Effects of relaxation exercises on the ways of coping with stress and anxiety level in primiparous pregnant women diagnosed with preterm labor[1]

Ayten Arıöz Düzgün[2]
Emel Ege[3]

Abstract

This experimental study aims to evaluate the effects of relaxation exercises on the ways of coping with stress and anxiety level in primiparous women diagnosed with preterm labor.

The study included a total of 60 pregnant women who were admitted to the outpatients clinics of the Department of Obstetrics and Gynecology at a tertiary setting between November 2012 and February 2014. Of these women, 30 were allocated into the intervention group and 30 were allocated into the control group. The Pregnant Women Identity Information Form, Ways of Coping with Stress Inventory, and State-Trait Anxiety Inventory were used as data collection tools.The pregnant women in the intervention group achieved higher scores in the State-Trait Anxiety Inventory in the first assessment and lower scores in the final assessment, and the difference from baseline was significantly different ($p<0.005$). The women in the control group achieved lower scores in the State-Trait Anxiety Inventory in the first assessment and higher scores in the final assessment, and the difference from baseline was significantly different ($p<0.005$). The scores of pregnant women in the intervention group in efficient ways of coping subscale increased as from the baseline ($p<0.005$), whereas there was an increase in the scores of women in the control group in inefficient ways of coping subscale and the difference was statistically significant ($p<0.005$). Our study results suggest that relaxation exercises are effective in reducing anxiety and coping with stress in pregnant women with imminent premature labor.

Keywords: Pregnancy; preterm labor; relaxation exercise; anxiety; stress.

1. Introduction

According to the World Health Organization (WHO), premature labor (PL) is defined as labor that begins before 260th day of gestation (before 37 weeks). Imminent premature labor (IPL) is defined as contractions of uterus that start before 37 weeks of pregnancy (Gilbert and Harmon 2002; Günenç 2007; Beck 2010; Martin 2011). According to the reports of the WHO, preterm labor rates in low-income countries are around 12% on average, and this rate is around 9% in countries with higher income. The prevalence of preterm labor was reported to be 12.2% in the

study by Martin (2011). The prevalence of preterm labor in a study conducted by Ege et al. in our country was reported to be 17.3% (Ege et al., 2009).

There are many factors resulting in preterm labor and several of these factors co-exist in a single patient. Known risk factors for preterm labor include history of premature membrane rupture, past history of preterm labor, past history of cervical surgery, uterine anomaly, short cervical length, infections, low socioeconomic status, polyhydramnios, smoking and substance dependence, multiple gestations (Moore 2003; Reedy 2007; Damus 2008). One of the most important factors resulting in preterm labor is stress. The studies have associated preterm labor and low birth weight to maternal prenatal anxiety (Bastani et al., 2005; Alder et al., 2007). Maternal prenatal stress has been suggested to result in preterm labor by stimulating the placenta and maternal pituitary-adrenal axis (Mackey 2000).

As being a consequence of preterm labor, prematurity is regarded as one of the most important causes of perinatal morbidity and mortality (Gilbert and Harmon 2002; Hagberg 2005; Günenç 2007; Beck 2010; Martin 2011). Organ maturity is the most important complication of preterm labor that has an effect on the infant (Wen et al. 2004; Goldenberg 2002; Iams 2008). Other problems include intravascular or pulmonary hemorrhage, hyperbilirubinemia, increased tendency to infections, anemia, neurological problems, metabolic problems, and insufficiency in regulating body temperature (DiPietro et al., 2003; Yurdakok and Erdem 2004; Fink et al. 2009). Along with these problems, insufficiency of competent care units, paucity of skilled personnel, inability to access modern technical facilities and good care opportunities, and the burden of health care costs on the country's budget are other concerns (Serçekuş and Okumuş 2004; Aksu and Şirin 2007).

