of squatting and supine position of parturients on second stage of labor. The data were collected between March – April 2004 in Charoenkrungpracharuk Hospital, Bangkok, Thailand. Charoenkrungpracharuk Hospital is a medium sized hospital of 400 beds. It's under the control of the Bangkok Metropolitan Administation. It's not a teaching hospital but is a place of where some medical student and nurse students practice in labor room.

Definitions

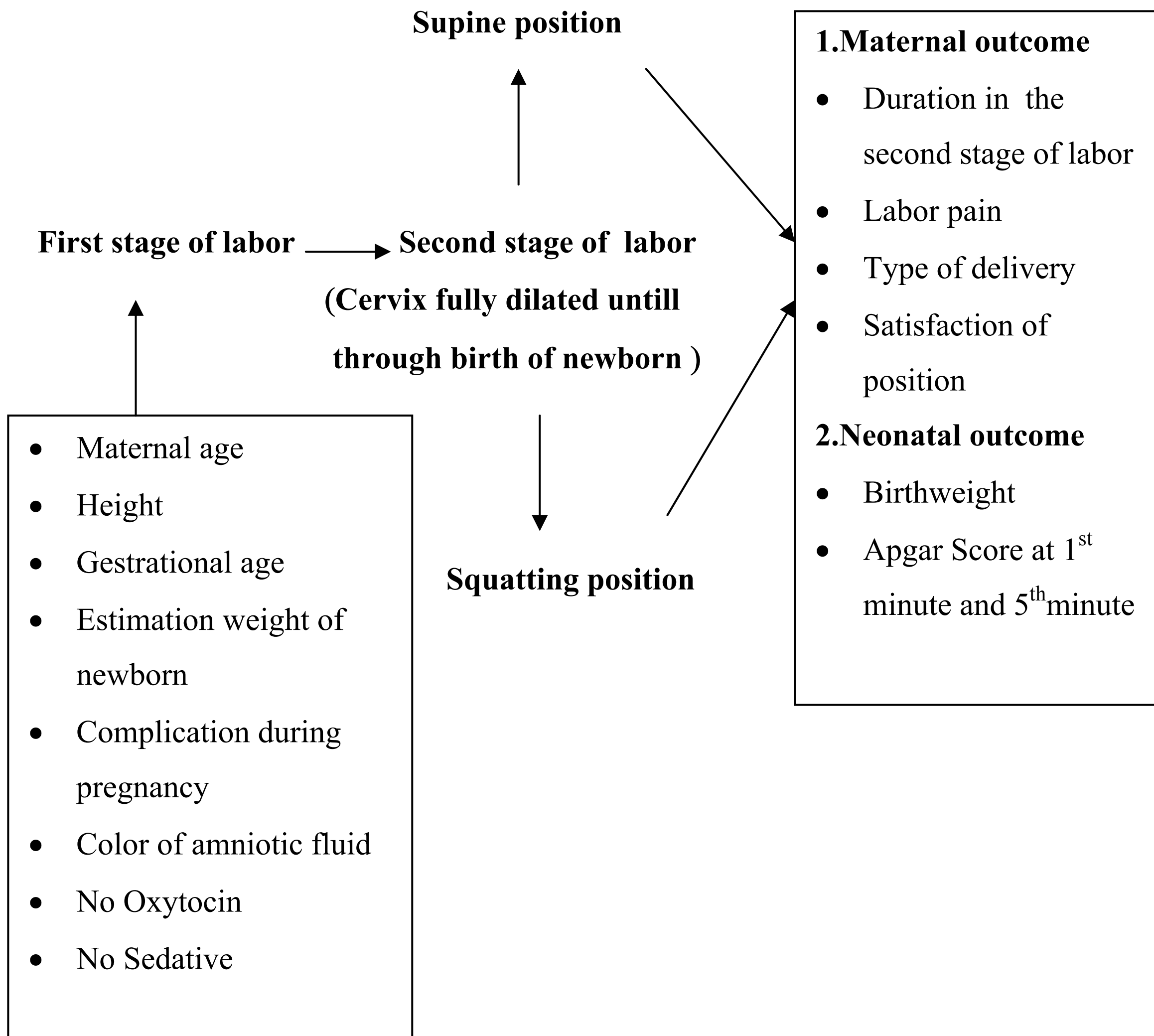
- Primigravidarum means the pregnant woman who were of first pregnancy.
- Squatting means to sit in a crouching position with knees bent and the buttocks on or near the heels.
- Supine means lying on the back or having the face upward.
- Duration of second stage of labor means amount of time from fully cervical dilatation through birth of newborn.
- Satisfaction means the feeling of comfort and happiness and parturients who delivered babies in their study.

Expected outcome and Benefit

The result of research may be useful for the doctors, nurses, mothers and newborns themselves:

1. It will provide a valuable information for the doctors, nurses who have responsibility in taking care for labor. They can teach or opinion pregnant woman to select the appropriate position in the second stage of labor
2. It will be a basic step for further study of the frequency of teaching class

Conceptual Framework



CHAPTER II
LITERATURE REVIEW

This chapter are describe about:

1. Stage and phase of labor.
2. The effects of position in the second stage of labor.
3. Labor pain
4. The assessment of newborn.

Stage and phase of Labor. (1,2)

First stage of labor: Cervical effacement and dilatation occur in the first of labor, begins with the onset of true labor contraction and ends with complete dilatation (10 cm) and effacement (100%) of the cervix. The first stage of labor has three phases and each phase is characterized by typical maternal behaviors. These behaviors vary with the woman's preparation.

Latent Phase. From the beginning of labor until about 3 cm of cervical dilatation. The pregnant women is usually sociable and excited during this early phase of labor.

Active Phase. The cervix dilatation from 4 to 7 cm and effacement of the cervix is completed. The fetus descends in the pelvis, and internal rotation begins.
The pregnant women more anxious and feel helpless as the contractions intensify.

Transition Phase. The cervix dilatation from 8 to 10 cm, and the fetus descends future into the pelvis, increase of bloody show with very strong contraction. The pregnant women may have an urge to push or bear down during contractions, leg tremors, nausea, and vomiting.

Second stage of labor: The second stage begins with complete (10 cm) dilatation and full (100%) effacement of the cervix and ends with the birth of the baby. The fetus descends, pressure of the presenting part on the rectum and the pelvic floor. The pregnant women pushing efforts augment involuntary uterine contractions.

