

DETERMINING THE CHILDBIRTH STORIES OF WOMEN DOING PRENATAL PILATES AND THEIR VIEWS ON THE ADVANTAGES OF PILATES

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ABSTRACT

Introduction: Prenatal Pilates is a low-effect mental exercise providing emotional, mental and physical advantages to the pregnancy and childbirth process. The purpose of this study was to determine the childbirth stories of women doing prenatal Pilates in a fitness center in Northern Cyprus (NC) and their views on the advantages of Pilates.

Material and Methods: This study was carried out as a retrospective, descriptive and relation-seeking study. Target population of the study consisted of pregnant women (n=58) who had enrolled in a fitness center in NC for Pilates between 2016-2018. Among the population, 40 volunteer women regularly attending prenatal Pilates twice a week for at least one month, comprised the study sample.

Results: It was determined that 52.5% of the women had had vaginal delivery. Majority of the women (82.5%) stated, 'it helped me have a more flexible and active pregnancy' and 'it made me happy', (70.0%) 'it helped me have a healthier and more comfortable pregnancy' and 'it enabled me to socialize'. Majority of the women expressed advantages related to the moment of childbirth such as, 'it helped me cope with labor contractions more easily with the help of respiratory breathes' (45.0%). Likewise, 55 % participants chose, 'it has strengthened and built up my stomach muscles faster'.

Conclusion: In this study, it was found that prenatal pilates had greater emotional and mental advantages and the women believed that the least advantageous and the women believed that the least advantageous process was during labor.

Key Words: Exercise, obstetric, prenatal, pilates, pregnancy

INTRODUCTION

Pilates is a type of exercise which requires controlled breathing, muscle control, posture, core (stomach, back and hip muscles) stability, strength and flexibility and comprises both body and mind. Pilates exercises were discovered by Joseph Pilates in the 1920s. Pilates contains six basic traditional principles as concentration, control, centering, fluency, certainty

and breathing (1,2). The Pilates approach focuses on using body muscles actively in order to stabilize the pelvic-lumbar area. Lumbar stabilization exercises can enhance the internal muscle force (3).

A woman's body goes related to the physiologic changes of pregnancy. These changes lead to increased body weight, posture changes (lumbar hyperlordosis etc.), fluid retention in connective

tissue, weakness of joints, ligaments and muscle tensions. They may frequently result in back pain and pubic symphysis pain during pregnancy, as well as many other complaints such as sacroiliac joint pain, muscle cramps, lower extremity disorder, swelling of feet/ankles, carpal tunnel syndrome and imbalance (3,4, 5, 6). Especially, these complaints increase in the third trimester (5).

Prenatal Pilates is a low-effect mental exercise providing emotional, mental and physical advantages to pregnant women. Thus, Pilates may prevent many problems related to pregnancy (5,7). Studies investigating the advantages of Pilates performed during pregnancy on the pregnancy process, labor outcomes and postpartum period, are limited (8,9,10). It is indicated that Pilates is effective on reducing pregnancy-related problems such as holding the spine straight, urinary incontinence, depression, sleep problems, swelling, indigestion, back pain and enhancing maternal mental health (5, 10-12). In addition, prenatal Pilates may affect women's placental and fetal development positively (9,13). In the study conducted by Oktaviani with 40 pregnant women, it was stressed that Pilates was effective on reducing pain experienced in pregnancy and it could be used as an alternative exercise method for the third trimester of pregnancy (3).

Pilates prepare the abdomen and pelvic floor for labor (5). Therefore, considering the advantages of Pilates exercises during labor; it is stressed that abdominal breathing during Pilates will enable women to cope with contractions more easily, push the baby out better, have a more comfortable labor experience and have fewer lacerations in the perineum area (10-14). In the study by Aktan et al. (2021), it was determined that pregnant women doing Pilates exercise and receiving childbirth education had less labor pain, gained less weight during their pregnancy, felt less anxious and the newborns had higher apgar scores in the first minute postpartum (15). In the study conducted by Sarpkaya et al., it was determined that primiparous women receiving childbirth preparation training supported by pregnancy Pilates, had less fear of childbirth, would have vaginal delivery more frequently (9). Likewise, in the same study, the newborns had higher APGAR scores in the first minute postpartum and higher weight of the newborn (9).

