

# Effect of Taegyo-focused Prenatal Education on Maternal-fetal Attachment and Self-efficacy Related to Childbirth

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**Purpose.** To examine the effect of Taegyo-focused prenatal classes on maternal-fetal attachment and self-efficacy related to childbirth.

**Methods.** Over 4 weeks, 49 women, 20 to 36 weeks of gestation participated in a prenatal program led by the nurse who developed it. In addition to Lamaze content it included; understanding ability of fetus to respond, sharing motivation, purpose of pregnancy, and preconceptions of experiencing childbirth, training in maternal-fetal interaction, writing letters and making a declaration of love to unborn baby. Using a pre-experimental design, data were collected by self-report, before and after program, using Cranley's Maternal-Fetal Attachment Scale (1981), and Shin's (1997) Labor Self-Efficacy Measurement.

**Results and Conclusion.** Paired t-test showed significant changes in scores of maternal-fetal attachment ( $t=6.91, p<.001$ ) and self-efficacy related to childbirth ( $t=10.19, p<.001$ ). Taegyo opens the possibility of integrating Western ideas with Korean traditional health behavior. Incorporation of Taegyo into existing prenatal classes is recommended.

**Key Words :** Taegyo, Attachment, Self-efficacy

## INTRODUCTION

Taegyo (Korean traditional prenatal education) is part of the traditional and cultural health care practices of many childbearing women in Korea. It is a type of self-care behavior that integrates and enhances physical and psychological growth and development for the baby. It is based on the philosophy that a fetus is a human being from the time of conception. Taegyo is based on the idea of facilitating the development of the talents, personality, and intelligence of the fetus, formation of good habits, and future plans and visions for the unborn baby,

and acquisition of the parent role (Chang, Park, Choi, & Chung, 1996). It is performed intentionally in everyday life. Cognitive, affective and behavioral aspects are oriented to the fetus. Many couples believe in its effects and desire to transmit the beneficial effects of Taegyo to their sons and daughters (Choi & Kim, 1995). As couples limit the number of the children that they have, there is a strong desire for optimal health for their children and thus, the number of pregnant women practicing Taegyo is increasing.

Since Korean nurses generally offer disease-focused health care services, they tend to limit their attention to measurable biological indicators (Lee, 1992). In the con-

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text of health care for childbearing women, the woman's own beliefs and feelings are rarely considered, because nurses accept conventional medical care rather than paying attention to the woman's needs and responses. Most prenatal classes in Korea, such as Lamaze classes or Sophrology classes, provide educational content addressing self-care strategies, safety, and nutrition during pregnancy (Jung, 1995), control of anxiety, labor pain and duration of labor, a positive experience of delivery (Kim, H. H., 2000), and strategies to strengthen the mother's role (Noh, 1998). However, few programs have content that shows specific interests for the health care of the fetus.

Although more than 90% of pregnant women in Korea have practiced Taegyo during pregnancy and recognized its practical effects while raising their children (Cho, 1987), there has been little effort to integrate the culture-oriented self-care into a formatted health care program. Further, most previous research data on the effect of Taegyo has been based on personal experiences, which means that the scientific basis of Taegyo has not been established. This study evaluated the effects of Taegyo-focused prenatal classes on maternal-fetal attachment and self-efficacy related to childbirth.

## LITERATURE REVIEW

### *Background of Taegyo*

The philosophy of traditional Korean Taegyo is based on the idea that a fetus is a growing and developing personality. It can be viewed as a caring effort emphasizing the importance of biologic and genetic factors along with the control and protection of the fetal environment in the broadest sense (Chang, et al., 1996). One of the classics on traditional Korean Taegyo is Sajudang Lee's (1801) Taegyo Singi that is based on the premise that "the effects of ten years of education after birth are less than those of the ten months during pregnancy". The practice of Taegyo promotes a variety of caring activities. These include control of the mind to be peaceful and joyful, maintenance of a graceful demeanor; selection of foods by the quality of the ingredients, recipe, and shape, use of discreet judgement regarding objects, pursuit of aesthetic activities to refine the emotions, identification with saints and great persons, and practice in control of, and protection from, sensory and sexual stimulation (Sajudang Lee, 1801). This cultural tradition has been experientially passed on from generation to

generation in the belief that all thoughts, attitudes, and behaviors of a pregnant woman affect the growth and development of her fetus. Family members are also expected to cooperate as a means of controlling the fetal environment (Kim & Ryu, 1998).