The fetus descends low in the pelvis and the vulva distends with crowing of the fetal head, they feel a sensation of stretching or splitting even if no trauma occur. During the second stage of labor the contraction were strong, but they may feel more in control because they were doing something to complete the process by pushing the baby. The women exerts intense effort to push their baby out. The pregnant women feel tremendous relief and excitement as the second stage ends with the birth of the baby.

Third stage of labor: begins with the birth of the baby and ends with the expulsion of the placenta. When the infant was born, the uterine cavity become much smaller and reduced size decrease the size of the placental site, causing the placenta to separate from the uterine wall.

Fourth stage of labor: This stage was the stage of physical recovery for the mother and infant. It lasts from the delivery of the placenta through the first 1 to 4 hours after birth. Discomfort during the fourth stage usually results from birth trauma or after pains. Ice packs on the perineum limit discomfort and hematoma formation. The fourth stage of labor is an ideal time for bonding of the new family because the interest of both parents and newborn is high. It is also the best time to initiate breastfeeding.

The effect of position in the second stage of labor

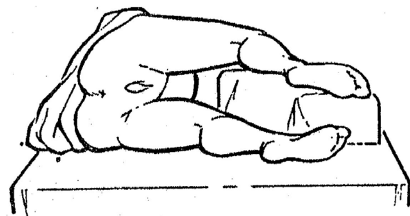
The position of pregnant women may choose to adopt is dictated by several factors:(Figure 1)

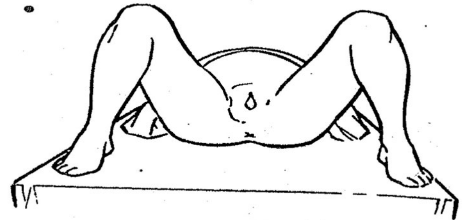
Maternal and fetal condition. If there is any cocern about the well- being of either the women or their baby then need for frequent or continuous monitoring may limit the choices available to their.

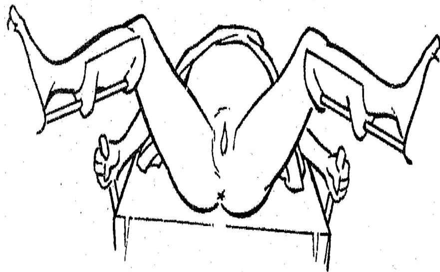
The mother's personal preference should always be a primary consideration.

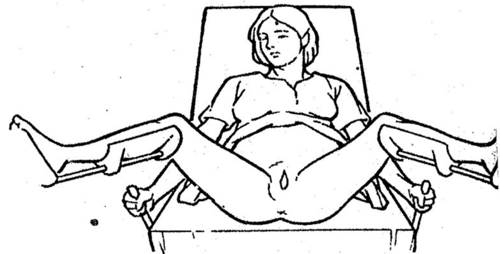
The environmental. For reason of safety and privacy it may not be possible to consider all the alternative positions.

The midwife' considence in her own skill to supervise the delivery when the mother prefers to adopt a posture with which they have little or no experience. (Figure 1)









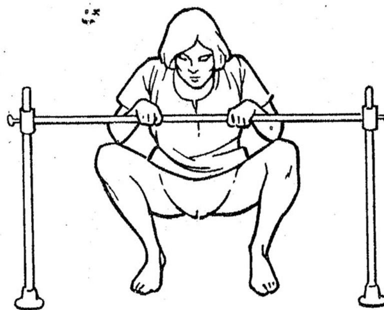


Figure 1 : Position on the 2nd stage of labor

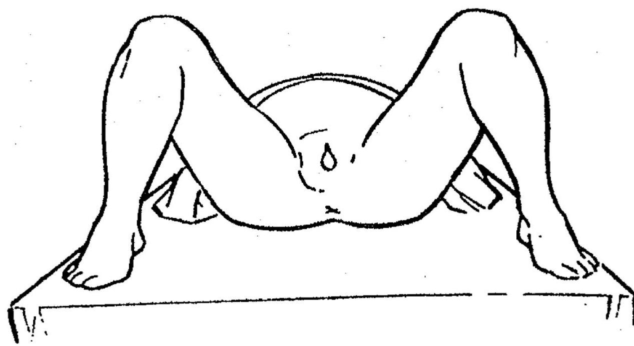
Squatting position. To squat, the mother will bend at the hips and the knees until her bottom is close to the floor. The heels of her feet should remain on the floor throughout the squat. Squatting realigns the pelvis to increase the opening at the bottom by up to 15%. Squatting also uses the force of gravity to help the baby make her way down the birth canal. These can result in a faster second (pushing) stage.

Squatting is used during the second stage of labor. If the mother is stretched enough, as a contraction begins help her move from a sitting or standing position into a squatting position for the duration of the contraction. At the end of the contraction help her resume the most comfortable position for her to allow her muscles to relax.
The pregnant women move into a squat for the contractions. This will give the mother about 2 minutes of squat to 5 minutes of relaxation depending on the frequency and duration of her contractions. The mother don't use the squat during first stage, as it will close the inlet of the pelvis and hinder the baby's progress. For the same reason, the mother should not squat until she has the urge to push. The urge to push is a very good indicator that the baby has move down the pelvis and is at the outlet. Some sample, Squatting positions: If the mother desires to sit in a bed to relax, have her bring her knees back and place the bottoms of her feet on the bed, then help her move forward into a squat for the pushing contraction. Some hospitals and birth centers have beds with a special attachment called a squat bar. This bar is used to support the weight of the mother so her legs do not have to. The mother may have access to a birthing stool. This is a low, u-shaped stool that the mother will sit on, and her body will be in the squat position, but her weight will not need to be supported by her legs. (Figue 2)

Figue 2: The squatting position in labor

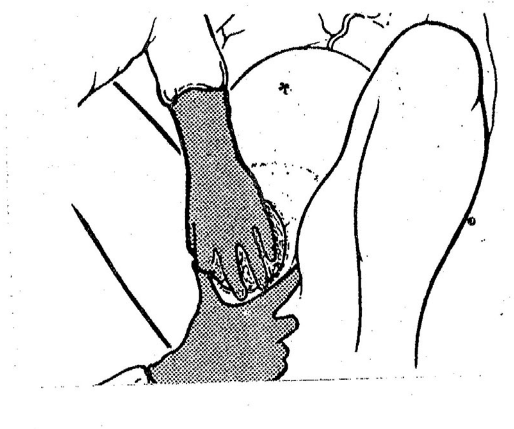
Supine position. This position in relatively new in history and has proven to have little value and much risk and damage to the natural birthing process. When a woman is left alone to birth the mother will usually move around freely, assuming the most comfortable position, such as squatting or on her hands and knees. The mother who labor and birth in these positions tend to report much less pain in their births because a large vain runs down the mother back and the weight of the baby can restrict it's flow, cause problems for both the mother and child. The baby may show signs of fetal distress, which could be resolved by the mother being moved off her back, but which is usual just given more technical treatments.