In the randomized controlled study conducted by Dias et al. with 50 primiparous women, it was found that Pilates exercise program applied with pelvic floor

muscle contraction did not change the pelvic floor muscle force measured with manometer, but it increased attendance in exercise (16).

We have encountered no study investigating the views of pregnant women doing Pilates on the advantages of Pilates. It is believed to be necessary to conduct randomized controlled studies regarding the advantages of Pilates and determine the views of women on this issue.

The purpose of the study was to determine the childbirth stories of women doing prenatal Pilates in a fitness center in Northern Cyprus and their views on the advantages of Pilates. Within the scope of the study, it was attempted to seek an answer to questions such as, 'what are the childbirth stories of women doing Pilates for at least one month and above in their pregnancy?' and 'what are their views on the advantages of Pilates in pregnancy, labor and postpartum period?'

MATERIAL AND METHODS

Type of the Study

The study was carried out as a retrospective, descriptive study and relation-seeking study. Before this study, written permissions were obtained from the fitness centers and from the women, as well as receiving approval from Scientific Researches Evaluation Ethical Committee of a Near East University (Approval date: 22.01.2019, Number: YDU/2019/65-708).

Target Population and Sample of the Study

Target population of the study consisted of pregnant women (n=58) who had enrolled in a private fitness center in a city of NC for Pilates between November 2016 - December 2018. Reasons for preferring this fitness center were that prenatal Pilates class was regularly conducted in the center by only one international certificate as a Pilates instructor. Classes were held twice a week throughout 2 years and attendance level of pregnant women was higher than other centers. This study was aimed to reach the entire population and the sample of the study consisted of 40 women who regularly attended prenatal Pilates twice a week for at least one month and agreed to participate in the study. A total of 18 women who attended Pilates sessions for less than one month due to ankle and lumbar pain (2 women), time and transportation problems (11 women), risk of preterm birth (4 women) and fetal loss (1 woman),

Table 1. Women's State of Experiencing Problems in Pregnancy, Labor and Postpartum Period and Distribution of Their Problems

	n (40)	%
State of experiencing problems in pregnancy		
Yes	15	37.5
No	25	62.5
Problems experienced in pregnancy (n=15)		
Bleeding	5	33.3
Nausea/vomiting	3	20.0
Reflux	2	13.3
Cramps	1	6.6
Hemorrhoid	1	6.6
Excessive uterus contractions	1	6.6
Inadequate weight gain of infant	1	6.6
Anemia	1	6.6
State of experiencing problems in labor and postpartum period		
Yes	13	32.5
No	27	67.5
Problems experienced in labor and postpartum period (n=13)*		
Infant's respiratory distress and treatment	4	30.7
Development of postpartum infections	3	23.0
Excess pain after c-section	2	15.3
Excessive abdominal pressure	1	7.6
Development of jaundice in infant	1	7.6
Excessive lacerations in the lower area	1	7.6
Capillary vessel lacerations in the eye due to pushing	1	7.6
Problem with nursing	1	7.6
Excessive postpartum bleeding	1	7.6

*Multiple answers were given. Percentages were calculated on the basis of n.

were excluded from the study. In addition, one woman did not agree to participate in the study.

Study Process

Using registration forms of pregnant women; their contact information and whether they were regularly available in attendance lists or not were determined. In the sequential process, they were called and those doing prenatal Pilates for at least one month were invited to the application of the study via e-mail and phone (WhatsApp).

Collection of the Data

Data collection forms consisted of forms related to descriptive characteristics, childbirth stories and the advantages of prenatal Pilates. The forms were developed by the researcher using the literature (9, 13, 17-19). The data collection form related to descriptive characteristics and childbirth stories consisted of a total of 14 questions including short information about descriptive characteristics and childbirth stories of women. The data collection form related to the advantages of prenatal Pilates

Table 2. Distribution of Women's Characteristics Related to Birth Outcomes

Characteristics	n (40)	%
Delivery method		
Vaginal delivery	21	52.5
C-section	19	47.5
Intervention in vaginal delivery (n=21)		
Yes	16	76.2
No	5	23.8
Interventions performed (n=21)*		
Episiotomy	14	66.7
Induction	9	42.8
Fundal pressure	8	38.0
Vacuum	2	9.5
Reason of having a c-section (n=19)		
Unprogressive labor	7	36.8
Breech presentation	5	26.3
Fetal heart rate abnormalities	3	15.8
Head pelvis incompatibility	2	10.5
Doctor's decision	1	5.3
Difficult labor	1	5.3
Infant's birth weight		
Under 3000 grams	5	12.5
3000-3500 grams	21	52.5
Over 3500 grams	14	35.0

*Multiple answers were given. Percentages were calculated on the basis of n.

consisted of a total of 28 views including three sections, regarding the advantages of prenatal, labor, birth, and newborn outcomes.