Scientific evidence supporting the rationale that Taegyo activities influence the fetus can also be found in Western research studies. Alcohol consumption and smoking by pregnant women have been found to interfere with fetal brain development and significantly increase heart rate and blood pressure in the fetus (Castro, Allen, Ogunyemi, Roll, & Platt, 1993; Guerri & Renau-Piqueras, 1997). Emotional distress in pregnant women is known to increase susceptibility to disease, and low birth weight in the newborn (Nordstrom, Dallas, Morton, & Patel, 1988), and further, environmental noise and vibration also induced irregularity in the fetal heart rate, breathing, and movement (Petrikovsky, Schifrin, & Diana, 1993; Sherer, Abramowicz, Damico, Allen, & Woods, 1991).

On the other hand, when the mother listens to good music or natural sounds, alpha waves of the brain are produced, which subsequently increase the fetal heart rate and facilitate fetal maturation (Park et al., 1999). Verbal stimulation with a low voice has also been reported to help fetal brain development (Fifer & Moon, 1994), and provision of a secure and stable prenatal environment has been found to make a significant difference in the baby's IQ (Devlin, Daniel, & Roeder, 1997). Furthermore, good nutrition for the mother affects the embryo in the early stage of pregnancy, and also promotes the structural and functional development of the fetus (Scrimshaw, 1997). These data illustrate that environmental stimulation of the fetus influences fetal growth and development.

### *Effects of Taegyo*

Since maternal-fetal attachment influences both the psychological and physical health of the fetus, promotion of attachment is a significant goal for nurses when providing health care for childbearing women (Olds, London, & Ladewig, 1988). Maternal-fetal attachment is an affiliation and interaction between mother and baby (Cranley, 1981), and is indicated by a pregnant woman stroking her abdomen, talking to her child, and imagining the sex and appearance of the unborn child (Davis & Akridge, 1987). It is known to be a factor that integrates the identities of each of them, and positively influences

the mother's adaptation to her pregnancy (Cranley, 1981; Muller, 1993).

In comparison to maternal-fetal attachment in Western society as described by Cranley, Chang et al. (1996) describes Taegyo as having five dimensions: maternal-fetal interaction and affiliation, psychological stability for the fetus, personality development for the fetus, intellectual development for the fetus, and promotion of the physical health of the fetus. Taegyo practice is seen as not only influencing physical health, but also as influencing psychological affiliation and interaction between mother and fetus as well as preparing the woman for her role as mother. The pregnant woman and her husband intentionally interact with the fetus through Taegyo practice, and in turn they are stimulated by the reaction of the fetus, and this stimulates further transmission of their affection to their unborn baby (Choi & Kim, 1995; Kim, H.O., 1996). Moreover, pregnant women who practice Taegyo report higher maternal-fetal attachment than those who do not (Chang, Choi, Park, & Chun, 1991).

For effective childbirth education, most prenatal education offers theoretical as well as practical training such as, breathing, relaxation, meditation, and physical exercise. This prenatal education helps women to have a positive attitude toward giving birth, increase self-efficacy for childbirth, and decrease anxiety, labor pain and discomfort (Jung, 1995; Noh, 1998; Park, Kim, & Park, 1996). Taegyo-focused prenatal classes are expected to induce a positive attitude toward giving birth and help women perceived it as a process in which mother and fetus participate actively. Compared to the effects on physical health that are gained from existing prenatal classes, the content of Taegyo-focused prenatal classes stimulates a change in the idea of the fetus. Further, it enhances the ability of the pregnant woman to perceive herself as a mother, and therefore better prepare her for motherhood.