Stress must be managed primarily using individual ways of coping to reverse these undesired effects and eliminate unfavorable consequences of stress. In individual strategies of coping with stress, body control and relaxation techniques are important methods in ensuring physical and mental relaxation along with increasing the resistance of the organism against stress (Erganhouse 1999; Aksu and Şirin 2007).The studies have reported that relaxation exercises during pregnancy increased birth weight by prolonging gestational period, decreased the rates of Cesarean section, reduced pain and possessed a parallel favorable effect on the quality of life of patients(Field et al. 2004; Urizar et al 2004; Bastani et al. 2005; Teixeira et al. 2005; Nickel et al. 2006; Aksu and Şirin 2007).

Although stress plays an important role in preterm labor, relaxation exercises have attracted a very little attention as a cost-effective intervention. Midwives and nurses working in the field of prenatal care are encouraged to include relaxation exercises in the care and follow-up of patients with imminent preterm labor (Janke 1999; Aksu and Şirin 2007; Khianman et al., 2011; Fink et al., 2011; Hadımlı 2011). The present study was conducted to evaluate the effects of relaxation exercises on the ways of coping with stress and anxiety level in primiparous women diagnosed with preterm labor.

2. Materials and Methods

Type of Research: The research was designed as an experimental study to evaluate the effects of relaxation exercises on the ways of coping with stress and anxiety level in primiparous women diagnosed with preterm labor.

Place and Time of the Research: The research was conducted on pregnant women who were admitted to the outpatient clinics of the Department of Obstetrics and Gynecology at Necmettin Erbakan University Meram Faculty of Medicine between November 2012 and February 2014 and who were diagnosed with premature labor.

Universe and Sample of the Research: Pregnant women at 28-32 weeks of gestation who were hospitalized in the Department of Obstetrics and Gynecology at Necmettin Erbakan University Meram Faculty of Medicine between November 2012 and February 2014 due to imminent preterm labor comprised the universe of the study. Using G*Power software, number of samples for each group was found to be 25 with an effect size of 0.68, significance level of 0.05, and a power of 0.90 considering the study (Bastani et al., 2005) that reported a mean pretest score of 37.18 and a mean post-test score of 22.71 in State-Trait Anxiety Inventory (STAI). The sample size in each group was set at 30 considering missing data during the study. At the end of the study, the power of the study was found to be 0.95 using G*Power software considering changes in pre-test and post-test score in the intervention group. Particular attention was paid to avoid inclusion of patients diagnosed with preterm labor aged below 18 years or above 35 years, and to include primiparous women with a single fetus and without diagnosis of preeclampsia-eclampsia.

Data Collection Tools: The Pregnant Women Identity Information Form which was developed by the researchers according to literature data, Ways of Coping with Stress Inventory (WCSI), and STAI were used as data collection tools.

The Pregnant Women Identity Information Form was composed of questions inquiring socio-demographic, medical and obstetric characteristics.

Ways of Coping with Stress Scale (WCSI): This 30-item scale developed by Folkman and Lazarus was evaluated for its validity and reliability in Turkey by Şahin and Durak (1995). The relevant study found the following Cronbach's alpha reliability coefficients for the subscales derived from the factor analysis: 0.69 for Confident Self-Approach, 0.63 for Optimistic Approach, 0.72 for Social Support Seeking Approach, 0.67 for Unconfident Self-Approach, and 0.68 for Submissive Approach. The scale has to dimensions that can be termed as problem-focused effective approaches and ineffective emotional directed approaches. Problem-focused effective approaches include self-confident, optimistic and social support seeking approach, whereas ineffective emotional directed approaches include unconfident and submissive approach. The scale is composed of 30 items each scores as 0 "not suitable at all", 1 "not suitable", 2 "suitable", and 3 "completely suitable". The scores of each subscale are calculated separately and total score for the subscale is obtained. Increased total score in a given subscale indicates that the individual uses more that particular coping strategy. Maximum and minimum scores that can be achieved in the subscales range from 0 to 21 for Confident Self-Approach, from 0 to 24 for Optimistic Approach, from 0 to 15 for Social Support Seeking Approach, from 0 to 12 for Unconfident Self-Approach, and from 0 to 18 for Submissive Approach (Şahin and Durak, 1995).