Evaluation of the Data

The data were evaluated by the researcher performing the percentage, mean calculation and chi-square tests in the SPSS 22 program.

Limitations of the Study

As prenatal classes are limited in the center city of NC, this study was limited to the prenatal Pilates class in only one fitness center. Other limitation of this study is using of a convenient sample.

RESULTS

Age average of the women within the scope of this study was 30.7+ 2.9 years (Min.=25-Max.=40) and 55% had a university education, 40% postgraduate

education. It was determined that many of the women were teacher (27.5%). Examining gravidity and parity characteristic of the participants; it was found that 72.5% were primigravids. Ninety percent of the sample had given birth once, while 30% had experience a pregnancy loss, such as a miscarriage or abortion. It was determined that among the women doing prenatal Pilates, 20% did not regularly do any exercise other than Pilates (Table 1). It was determined that 57.5% of the women within the scope of the study had been regularly doing Pilates for more than 3 months.

Table 1 demonstrates the women's state of experiencing problems in pregnancy, labor and postpartum period and distribution of their problems. It was determined that 62.5% of the women had no problems in their pregnancy, while 67.5% did not experience complications in labor and postpartum period. It was indicated that the most common

problems were bleeding and nausea/vomiting in pregnancy; treated for respiratory distress of infant in postpartum.

Examining the characteristics related to birth outcomes; it was determined that the women were in 39.4±1.2 (min.37-max.42) gestational week on average. More than half of them (52.5%) had had vaginal delivery. Among the women who had vaginal delivery, the most common intervention was episiotomy (66.7%). Among the women having a c-section, it was determined that they mostly suffered from unprogressive labor and breech presentation. This current study revealed 87.5% of neonatal birth weights of over 3000 grams (gm). The infants were 10.4±8.9 (min.1-max.26 months old on average at the moment and 72.5% of the women were still nursing their babies (Table 2). Table 3 demonstrates a comparison of women's characteristics concerning pregnancy, labor and postpartum period with duration of doing Pilates. It was determined that 76% of the women doing Pilates for more than three months had no problems in their pregnancy, whereas 73.3% of the women doing Pilates for less than three months had problems. It was found that there was a statistically significant correlation between the state of experiencing problems in pregnancy and duration of doing Pilates ($p<0.05$). It was found that majority of the women expressing the advantages of doing Pilates in pregnancy, labor and portpartum period had been doing Pilates for 3 months and above; however, the difference was not statistically significant ($p>0.05$). There was no statistically significant difference between the women's state of experiencing problems in labor and postpartum period, delivery method, infant's birth weight and duration of doing Pilates.

Table 4 demonstrates the distribution of the views on the advantages of prenatal, labor and postpartum pilates. Regarding the advantages of prenatal pilates; majority of the women (82.5%) stated, 'it helped me have a more flexible and active pregnancy' and 'it made me happy', (70.0%) 'it helped me have a healthier and more comfortable pregnancy' and 'it enabled me to socialize', (65.0%) 'it has increased my commitment and communication with my baby'. On the other hand, 30% of the women stated that labor pilates had no advantages at all. Among the views of the women expressing the advantages of labor pilates, the first three statements were 'it helped me cope with labor contractions more easily with the help of respiratory breathes' (45.0%), 'it encouraged me to

have vaginal delivery' (42.5%) and 'it contributed to the healthy delivery of my baby' (%40.0), respectively. Examining postpartum advantages; 55.0% of the women stated, 'it has strengthened and built up my stomach muscles faster' and 40% indicated, 'it has enabled me to move faster after c-section'.