The emphasis on culturally relevant health care is increasing globally, and it is important for nurses caring for Korean women to integrate traditional Taegyo into prenatal health care, and that is, to integrate into their care the perspective of understanding the ingrained beliefs and behaviors of their clients. Taegyo focused prenatal classes will enhance fetal growth and development through maternal fetal attachment, while at the same time helping the pregnant woman to acquire self-care capability and health benefits for herself and also preparing her to be a mother. In Korea, it has been re-

ported that 71.4% of pregnant couples started to practice Taegyo after they became aware of the pregnancy, and 19.4% after they felt fetal movement (Choi & Kim, 1995). This indicates that many couples do not realize the necessity of practicing Taegyo as early as possible, even before the pregnancy. Further, the fact that women were not able to perform Taegyo steadily even though they were aware of the value of it, and that they obtained information on Taegyo mostly by word of mouth (Kim, U.S., 1996), suggests a need to provide formatted and practical Taegyo education for pregnant women. Thus this study was done to evaluate the effects of Taegyo focused prenatal classes on maternal-fetal attachment and self-efficacy related to childbirth.

## METHODS

### *Design and Sample*

This study used a pre-experimental design with pre and posttest. It utilized a convenience sample including 49 pregnant women who attended Taegyo-focused prenatal classes. Women were included if they were between 20 to 36 weeks of gestation, pregnant with a single baby, had no pregnancy complications or other diseases, and agreed to participate in the study. As maternal-fetal attachment becomes stronger at 20 weeks gestation when the mother starts to feel quickening, it was decided to include women with gestation of at least 20 weeks. Participants were recruited from a public health center in Seoul.

The average age of the participants was 29.3 years ( $\pm 3.18$ ) with a range of 24 to 40 years, and the average length of gestation was 31 weeks ( $\pm 4.19$ ) at the beginning of the study. The majority of the participants had completed college or graduate school; 80% ( $n=44$ ) were not employed; 31 (73.8%) were pregnant with their first child. The higher educational level of the participants is considered to reflect their interest in the Taegyo-focused prenatal classes.

### *Implementation of Treatment*

The Taegyo-focused program developed by Chang and colleagues (2001) was used in this study. The classes were conducted by one of the research team members who is a midwife and an experienced maternity nurse with 8 years of experience in managing prenatal classes, and is also a member of the Korean Taegyo Research Association.

The treatment of Taegyo-focused prenatal education was scheduled for 8 hours (2 hours a week for 4 weeks) and used lectures, demonstrations, practice, training, discussion, and sharing of experiences. The classes were held in health education rooms in the public health center. The Taegyo-focused prenatal class provided basic information similar to other prenatal classes plus the unique content of Taegyo (Table 1). Participants were provided brochures containing a checklist, which listed items of Taegyo practices and so they were able to keep records everyday throughout the participation.

### Measurement

Maternal-fetal attachment is defined as the extent to which a woman engages in behaviors that represent an affiliation and interaction with her unborn child (Cranley, 1981). It was measured using the Cranley's Maternal-Fetal Attachment Scale (MFAS), which was translated into Korean and modified by Kim Ki-Yeong (2000) for use with Korean populations. MFAS is com-

posed of a total of 23 items with five subscales; differentiation of self from the fetus, interaction with the fetus attributing characteristics and intentions to the fetus, giving of self, and role taking. Possible scores range from 23 to 92, a higher score indicates stronger maternal-fetal attachment. Cronbach's  $\alpha$  of .85 and external criterion validity were reported (Cranley, 1981). In a Korean study the Cronbach's  $\alpha$  was .91 (Kim, K. Y., 2000) and it was .87 in the present study.

Self-efficacy related to delivery is women's confidence in their ability to cope with labor (Lowe, 1991). It was measured using the Labor Self-Efficacy Measurement (Shin, 1997) that consists of 25 items with a 4-point Likert scale. The subscales are anticipation of childbirth, preparation for childbirth, and fear of childbirth needing reverse scoring. Possible scores range from 25 to 100 and a higher composite score indicates greater self-efficacy related to delivery. Construct validity and criterion-related validity were verified. A Cronbach's  $\alpha$  of .90 has been reported (Shin, 1997), and in the present study the