Gravity is also needed to give birth naturally and in less pain. When the mother on her back, the baby is having to work against gravity to get into the birth canal and out of the body. It also causes the tail bone to be pushed up into the birthing canal which can block the babies head or cause him to need to manuver himself over it. Remind the mother coach or partner that he or she needs to help you to remember to stay off her back. If a vaginal exam or some other procedure is done, it is easy to stay in that position. Your partner should gently remind you that off her back is the best place to be. (6) (Figue3)



Figue3: The supine position in labor

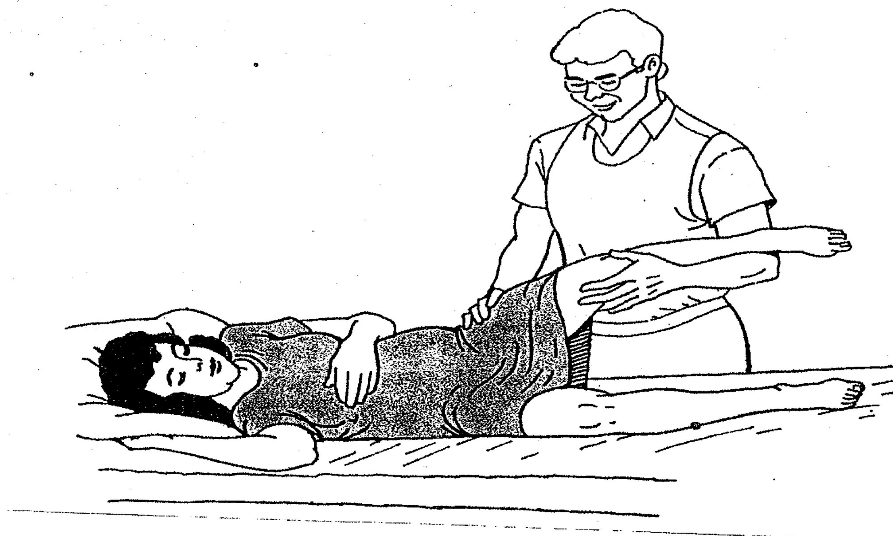
Semirecumbent or supported sitting position. There is evidence to suggest that if the mother lies flat on her back, vena cava compression is increased, resulting in hypotension, and this can lead to reduced placental perfusion and diminished fetal oxygenation. The efficiency of uterine contractions may also be reduced. Unless the mother is well supported, it may be difficult for a mother to direct her pushing efficiently and if the mother semirecumbent, her weight is on her sacrum, which directs the coccix forwards and reduces the pelvic outlet. Dorsal positions after the midwife good access and clear view of the perineum. (Figue 4)



Figue 4: Semirecumbent or supported sitting position

Birthing chairs. Electronically control birthing chairs appeared to be an alternative for supporting women in the squatting position, giving the midwife good vision and access to the fetus. However, there have been problems associated with their use. There appears to be a higher mean blood loss an increase in postpartum haemorrhage in multigravida. This finding may be due to the increased accuracy in measuring blood loss or there may be more actual blood loss from perineal trauma caused by obstructed venous rectum because of pressure in the buttocks and perineum. (3)

Right lateral position. The mother usually turns back into the dorsal position for delivery of the placenta. During this maneuver the pregnant women should keep her knees together to prevent the uterus from fillingwith air;the contracted fundus should be supported by the midwife's hand. (Figue 5)



Figue 5: Right lateral position

Previous record of position during second stage of labor

Gardosi J, Hutson N, B-Lynch C. (1989) Studied prospective, controlled trial of 427 primipara compared the outcome of labor in women randomly allocated to squatting (218) or semirecumbent (209) position. The squatting group had significantly fewer forceps deliveries (9% vs 16%) and significantly shorter second stages (median length of pushing 31 vs 45 min) than the semirecumbent group. There were fewer perineal tears, but more labial tears, in the squatting group. Apgar scores, blood loss, and post-partum vulva edema were similar in both groups. 82% of the women in the squatting group maintained upright positions for most of the second stage, and reported great satisfaction with the supported squatting position. The traditional birth posture of squatting can be easily adapted for modern labor management and has advantages for women in their first labor. (7)

Allahbadia GN, Vaidya PR.(1992) Studied supine position versus ambulation in the first stage and squatting position during the second stage of labor. Their study was comprised of 200 patients both primigravida and multigravida; 100 were kept in the supine position throughout labor and 100 were kept ambulatory in the first stage and adopted the squatting position during the second stage. The study showed a shortening of both stages of labour in the squatting group but the incidence of complications was less in the control group. It was concluded that without proper birthing chairs which can give excellent perineal support, the usual supine position is preferable in their setup. (8)

Allahbadia GN, Vaidya PR. (1993) The study was conducted on 200 normal pregnant women who were randomly classified into 2 groups of 100 cases each. The control group comprised mothers in supine position throughout labor and delivery (46 primigravida and 54 multigravida). The squatting group consisted of cases who were kept ambulatory during the 1st stage and were asked to squat on ordinary delivery cots during the 2nd stage of labor. Third stage of labor was conducted in supine position. The squatting group comprised 42 primigravida and 58 multigravida. There was a mean difference (shortening) of 3 hours in primigravidae and 2 hours in

multigravidae in the duration of 1st stage of labor between the squatting and control groups. In the duration of 2nd stage of labor the mean differences in primigravida and multigravida of the squatting and control groups were 20 and 13.5 minutes respectively. In the squatting group there were 79 normal vaginal delivery, 16 forceps delivery and 5 caesarean sections whereas in the control group there were 80, 18 and 2 cases respectively. Although foetal complications were comparable in both the groups, the incidence of maternal injuries was observed in 14 cases in control group and 38 cases in squatting group. It was concluded that without proper birthing chairs which can give good perineal support, the usual supine position is preferable. (9)