DISCUSSION

Although pregnancy and labor are physiological events, the problems experienced or changes in the body may usually affect women's quality of life negatively. In this study, it was determined that majority of the women doing prenatal Pilates did not experience any problems in pregnancy (62.5%), labor and postpartum period (67.5%) (Table 1). In pregnancy, musculoskeletal changes can be encountered frequently and these changes are affected by physical activities (3,4). In Hyun and Jeon's Study, it was found that Pilates increase skeletal muscle and does not cause muscle damage in pregnant women (20). In this study, examining the women's complaints related to the musculoskeletal system in pregnancy; only one woman stated that she had cramps during her pregnancy. In addition, the women stressed the advantages of prenatal pilates for the musculoskeletal system stating that it reduced their back pain (55%), improved their balance (42.5%), reduced their muscle cramps (40%), corrected their posture (15%) and enabled them to have a more flexible and active pregnancy (82.5%). The advantages of prenatal Pilates for physical changes and problems encountered in pregnancy were mostly reported below 55%, which can be associated with the fact that the women did not experience these problems or changes. In this study, it was found that the women doing pilates for more than 3 months experienced fewer problems in their pregnancy compared to those doing pilates for 3 months and below (Table 3), which makes us think that pilates helps women cope with problems in the long term.

Prenatal Pilates provides women with physical advantages, besides emotional and mental advantages (7, 10). Majority of the women doing prenatal pilates (70-100%) stated that pilates had advantages for pregnancy, labor, and postpartum period (Table 3-4). On the other hand, the women believed that the least advantageous process was the moment of childbirth (Table 4). In this study, the women generally mentioned emotional and mental

Table 3. Distribution of Women's Characteristics Related to Birth Outcomes

Characteristics	3 months and below		Above 3 months		Sig. test
	n	%	n	%	
State of experiencing problems in pregnancy^{***}					
Yes	11	73.3	4	26.7	
No	6	24.0	19	76.0	X=9.33, p=0.00*
Advantages of pregnancy pilates					
Yes	17	42.5	23	57.5	
No	0	0.0	0	0.0	
State of experiencing problems in labor and postpartum period					
Yes	7	53.8	6	46.2	
No	10	37.0	17	63.0	X=1.01, p=0.31*
Advantages of Pilates exercises during labor					
Yes	11	39.3	17	60.7	
No	6	50.0	6	50.0	X=0.39, p=0.53*
Delivery method					
Vaginal delivery	9	42.9	12	57.1	
C-section	8	42.1	11	57.9	X=0.00, p=0.96*
Infant's birth weight					
Under 3500 grams	11	42.3	15	57.7	
Over 3500 grams	6	42.9	8	57.1	X=0.00, p=0.97*
Advantages of postpartum pilates					
Yes	17	47.2	19	52.8	
No	0	0.0	4	100.0	X=3.28, p=0.12**

*Pearson's Chi-square Exact Test result.

**Fisher's Exact Test result.

***92,4%, (α , 0.05), Post hoc achieved power result for this parameter

advantages such as having a healthier and more comfortable pregnancy, feeling happy, socializing, having increased commitment and communication with their baby and having less fear of childbirth. In some studies, conducted, it was found that Pilates affected the quality of life positively, improved women's mood, reduced depression, and anxiety (8, 10,15, 17,18). In the study by Sarpkaya Guder et al., it was determined that primiparous women receiving childbirth preparation training supported by pregnancy Pilates, had less fear of childbirth (9). In the meta-analysis study conducted by Fleming et al., it was found that Pilates affected mental health outcomes positively, although there was no adequate evidence about the advantages of Pilates (19). The above mentioned studies support our study result. In

a study conducted with Pilates trainers, the trainers usually mentioned the physical and psychological advantages of Pilates such as strengthening pelvic floor and improving social well-being, which supports this study result (21). In the study by Aslantekin and Alkan (2017), it was indicated that Pilates had positive effects on fatigue, body fat ratio, body fat mass, muscle force, sleep quality and flexibility in pregnant women (8). In this study, it was indicated that Pilates reduced fatigue (45%), controlled weight (42.5%) and increased sleep quality (17.5%). In addition, regarding the advantages of Pilates in prenatal period; majority of the women (82.5%) stated that it helped them have a more flexible and active pregnancy.