**Table 1.** Schedule and Content of Taegyo-focused Prenatal Classes

Week Min	1	2	3	4		
10	Breathing, Relaxation, & Maternal Physical	B. R. & MPE	B. R. & MPE	B. R. & MPE		
10	Exercise (B. R. & MPE)		MPE			
10						
10	Writing & Sharing: Motivation & purpose of the pregnancy	Sharing: Perceived Ideas about childbirth		Lecture: Understanding		
10		Watching a childbirth video		& caring for the newborn		
10		Lecture: Understanding childbirth				
10		Milk Break				
10	Lecture: Importance of the internal environment of the fetus	Milk Break				
10		Writing & Sharing: A prayer letter to The newborn child			Milk Break	
10					SMFR	Milk Break
10					Hospital tour (Delivery Rm., Maternity unit, & Nursery)	Taegyo Meditation II
10	Demonstration & Practice: Strengthening the maternal -fetal relationship (SMFR)	Taegyo Meditation I		Declaration of love by the mother		

Cronbach's  $\alpha$  was .89.

**Data Collection**

A structured questionnaire was distributed to participants prior to the beginning of the first week and after the fourth week of the program. The purpose of the study was explained and consent was obtained. Participants were told that they were free to withdraw from the study, and they were allowed to continue to attend the Taegyo-focused prenatal class even if they withdrew.

**Data Analysis**

Data were analyzed using the SAS program. Demographic characteristics and differences in the major study variables before and after the treatment were tested by descriptive statistics and paired t-test.

**RESULTS**

To determine the effect of the Taegyo-focused prenatal class, the paired t-test was utilized. There were significant changes in maternal-fetal attachment scores before and after the treatment (Table 2). Prior to participation in the class, the total score was 71.2, and it increased to 78.7 after four weeks of participation ( $t=6.81, p<.001$ ). In all 5 subscales, significant differences were found between the pre and posttest scores. Score changes were particularly noticeable in the subscales, "attributing

characteristics and intentions to the fetus" and "role taking". Thus, the Taegyo-focused prenatal class made a difference in maternal-fetal attachment.

Paired t-test comparison of the mean scores before and after participation in the classes showed that there was also a significant change in the score of self-efficacy related to childbirth ( $t=10.19, p<.001$ ) (Table 3). The score for self-efficacy related to childbirth was 71.6 before participation, and increased to 84.2 after four weeks of attendance. Of the three subscales, the greatest difference was found in "preparation for childbirth." Thus, it was shown that the Taegyo-focused prenatal classes made a change of the score of self-efficacy related to childbirth.

**DISCUSSION**

This study provides a possibility that Taegyo-focused prenatal education could make a change in maternal-fetal attachment and self-efficacy related to childbirth. Regarding self-efficacy, the results concerning self-efficacy to handle childbirth were found to be consistent with those of existing prenatal classes (Crowe & von Baeyer, 1989; Wutchick, Hesson, & Bakal, 1990). In addition, the unique contents of the Taegyo-focused program were considered to strengthen the maternal-fetal attachment.

It has been addressed that pregnant women need to develop their attachment purposefully, because it is not acquired spontaneously (Verny & Kelly, 1981). Cranley (1992) also stated that nurses must do intervention re-

**Table 2.** Effect of the Taegyo-focused Prenatal Education on Maternal-Fetal Attachment (N = 49)

Variable	Pretest (Mean $\pm$ SD)	Posttest (Mean $\pm$ SD)	t-value
Maternal-Fetal Attachment	71.2 $\pm$ 11.26	78.7 $\pm$ 8.91	6.81**
Subscales			
Differentiation of self from the fetus	9.2 $\pm$ 1.78	9.8 $\pm$ 1.73	- 2.67*
Interaction with the fetus	12.5 $\pm$ 2.27	13.9 $\pm$ 1.73	5.54**
Attributing characteristics and intentions to the fetus	19.7 $\pm$ 3.15	21.6 $\pm$ 1.94	6.70**
Giving of self	18.2 $\pm$ 3.39	19.8 $\pm$ 3.22	5.19**
Role taking	12.2 $\pm$ 2.71	13.6 $\pm$ 2.26	6.61**

\* $p<.01$ , \*\* $p<.001$

**Table 3.** Effect of the Taegyo-focused Prenatal Education on Self-efficacy Related to Childbirth (N = 49)

Variable	Pretest (Mean $\pm$ SD)	Posttest (Mean $\pm$ SD)	t-value
Self-Efficacy Related to Childbirth	71.6 $\pm$ 9.47	84.2 $\pm$ 10.03	10.19*
Subscales			
Anticipation of childbirth	28.0 $\pm$ 4.37	31.6 $\pm$ 3.67	7.92*
Fear of childbirth	27.7 $\pm$ 3.02	25.3 $\pm$ 4.10	- 5.30*
Preparation for childbirth	18.2 $\pm$ 4.06	25.1 $\pm$ 4.69	11.96*