Golay J, Vedam S, Sorger L. (1993) The effects of maternal squatting position for the second stage of labor on the evolution and progress of labor, and on maternal and fetal well-being. Outcomes from 200 squatting births, randomly selected from a sample of 1000, were compared with 100 semirecumbent births, randomly selected from a sample of 300. Data collection was by chart review. The two groups were similar with respect to most antepartal, intrapartal, and socioeconomic variables likely to affect labor outcomes. The mean length of the second stage of labor was 23 minutes shorter in squatting primiparas and 13 minutes shorter in squatting multiparas than in semirecumbent women. Squatting women required significantly less labor stimulation by oxytocin during second stage (P = 0.0016), and they showed a trend toward fewer mechanically assisted deliveries. Significantly fewer and less severe perineal lacerations occurred, and fewer episiotomies were performed in the squatting group (P = 0.0001). No statistically significant differences were found between groups for third-stage complications and infant complications. (6)

Jander C, Lyrenas S. (2001) This study identified several factors associated with anal sphincter tears. Median episiotomy should be avoided. Delivery, while squatting on a low chair, should be used with caution. A woman with one or more risk factors requires caution by birth attendants during delivery. Gynecologists should consider the option of cesarean section instead of vacuum extraction, especially when mid release is needed in the presence of macrosomia. A continuous audit regarding instrumental delivery technique is necessary. (10)

Shorten A, Donsante J, Shorten B. (2002) Multiple regression analysis revealed a statistically significant association between birth position and perineal outcome. Overall, the lateral position was associated with the highest rate of intact perineum (66.6%) and the most favorable perineal outcome profile. The squatting position was associated with the least favorable perineal outcomes (intact rate 42%), especially for primipara. A statistically significant association was demonstrated between perineal outcome and accoucheur type. The obstetrician group generated an episiotomy rate of 26 percent, which was more than five times higher than episiotomy rates for all midwife categories. The rate for tear requiring suture of 42.1 percent for the obstetric category was 5 to 7 percentage points higher than that for midwives. Intact perineum was achieved for 31.9 percent of women delivered by obstetricians compared with 56 to 61 percent for three midwifery categories. Findings contribute to growing evidence that birth position may affect perineal outcome. Women's childbirth experiences should reflect decisions made in partnership with midwives and obstetricians who are equipped with knowledge of risks and benefits of birthing options and skills to implement women's choices for birth. Further identification and recognition of the strategies used by midwives to achieve favorable perineal outcomes is warranted. (11)

Gupta JK, Hofmeyr GJ. (2004) Results should be interpreted with caution as the methodological quality of the 19 included trials (5764 participants) was variable. Use of any upright or lateral position, compared with supine or lithotomy positions, was associated with: reduced duration of second stage of labor (10 trials: mean 4.29 minutes, 95% confidence interval (CI) 2.95 to 5.64 minutes) - this was largely due to a considerable reduction in women allocated to the use of the birth cushion; a small reduction in assisted deliveries (18 trials: relative risk (RR) 0.84, 95% CI 0.73 to 0.98); a reduction in episiotomies (12 trials: RR 0.84, 95% CI 0.79 to 0.91); an increase in second degree perineal tears (11 trials: RR 1.23, 95% CI 1.09 to 1.39); increased estimated blood loss greater than 500 ml (11 trials: RR 1.68, 95% CI 1.32 to 2.15); reduced reporting of severe pain during second stage of labour (1 trial: RR 0.73, 95% CI 0.60 to 0.90); fewer abnormal fetal heart rate patterns (1 trial: RR 0.31, 95% CI 0.08 to 0.98). The tentative findings of this review suggest several possible benefits for upright posture, with the possibility of increased risk of blood loss greater

than 500 ml. Women should be encouraged to give birth in the position they find most comfortable. Until such time as the benefits and risks of various delivery positions are estimated with greater certainty, when methodologically stringent trials' data are available, women should be allowed to make informed choices about the birth positions in which they might wish to assume for delivery of their babies.(12)

Labor pain.

The pain experienced by the woman in labor is caused by the uterine contractions, the dilatation of the cervix and, in the late first stage and the second stage, by the stretching of the vagina and pelvic floor to accommodate the presenting part. These painful stimuli are said to be transmitted by thoracic, lumbar and sacral nerves. The nerve supply of the uterus passes to the last two thoracic nerves, T11 and T12, via the paracervicaj plexus. These nerves transmit the pain caused by cervical dilatation. In the later first stage T10 and the first lumbar nerve, L1, are also involved. The pudendal nerve relays the pain impulses from the stretching of the pelvic floor to sacral nerves S2, S3 and S4. (Figure 6)