Table 4. Distribution of the Views on the Advantages of Prenatal, Labor and Postpartum Pilates

Views	n (40)	%
Views on prenatal period*		
It helped me have a more flexible and active pregnancy	33	82.5
It made me happy	33	82.5
It helped me have a healthier and more comfortable pregnancy	28	70.0
It enabled me to socialize	28	70.0
It increased my commitment and communication with my baby	26	65.0
It reduced my fear of childbirth	24	60.0
It reduced my back pain	22	55.0
It contributed to my baby's healthy development	20	50.0
It reduced my fatigue	18	45.5
It helped me control my weight	17	42.5
It developed my balance	17	42.5
It reduced my muscle cramps	16	40.5
It reduced my labored breathing	11	27.5
It increased my sleep quality	7	17.5
It corrected my posture	6	15.0
It increased my confidence in labor	2	5.0
Views on Labor*		
It had no advantages	12	30.0
It helped me cope with labor contractions more easily with the help of respiratory breathes	18	45.0
It encouraged me to have vaginal delivery	17	42.5
It contributed to the healthy delivery of my baby	16	40.0
It helped me push my baby more easily	14	35.0
It made my labor shorter and easier	12	30.0
It made me active using the pilates ball	7	17.5
It prevented me from having ruptures in the lower area	2	5.0
Views on postpartum period*		
It has had no advantages	4	10.0
It has strengthened and built up my stomach muscles faster	22	55.0
It has enabled me to move more easily after c-section	16	40.0
It has prevented me from having urinary incontinence problem	15	37.5
It has enabled me to lose weight faster	13	32.5
Other**	2	5.0

*Multiple answers were given. Percentages were calculated on the basis of n.

**The answers, 'It has contributed to the development of my arm muscles to carry my baby', 'It has reduced the risk of postpartum depression' were given.

A systematic review and meta-analysis study by Veisy et al. showed that prenatal exercise can reduce the frequency of caesarean section (22). In this study, majority of the women who had had vaginal delivery (52.5%) indicated that Pilates facilitated vaginal delivery. In the study by Sarpkaya Guder et al., it was determined that primiparous women receiving childbirth preparation training supported by pregnancy Pilates, would have vaginal delivery more frequently (9). In the study by Aslantekin and Alkan (2017), it was determined that Pilates affected normal delivery and episiotomy ratio significantly (8). In this study, majority the women reporting advantages for the moment of childbirth, mostly stated that

respiratory breathes helped them cope with labor contractions more easily (Table 4). It is thought that this view was not only limited to women who had had vaginal delivery and the women who had to have a c-section due to unprogressive labor also used respiratory techniques and found it useful. In the study, 35% of the women reported that Pilates was useful for pushing the baby, 30% for having a shorter and an easier labor and 5% for having no ruptures in the lower area. Considering that more than half of the women had had vaginal delivery and considering the frequency of episiotomy; it is possible to state that majority of them expressed positive views about pushing the baby and having a shorter and an easier

labor. In the study by Kazemi et al. (2015), it was determined that pregnant women doing Pilates had greater perineal muscle force and Pilates exercise would be useful for reducing third- and fourth-degree ruptures (23). In the systematic review and meta-analysis study by Lemos et al. (2019), it was found that the Pilates method had no effect on the changes encountered in pelvic floor muscle functions of healthy women (24).

In the literature, studies on Pilates in pregnant women are insufficient and additional verification is needed (6). In this study was found that prenatal pilates had greater emotional and mental advantages, whereas the least advantageous process was the moment of childbirth. Pregnancy Pilates should be popularized, and awareness should be raised that pregnancy is a natural process and exercise is not harmful.

CONCLUSION

The results of this study would be beneficial for childbirth educators. Childbirth educators can refer pregnant to prenatal exercise classes in general, and Pilates, specifically where none exist. It is believed that there is a need for studies investigating childbirth stories and their consequences in larger sample groups with the increase of prenatal Pilates classes.

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Author contribution: Design of the research, literature review, writing, analyzing, final approval.

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Ethical approval: Before this study, written permissions were obtained from the fitness centers and from the women, as well as receiving approval from Scientific Research Evaluation Ethical Committee of a Near East University (Approval date: 22.01.2019, Number: YDU/2019/65-708).

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