\* $p<.001$

search to promote maternal-fetal attachment because there is no single explanatory model to structure thinking or to guide interventions to promote attachment between pregnant women and their fetuses. In this study, the unique content of Taegyo was considered to have essential attributes that strengthen maternal-fetal attachment. These include understanding the effect of the fetal environment on the fetus, sharing the motivation and purpose of the pregnancy, practice in strengthening the maternal-fetal relationship, removing biases related to childbirth, writing a letter to the unborn child and talking to the child, understanding the newborn's behavior, and a declaration of love by the mother.

In comparison to Cranley's (1981) maternal-fetal attachment which is considered to be emotion-based, the newly developed Taegyo-focused prenatal classes promote cognition-based, goal oriented behavior toward the fetus by the pregnant women. Thus, this study showed how reinforcement of the cognition-based behaviors of Taegyo affected the maternal-fetal attachment in Cranley's concept. Consequently, the results show that traditional Korean health behavior practices by childbearing women can be integrated into existing prenatal classes. Strategies learned from Taegyo-focused prenatal classes show that these classes help pregnant women to increase maternal-fetal attachment and to acquire self-efficacy for childbirth and to become confident about experiencing childbirth.

Compared to the 8-week prenatal programs in Western countries, four-week schedule was used in this study for feasibility of integrating it into existing prenatal programs. As changes in scores of maternal-fetal attachment and self-efficacy related to childbirth were found even in the short time period, it is expected that consistent practice of Taegyo during pregnancy, either in formatted program or in personal practice would make stronger maternal-fetal attachment and confidence during childbirth.

This study has two limitations that need mentioning. Mothers become increasingly attached to their babies as their pregnancy progresses and this study could not exclude the effects of maturation which could have occurred in the 4 weeks. Thus, a comparative study using a control group is recommended to test the effect of Taegyo-focused prenatal classes. In addition, generalizability of the results needs caution due to the small sample size. Future study is suggested to measure the effect of Taegyo-focused prenatal classes on maternal-fetal at-

tachment at each stage of pregnancy.

## References

- Castro, L. C., Allen, R., Ogunyemi, D., Roll, K., & Platt, L. D. (1993). Cigarette smoking during pregnancy: Acute effects on uterine flow velocity waveforms. *Obstet Gynecol*, 81(4), 551-555.
- Chang, S. B., Choi, Y. S., Park, S. M., & Chun, E. M. (1991). Pregnancy planning and maternal fetal attachment. *J Korean Acad Nurs*, 14, 47-61.
- Chang, S. B., Kim, K. Y., & Kim E. S. (2001). Changes of maternal-fetal attachment and self-efficacy for delivery after the Taegyo-perspective prenatal class. *Korean J Women Health Nurs*, 7(1), 1-17.
- Chang, S. B., Park, Y. J., Choi, Y. S., & Chung, C. W. (1996). Factors of the 'Taegyo' of Korean pregnant women: Self care of pregnant women based on oriental folk behavior. *J Korean Acad Nurs*, 26(2), 345-358.
- Cho, D. S. (1987). *A study on the Taegyo behavior of women who had given birth and the health professionals perception of Taegyo*. Doctoral Dissertation, Yonsei University. Seoul, Korea.
- Choi, Y. S., & Kim, H. O. (1995). A survey on the practice of Taegyo among childbearing couples. *Korean J Women Health Nurs*, 1(2), 153-173.
- Cranley, M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nurs Res*, 30(5), 281-284.
- Cranley, M. S. (1992). Response to a critical review of prenatal attachment research. *Sch Inq Nurs Pract*, 6(1), 23-26.
- Crowe, K., & von Baeyer, C. (1989). Predictors of a positive childbirth experience. *Birth*, 16, 59-63.
- Davis, M. S., & Akridge, K. M. (1987). The Effect of promoting intrauterine attachment in primiparas on postdelivery attachment. *JOGNN*, 16(6), 430-437.
- Devlin, B., Daniel, M., & Roeder, K. (1997). The heritability of IQ. *Nature*, 388(31), 468-471.
- Fifer, W. P., & Moon, C. M. (1994). The role of mothers voice in the organization of brain function in the newborn. *Acta Paediatric*, 397(2), 86-93.
- Guerra, C., & Renau-Piqueras, J. (1997). Alcohol, astroglia, and brain development. *Mole Neurobiol*, 15(1), 65-81.
- Jung, G. A. (1995). *Effects on labor, anxiety & labor experience by the prenatal education for primi-para women*. Doctoral Dissertation, Kyungbook University, Daegu, Korea.
- Kim, H. H. (2000). Effect of Sophrology prenatal education on anxiety, and pain in women during labor. *Korean Sophrology Workshop*, June, Seoul.
- Kim, H. O. (1996). *An ethnographic study about Taegyo practice in Korea*. Doctoral Dissertation, Yonsei University, Seoul, Korea.
- Kim, K. Y. (2000). *Effects on maternal attachment by the Taegyo perspective prenatal class*. Master's Thesis, Yonsei University, Seoul, Korea.
- Kim, S. Y., & Ryu, C. S. (1998). A study on Taegyo types of the pregnant women: Q-methodological approach. *J Korean Acad Nurs*, 27(4), 740-751.
- Kim, U. S. (1996). Childbearing culture and women. *Korean Women's Study*, 12(2), 119-153.
- Lee, J. C. (1992). *Double faces of western medicine* (pp.13-15).