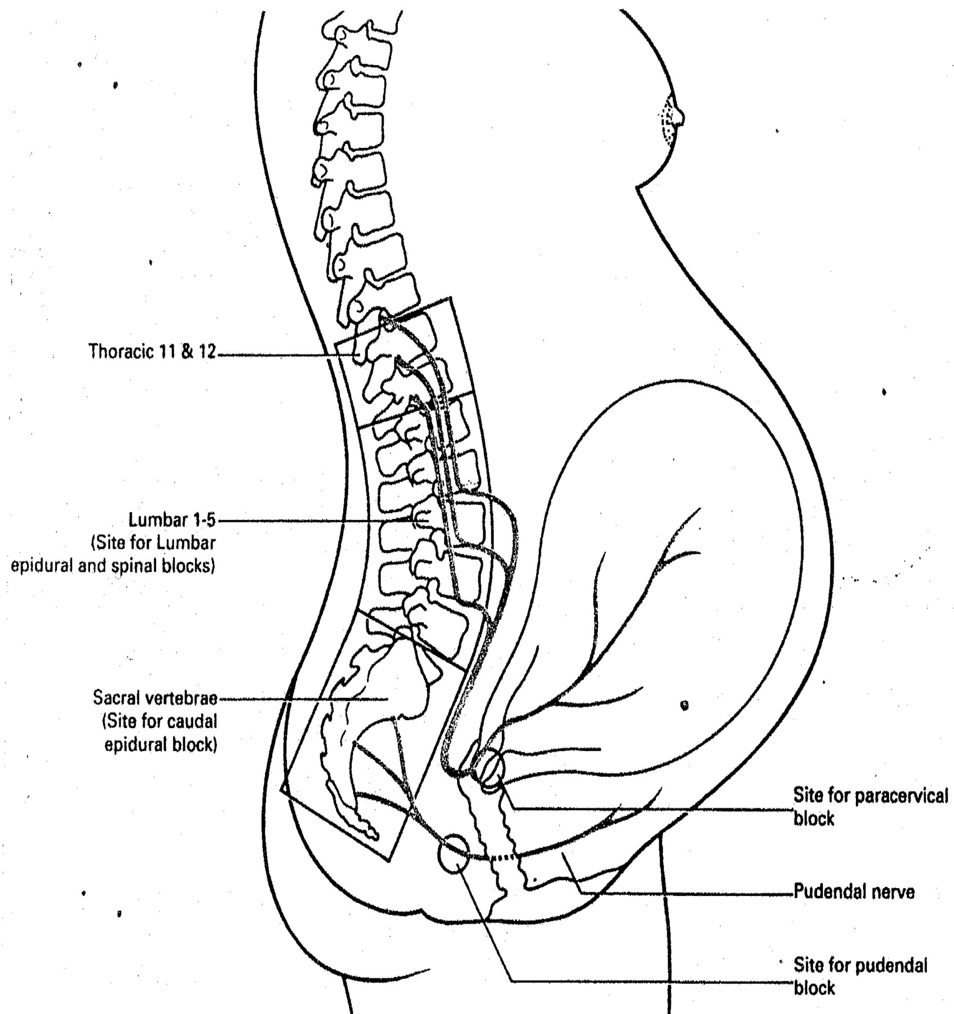


Figure 6: Pain parthways in labor

Understanding of pain pathways, allows a reasonable range of interventions. Care may include pharmacological and non-pharmacological methods of pain relief. Carers can offer:

1. Non- pharmacological support

The environment is important. The room should be furnished comfortably but in such a way that any emergency treatment needed can be carried out swiftly and efficiently.

A companion of the woman's choice should be able to stay with her throughout labor.

Freedom to move about. The pregnant women should be helped to find the position in which she is most comfortable, making full use of the range of the furniture and equipment provided. Thus she may walks about, lie down, sit astride a chair or kneel as she wishes.

Relaxation techniqeus should be encouraged if the woman has learned them antenatally. It is also possible to teach woman simple breathing techniques during the course of labor.

Communication. The woman and her companion should participate in any decision making such as the need for pain relief. The woman is comfortable with, hand holding, back rubbing, massage and cuddling may be appreciated by some woman while others prefer to be left alone.

Bathing may be something for some women as a direct reliever of pain and indirectly through feeling refreshed. Clean clothing should be available if necessary. Mouth cleansing such as teeth cleansing or sucking ice can be most refreshing.

2. Transcutaneous electricical nerve stimulation (TENS)
3. Systemic analgesia
4. Transquillisers
5. Inhalational analgesia
6. Regional and local
7. Alternative method

Previous record of labor pain in the second stage of labor

Field T, (1997) Twenty-eight women were recruited from prenatal classes and randomly assigned to receive massage in addition to coaching in breathing from their partners during labor, or to receive coaching in breathing alone (a technique learned during prenatal classes). The massaged mothers reported a decrease in depressed mood, anxiety and pain, and showed less agitated activity and anxiety and more positive affect following the first massage during labor. In addition, the massaged mothers had significantly shorter labors, a shorter hospital stay and less postpartum depression. (13)

Chang MY, Wang SY, Chen CH. (2002) To research of “This study was randomly assigned to the experimental (n = 30 for received massage) or the control (n = 30 did not received massage) group. This research was compared in latent phase, active phase and transitional phase. In both groups, there was a relatively steady increase in pain intensity and anxiety level as labor progressed. A test demonstrated that the experimental group had significantly lower pain reaction in latent, active and transitional phase. Anxiety levels were only significantly different between the two group in the latent phase. The experimental group of 87 % were reported that massage was helpful, providing pain relief and psychological support during labor. (14)

Waters BL, Raisler J. (2003) The current study investigated the use of ice massage of the acupressure energy meridian point large intestine 4 (LI4) to reduce labor pain during contractions. A one-group, pretest, posttest design was chosen, which used 100-mm Visual Analog Scales (VAS) and the McGill Pain Questionnaire (MPQ) ranked numerically and verbally to measure pain levels; the pretest served as the control. Study participants were Hispanic and white Medicaid recipients who received prenatal care at a women's clinic staffed by certified nurse-midwives and obstetricians. Participants noted a pain reduction mean on the VAS of 28.22 mm on the left hand and 11.93 mm on the right hand. The postdelivery ranked MPQ dropped from number 3 (distressing) to number 2 (discomforting). The study results suggest

that ice massage is a safe, noninvasive, nonpharmacological method of reducing labor pain. (1)

Assessment of the newborn.

The Apgar score is the very first test given to newborn, and occurs right after birth in the delivery or birthing room. Developed in 1952 by an anesthesiologist named Virginia Apgar, the test was designed to quickly evaluate a newborn's physical condition after delivery and to determine any immediate need for extra medical or emergency care.

The Apgar test is usually given to newborn twice: once at 1st minute after birth, and at 5th minutes after birth. There are serious problems with the newborn’s condition and the first two scores are low, the test will be scored for a third time at 10 minutes after birth.

Five factors are used to evaluate the newborn’s condition and each factor is scored on a scale of 0 to 2:

- heart rate (pulse)
- breathing (rate and effort)
- activity and muscle tone
- grimace response (medically known as "reflex irritability")
- appearance (skin coloration)

Doctors, midwives, or nurses add these five factors together to calculate the Apgar score. Although 10 is the highest possible score, newborn almost never receive it because the hands and feet of healthy newborns are usually still slightly bluish and not yet pink at 5 minutes after birth.