The original STAI was developed by Spielberber et al. (1970) to evaluate state and continuous anxiety level separately and the Turkish version of the scale was tested for the reliability and validity by Öner and Le Compte (1998). As a self-administered questionnaire, this scale contains two different subscales and is composed of 40 items. The STAI contains 20 questions prepared to evaluate how an individual feels at a particular time point and under certain circumstances. Continuous anxiety scale contains 20 questions inquiring the tendency of an individual to experience anxiety. Continuous Anxiety Scale was developed to determine how an individual feels in general. All items in the STAI are rated from 1 to 4 points. Emotions, thoughts and behavior expressed by the items in the STAI are rated as (1) Never, (2) Somewhat, (3) Very Much, and (4) Completely depending on the severity, and the items in the Continuous Anxiety Scale are rated as (1) Never, (2) Sometimes, (3) Often, and (4) Always (Öner ve Le Compte 1998).

Data Collection: The intervention group was prioritized in data collection to avoid interaction between the intervention group and the control group and obtain healthy data. As it is required that the study data must be derived from comparable groups, pregnant women meeting the

selection criteria were included in the control group after completing the study procedures in the intervention group (30 in the intervention and 30 in the control group).

A training manual prepared by the researchers and a Relaxation Exercises CD describing relaxation exercises that was prepared by the Turkish Psychological Association were used as intervention material in the intervention group. The subjects contained in the training manual include pregnancy and stress, ways of coping with stress, benefits of relaxation exercises, practice tips, and circumstances requiring cessation of exercises.

First interview with pregnant women in the intervention group was conducted in the hospital and data were collected after hospitalization using pregnant women identity information form, WCSI, STAI. After administration of pre-test, the patients received first bed-side relaxation training, and they were informed of the basis and importance of performing exercises at home after discharge as described during training, and pregnant women were provided with a CD of relaxation exercises and training manual. They were also given a weekly check list to record exercises at home. After discharge from the hospital, the women were instructed to perform exercises at least three times weekly. After discharge, all pregnant women included in the study were contacted via phone by the researcher 1-2 times a week to remind women of the study procedures and they were checked whether they continued exercises and their questions were answered, if any. After the first training, second and third interviews were conducted for repeated measurements, and WCSI and STAI were administered at home at 2 and 4 weeks. Mode of delivery and birth week were recorded after delivery. After completing the study procedures in the intervention group, pregnant women in the control group were selected according to the criteria and their data were collected.

Data Analysis: The study data were analyzed using SPSS 20.0 software package. In the data analysis, t test and chi-square test were used in the analysis of dependent and independent groups, and analysis of variance was used in repeated measurements, and Bonferroni test was used to evaluate the groups that showed difference.

Ethical Aspects of the Study: For the conduction of this study, a written approval from the hospital and approval of Selçuk University, Selçuklu Faculty of Medicine Hospital, Non-interventional Trials Review and Ethics Committee were obtained and all pregnant women provided a written informed consent. The study was conducted in accordance with the principles of the Declaration of Helsinki.

3. Results

The mean age of the women in the intervention group was 24.8±4.1 years and the mean in the control group was 24.2±3.3 years; 43.3% of the women in the intervention group and 56.7% of women in the control group had graduated from high-school. The duration of marriage was 1.6±1.4 years in the intervention group and 1.4±1.0 years in the control group. The women in the intervention group and the control group were comparable with respect to age, duration of marriage, number of pregnancies, gestational week at the time of inclusion in the study, history of curettage and abortion, desire for pregnancy, educational level, employment, educational level of the partner, and family type (p>0.05).

A comparison of the mean STAI of women in the Intervention Group and the Control Group are presented in Table 1. It was found that there was no difference between means scores of the women in the intervention and control groups in the initial assessment and the mean score of women in the intervention group in the initial assessment was lower than the mean scores in interim and final assessments, and this difference was statistically significant (p<0.001).