Seoul: Hanwool.

- Lowe, N. K. (1991). Maternal confidence in coping with labor: a self-efficacy concept. *JOGNN*, 29(6), 457-463.
- Muller, M. E. (1993). Development of the prenatal attachment inventory. *West J Nurs Res*, 15(2), 199-215.
- Noh, Y. H. (1998). *A study on the effects of Sophrology education for primi-parturient women*. Master 's Thesis, Hanyang University, Seoul, Korea.
- Nordstrom, U. L., Dallas, J. H., Morton, H. G., & Patel, N. B. (1988). Mothering problems and child morbidity amongst mothers with emotional disturbances. *Acta Obstet Gynecol Scand*, 67(2), 155-158.
- Olds, S. B., London, M. L., & Ladewig, P. A. (1988). *Maternal newborn nursing: A family centered approach* (3rd ed.) (pp.1128-1149). Menlo Park, CA: Addison-Wesley Publishing Company.
- Park, M. I., Shin D. R., Moon, H., Lee, J. U., Hwang, Y. Y., & Chang, S. C. (1999). *Effects of acoustic stimuli of brain alpha wave producing sound and natural sound on fetal heart rate in pregnant women*. Abstract, 15th International Fetal Medicine Conference.
- Park, Y. S., Kim, Y. I., & Park, Y. H. (1996). The evaluation of childbirth class and educational need of pregnant women. *Korean J Women Health Nurs*, 2(1), 108-118.
- Petrikovsky, B. M., Schifrin, B., & Diana, L. (1993). The effect of fetal acoustic stimulation on fetal swallowing and amniotic fluid index. *Obstet & Gynecol*, 81(4), 548-550.
- Sajudang, Lee (1801). *Taegyo Singi*. (translated by Y. Lee), Seoul: Munduksa.
- Scrimshaw, N. S. (1997). The relation between fetal malnutrition and chronic disease in later life. *Br Med J*, 315(4), 825-826.
- Sherer, D. M., Abramowicz, J. S., Damico, M. L., Allen, T., & Woods, J. R. (1991). Fetal panting: Yet another response to the external vibratory acoustic stimulation test. *Am J Obstet Gynecol*, 164(2), 591-592.
- Shin, J. W (1997). *Development of the Labor Self Efficacy Measurement*. Master 's Thesis. Korea University, Seoul, Korea.
- Verny, T., & Kelly, J. (1981). *The secret life of the unborn child*. NY: Dell Publishing.
- Wuitchick, M., Hesson, K., & Bakal, D. (1990). Perinatal predictor of pain and distress during labor. *Birth*, 17(4), 186-191.