Table 1 : Apgar score assessment

Apgar Sign	2	1	0
Heart Rate (pulse)	Normal (above 100 beats per minute)	Below 100 beats per minute	Absent (no pulse)
Breathing (rate and effort)	Normal rate and effort	Slow or irregular breathing	Absent (no breathing)
Grimace (Responsiveness or "reflex irritability")	Pulls away, sneezes, or coughs with stimulation	Facial movement only (grimace) with stimulation	Absent (no response to stimulation)
Activity (muscle tone)	Active, spontaneous movement	Arms and legs flexed with little movement	No movement, "floppy" tone
Appearance (skin coloration)	Normal color all over (hands and feet are pink)	Normal color (but hands and feet are bluish)	Bluish-gray or pale all over

. A baby who scores a 7 or above on the test at 1st minute after birth is generally considered in good health. However, a lower score doesn't necessarily mean that newborn was unhealthy or abnormal. For example, a score between 4 and 6 at 1st minute indicates that your baby needs some special immediate care, such as oxygen to help newborn, breath or suctioning of airways. A newborn with an Apgar score of less than 4 generally requires advanced medical care and emergency measures, like assisted breathing, administration of fluids or medications, and observation in a neonatal intensive care unit (NICU).

At 5th minutes after birth, the Apgar score was recalculated, and the score hasn't improved to 7 or greater, the doctors and nurses will continue any necessary medical care and will closely monitor. Some babies are born with heart or lung conditions or other problems that require extra medical care; others just take a little longer than usual to adjust to life outside the womb. Most newborns with initial Apgar scores of less than 7 will eventually do just fine. It's important for new parents to keep their newborn’s Apgar score in perspective. The test was designed to help health care

providers assess a newborn's overall physical condition so that they could quickly determine whether the baby needed immediate medical care. It was not designed to predict a their long-term health, behavior, or outcome. Very few newborn score a perfect 10, and perfectly healthy babies sometimes have a lower than usual score, especially in the first few moments of life.

Keep in mind that a slightly low Apgar score (especially at 1 minute) is normal for some newborns, especially those born after a high-risk pregnancy, cesarean section, or a complicated labor and delivery. Lower Apgar scores are also usually seen in healthy premature babies, who usually have less muscle tone than full-term newborns in many cases, will require extra monitoring and breathing assistance because of their immature lungs. If your doctor or midwife is concerned about your newborn’s score, they will let know. Doctor or midwife will explain how the baby is doing, what might be causing any problems, and what care is being given - so try not to worry until then. Relax and enjoy the moment.

CHAPTER III
MATERIALS AND METHODS

Research Design

This research is experimental the effect on squatting position on the second stage of labor in term primigravida compared with supine with lifted knees position at Charoenkrungpraruk Hospital, Bangkok.

Study variable

1. Independent variable
   - Squatting position
   - Supine with lifted knees position
2. Dependent variable
   - Second stage of labor
   - Apgar score at 1st minute and 5th minute
   - Pain during second stage of labor
   - Satisfaction of process during second stage of labor
3. Control variable
   - Maternal age
   - Height
   - Gestrational age
   - Birthweight
   - Complication during labor

Inclusion criteria

1. Age between 20-35 years, 150- 170 centimeters of height
2. Gestational age between 37- 41 weeks to count at last menstrual peroid (LMP) or Ultrasound
3. No Sedative
4. No Oxytocin
5. No episiotomy
6. ARM (artificial rupture of membrane) or SRM (spontanrous rupture of membrane) in first stage of labor
7. No complication or abnormality during pregnancy
8. Cooperative with the study

Exclusion criteria

No complication during 2nd stage of labor

Sampling

The study population are women who were admitted into the labor room. Population are purposive sampling and primigravidarum who were admitted into the labor room in Charoenkrungpracharak Hospital, Bangkok. A purposive samples of 100 pregnant women were recruited 50 in squatting position and 50 in supine position and they have quality :

Statistical method

Pilot study was done to determine the process of evaluation of the quality of position in the second stage of labor in primigravida and term pregnancy observation of 30 pregnant women who admitted at the labor room

$$n = \frac{Z^2{}_{\alpha/2}\,\sigma^2}{d^2}$$

n	=	number of population sample
$Z^2{}_{\alpha/2}$	=	1.96 (two side test)
α	=	for type one error = 95 %
σ	=	variance of data population = 12.96
d	=	the most error that is excepted to be when estimation of population sample

$$n = \frac{(1.96^2\,(12.96)^2}{(4)^2}$$

$$n = 40.18$$

$$n = 41$$

Thus, the number of pregnant women in this study was at least 41 patients for each group. Concerning incomplete data or loss, we used the number of 50 in each group.

Instruments

1. Record of labour.
   - General and obstertric characteristic
   - Labor room record
   - Newborn record
2. Interview the patient.
   - Pain score
   - Satisfaction score
3. Bed should be adjusted according to the position of parturients.

Statistical Analysis

Data analysis was done by using SPSS for window version 11.0. The steps of data analysis were as follow;

1. General characteristics and obstetrics of patients between two groups were described using mean and standard deviation for continuous variables, frequency and percentage for categorical variables.

2. Those characteristics were compared between groups using t-test for continuous variables and chi-square test for categorical variables.

3. Comparison of duration of second stage of labor, painful score, Apgar score at 1st and 5th minute and satisfaction score between groups by independent t-test and chi-square test.

CHAPTER IV
RESULT

The purpose of this experimental research is to study the effects of squatting position on the second stage of labor in term primigravida who were amitted at labor room in Charoenkrungprajarak Hospital, Bangkok during March – April 2004. A purposive samples of one hundred pregnant women were recruited, by purposive sampling 50 in the experimental group and 50 in the control group. Data was collected from records of labor and interviewing questionaires. The results are presented in 2 parts as follow.

Part I: Descriptive data general and obstetric characteristic of pregnant women.

Part II: Comparision of duration of second stage of labor, pain score neonatal outcome and parturients' satisfaction score comparie between parturients in squatting position and in supine position.

I : Descriptive data of general and obstetric characteristics.

The average age of pregnant women in both group was 23.00$\pm$3.39 years old. The average weight and height of pregnant women in both groups were 63.05$\pm$4.96 kilograms and 163.29$\pm$3.22 centimeters respectively. The average gestational age in both groups were 38.93$\pm$0.92 weeks. All these characteristics were not significantly different between both group ($p > 0.05$) (Table 2)

I: Descriptive statistics of demographic and obstetric characteristics.

Table 2 : General characteristics of pregnant women in both groups.

Characteristics	Squatting		Supine		
	Number (n=50)	Percentage (100)	Number (n=50)	Percentage (100)	
Ages (years)					
<30	47	94	49	98	χ^2= 2.56
≥30	3	6	1	2	df = 2
$\bar{X}$ ± S.D	23.44 ± 3.58		22.56±3.15		P= 0.27
Heigh (cm.)					
≤ 160	8	16	12	24	χ^2= 1.00
≥ 161	42	84	38	76	df = 1
$\bar{X}$± S.D	163.29±3.46		163.46±3.5		P= 0.31
Weight (kgs.)					
≤ 60	17	34	15	30	χ^2 = 0.18
≥ 61	33	66	35	70	df = 1
$\bar{X}$± S.D	62.52±4.71		63.58±5.18		P= 0.68

Table 2 : General characteristics of pregnant women in both groups. (continue)

Characterestrics	Squatting		Supine		
	Number (n=50)	Percentage (100%)	Number (n=50)	Percentage (100%)	
Gestational age (weeks)					
37	1	2	-	-	
38	19	38	21	42	
39	13	26	14	28	
40	15	30	14	28	$\chi^2 = 1.50$
41	2	4	1	2	df = 4
$\overline{X} \pm$ S.D	38.96±0.96		38.90±0.88		P= 0.82

II: Comparison between type of delivery, duration of second stage of labor,pain score and parturients' satisfaction in squatting position and supine position.

2.1 Ninety four percent of parturient in both groups had normal vaginal delivery. Four percent of parturient in both groups had Vaccuum Extraction and two percent of parturient in both groups had Caesarian section. (Table 3)

Table 3 : Type of delivery between parturients in squatting position and those in supine position.

Characteristrics	Squatting		Supine		
	Number (n=50)	Percentage (100)	Number (n=50)	Percentage (100)	
Type of delivery					
Normal vaginal delivery	47	94	47	94	χ^2= 0.00
V/E	2	4	2	4	df = 2
C/S	1	2	1	2	P= 1.00

2.2 Duration of second stage of labor .

The mean duration of second stage of labor among parturients who were in squatting position was 32.00 ± 21.95 minutes compared to 40.54 ± 26.62 minutes among parturients in supine position. The difference was not statistically significant (t = -1.50, p = 0.136) (Table 4)

Table 4 : Duration of second stage of labor between parturients in squatting position and those supine position.

Position	Duration of second stage of labor		Statistical significance		
	n	$\bar{X} \pm$ S.D	t	df	P-value
Squatting	50	32.00 ± 21.95			
Supine	50	40.54 ± 26.62	-1.50	98	0.136

2.3 Pain score during second stage of labor .

The pain score during second stage of labor among parturients who were in squatting position was 4.88 ± 1.26 which was moderately painful compared to 6.06±1.02 in supine position. The difference was statistically significant (t = -5.16, p = 0.00) (Table 5)

Table 5 : Pain score during second stage of labor between parturients in squatting position and those in supine position.

Position	Pain score		Statistical significance		
	n	$\bar{X} \pm$ S.D	t	df	P-value
Squatting	50	4.88±1.26			
Supine	50	6.06±1.02	-5.16	98	0.00

2.4 Parturients' atisfaction during second stage of labor .

The satisfaction score during second stage of labor among parturient who were in squatting position was 7.12±1.12 compared to 5.28±1.27 among those supine position. The difference was statistically significant. (t = 8.47, p = 0.00) (Table 6)

Table 6 : Satisfaction score during second stage of labor between parturients in squatting position and those in supine position.

Position	Satisfaction score		Statistical significance		
	n	$\overline{X}$ ± S.D	t	df	P-value
Squatting	50	7.12±1.12			
Supine	50	5.28±1.07	8.47	98	0.00

III : Comparison of neonatal outcome between neonates of paturients in squatting position and of those in supine position.

3.1 The birthweight in squatting group was 2984 ± 223.47 compared to 2988+248.78 in group of supine position. The difference was not statistically significant. (t = -0.85, p = 0.93) (Table 7)

Table 7 : Neonatal birthweigths of parturients in squatting position and those in supine position.

Characteristrics	Squatting		Supine		
	Number (n=50)	Percentage (100)	Number (n=50)	Percentage (100)	
Birthweight(gms.)					
<2500	1	2	2	4	
2500-2999	33	66	31	62	
3000-3499	15	30	16	33	χ^2= 0.42
>3500	1	2	1	2	df = 3
X± S.D	2984±223.47		2988±248.78		P= 0.93

3.2 Apgar score at 1st and 5th minute of newborns between squatting group and supine group. The Apgar score at 1st and 5th among parturient who were in squatting position are good the newborn and same in supine position. The difference was not found statistically significant.

CHAPTER V
DISCUSSION

The purpose of this experimental research was to study the effect of squatting position on the second stage of labor in primigravida who attend in labor room at Charoenkrungpracharak Hospital, Bangkok. This discussion will be presented in two parts i.e. the research methodology and the result of this study.

Research Methodology

This research is an experimental study which collected data from pregnant women of 37-41 week of gestational age and maternal age between 20-35 years in labor room at Charoenkrungpracharak Hospital, Bangkok. The experimental study has several advantages i.e. 1) require less time 2) simple process of study and 3) can give the direct answer to the objectives of the study. However this study design also has some disadvantage. The most important one is the ethical problem. The patient may get benefits or adverse effects from the study such as receving better service among experimental group. In this study the patients were advised and volunteered to take past in the study.

In this study we devided the pregnant women into two groups; group 1 were squatting and group 2 were supine position. This study were term primigravida who were amitted at lobor room in Charoenkrungpracharak Hospital, Bangkok. A purposive samples of 100 pregnant women were required 50 in experimental group and 50 in control group. Data was from record of labor and interview the patient.

The sample size was calculated from the accuracy of position in the second stage of labor and records obtained from pilot study. Pilot study was done to determine the process of evaluation of the quality of position in the second stage of labor in primigravida and term pregnancy observation of 30 pregnant women who

admitted at the labor room. Level of statistically significant was determined at $\alpha = 0.05$.

The data analysis was done by using SPSS for window version 11.0. The steps of data analysis were as follow general characteristics and obstetrics of patients between two groups were described using mean and standard deviation for continuous variables, frequency and percentage for categorical variables. Those characteristics were compared between groups using t-test for continuous variables and chi-square test for categorical variables. Comparison of duration of second stage of labor, painful score, Apgar score at 1st and 5th minute and satisfaction score between groups by independent t-test and chi-square test.

Result of the study

When comparison was made between pregnant women who amitted at labor room were two groups: group 1 was squatting position and group 2 was supine position. Result of the study to discribes :

Objective 1: To compare maternal outcome.

1. Duration of the second stage: Among pregnant women who were in labor room. On the 2nd stage of labor to compare between duration of second stage of labor among both groups were 32.00 $\pm$ 21.95, 40.54 $\pm$ 26.62 minutes the difference was not statistically significant ($p = 0.136$, $p>0.005$). In the second stage of labor the pregnant women to weak because they want the heavy power for push the newborn. In the squatting position the pregnant women will bend at the hip and the knees until babies at birth. In the supine group, the pregnant women in these positions tend to report much less pain in their births to lay on the back during labor because a large vain runs down a woman back and the weight of the baby can restrict it's flow, cause problems for both the mother and child.

2. Pain score in the 2nd stage of labor: Compare between among both groups were 4.88 $\pm$ 1.26 with 6.06 $\pm$ 1.02 the difference was statistically significant ($p=0.00$, $p>0.05$). In the pain score from visual score, the pregnant women in the squatting position were less labor pain in the 2nd stage than the supine group. In the supine position woman is on her back, the baby is having to work against gravity to get in to the birth canal and out of the baby. It also causes the tail bone to be pushed up into the

birthing canal which can block the babies head or cause him to need to manuver himself over it.

3. **Parturients' satisfaction :** To compare during second stage of labor among parturients who were in the squatting position was 7.12 $\pm$ 1.12 compare to 5.28 $\pm$ 1.27 among those supine position. The difference was statically significant. ($p=0.00$, $p>0.05$) In the squatting position group was look right in the bathroom and they have feel of heavy power for push the baby. In the same time the supine position is on her back the baby in having to work against gravity to get into the birth canal and out of the baby.

Objective 2 : To compare neonatal outcome.

1. Birthweight : To compare among the both groups who were in the squatting position was 2984 $\pm$ 223.47 compare to 2988 $\pm$ 248.78 kilograms among those supine position. The difference was not significant.

2. Apgar score at 1st and 2nd minute : The apgar score at 1st and 5th minute of newborn between squatting group and supine group were same in both groups.

CHAPTER VI
CONCLUSION

The purpose of this experimental research was to study the effects of squatting position on the second stage of labor in term primigravida who were amitted at labour room in Charoenkrungprajarak Hospital, Bangkok during March – April 2004. The pregnant women has primigravida in 20-35 years old, 37-41 weeks of gestational, 150-170centimeters of height, 2,500-3,500 grams of birth weight and no complication during pregnancy. A purposive samples of 100 pregnant women were recruited, by purposive sampling 50 in the experimental group and 50 in the control group. Data was collected from records of labor and interviewing questionaires. General characteristics and obstetrics of patients between two groups were described using mean and standard deviation for continuous variables, frequency and percentage for categorical variables. Those characteristics were compared between groups using t-test for continuous variables and chi-square test for categorical variables. Comparison of duration of second stage of labour, painful score, apgar score at 1st and 5th minute and satisfaction score between groups by independent t-test and chi-square test.

The study showed the average age of pregnant women in both group was 20-27 years old. The average weight and height of pregnant women in both groups were 60-67 kilograms and 160-166 centimeters respectively. The average gestational age in both groups were 38-40 weeks. The mean duration of second stage of labor among parturients who were in squatting position was 32.00 $\pm$ 21.95 minutes compared to 40.54 $\pm$ 26.62 minutes among parturients in supine position. The pain score during second stage of labor among parturient who were in squatting position was moderately painful more than supine position. The satisfaction score during second stage of labor among parturient who were in squatting position was better than among those supine position. The apgar score at 1st and 5th among parturient who

were in squatting position are good the newborn and same in supine position. This study will provide a valuable information for the doctors, nurses who have responsibility in taking care for labor. They can teach or opinion pregnant woman to select the position in the second stage of labor and will be a basic step for further study of the frequency of teaching class.

Recommendation for application

During the second stage the parturients should be encouraged to suit their comfort to change the position on supine position is not comfort will be not as cpmfortable as other position.

Recommendation for Further Research

The comparison of the other difference position during labor i.e. sitting or standing position.

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APPENDIX

แบบบันทึกข้อมูล

เลขที่แบบบันทึก..................

O ท่านั่งยอง O ท่านนอนหงาย

1. ข้อมูลทั่วไป

อายุ...................ปี G..........P….A… อายุครรภ์..................สัปดาห์

ส่วนสูง..........................เซนติเมตร น้ำหนัก..........................กิโลกรัม

2. ข้อมูลการคลอด

แรกรับ: Dilatation……….cm. St.= …………………. Eff. =……………%

Presentation……………………… Membrane………………..

น้ำคร่ำ O แตก O รั่ว O เจาะ เวลา.............วันที่ ....ลักษณะน้ำคร่ำ..................

ภาวะแทรกซ้อนในระหว่างการคลอด O ไม่มี วิธีการคลอด O NL O V/E

O มี............................. O C/S O อื่นๆ....

การช่วยบรรเทาความเจ็บปวด O มี.. O ไม่มี

ปากมดลูกเปิดหมดเวลา ....น. คลอดเวลา...........................น.

รวมระยะเวลาที่ 2 ของการคลอด ....นาที

วันที่	เวลา	ลักษณะการหดรัดตัวของมดลูก			FHS
		Interval	Duration	Severity	

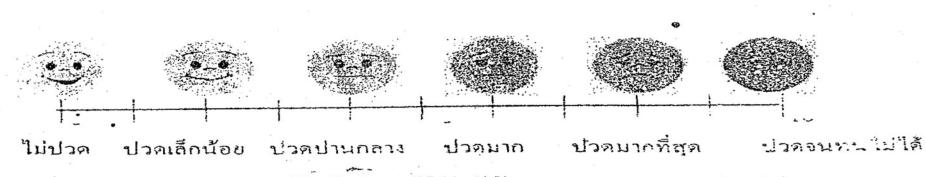
3. ข้อมูลเกี่ยวกับทารก

เด็กเกิดเวลา..........................น.วันที่.......................น้ำหนักทารกแรกคลอด...................กรัม

ทารกอยู่ในภาวะอันตราย O มี............ Apgar score O 1 นาที.......................

O ไม่มี O 5 นาที.......................

4. ความเจ็บปวดในการคลอด



5. **ความพึงพอใจต่อการคลอด**

BIOGRAPHY

NAME	Miss Pornwipa Muangprakaew
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