There was no difference between mean continuous anxiety scale scores of the women in the intervention and control groups in the initial assessment and the mean continuous anxiety scale score of women in the intervention group in the initial assessment was lower than the mean scores in interim and final assessments, and the difference was statistically significant (p<0.001).

Table 1. Comparison of State-Trait Anxiety Inventory Scores of Women in the Intervention Group and the Control Group

State-Trait Anxiety Inventory	Groups		
	Intervention Group	Control Group	Level of Significance
Initial Assessment	60.9±10.7	64.33±3.6	t:-1.640 p:0.106
Interim Evaluation	54.7±13.9	62.3±6.0	t:-2.725 p:0.010
Final Evaluation	25.5±3.49	68.1±6.8	t:-30.36 p<0.001
Continuous Anxiety Scale			
Initial Assessment	59.7±13.9	61.1±3.5	t:-0.729 p:0.471
Interim Assessment	49.9±11.0	60.7±6.8	t:-4,541 p<0.001
Final Assessment	28.3±3.5	66.5±6.8	t:-27.07 p<0.001

When the WCSI scores of pregnant women in the intervention group were compared (Table 2), there was an increase in the scores of efficient ways of coping subscale as from the baseline (p<0.05), whereas there was an increase in the scores of inefficient ways of coping subscale in the control group and the difference was statistically significant (p<0.05).

Table 2. Comparison of the Ways of Coping with Stress Inventory Scores of Women in the Intervention Group and the Control Group

Ways of Coping with Stress Inventory			Groups		
			Intervention Group	Control Group	Level of Significance
Efficient Approach	**Self-Confident Approach**	Initial Assessment	2.1±3.0	1.1±1.3	t: 1,657 p:0,103
		Interim Assessment	9.5±3.3	6.6±1.2	t: 4,391p<0.001
		Final Assessment	19.4±1.9	5.6±2.0	t:26,763p<0.001
	Optimistic Approach	Initial Assessment	1.4±2.1	0.8±0.6	t:1.450 p:0.152
		Interim Assessment	7.1±2.6	4.9±0.9	t:4.229 p<0.001
		Final Assessment	14.1±1.4	4.3±1.4	t:25.93 p<0.001
	Social Support	Initial Assessment	5.9±1.6	6.0±1.3	t:-0.175 p:0.862
		Interim Assessment	6.7±2.3	5.3±1.1	t:2.786 p:0.008
		Final Assessment	10.1±1.1	4.5±1.2	t:18.01 p<0.001
Inefficient Approach	**Unconfident Approach**	Initial Assessment	5.8±2.3	6.7±1.5	t:-1.782 p:0.80
		Interim Assessment	9.3±3.8	13.6±1.8	t:-5,50 p<0.001
		Final Assessment	2.2±1.3	15.9±3.2	t:-21.16p<0.001
	Submissive Approach	Initial Assessment	4.0±1.6	4.2±1.6	t:-0.469 p:0.641
		Interim Assessment	8.5±1.7	8.6±1.5	t:-0.233 p:0.817
		Final Assessment	7.3±1.8	9.3±2.2	t-3.741 p<0.001

The mean birth week was 37.8 weeks in the intervention group and 37.1 weeks in the control group (Table 3). There was a 1-week difference in the birth week of women in the intervention group; however, there was no statistically significant difference between the two groups with respect to the length of pregnancy (p>0.05)

Tablo 3. Labor Characteristics of the Women Included in the Study

Descriptive Features	Groups				Level of Significance
	Intervention Group (n:30)		Control Group (n:30)		
	X±SD		X±SD		
Birth Weeks	37.8±1.1		37.1±0.7		t:2.72 p:0.59
Mode of Delivery	n	%	n	%	
Normal vaginal delivery	7	23.3	6	20.0	X²:0.98
Cesarean	23	76.7	24	80.0	p:0.500
Total	30	100.0	30	100.0	

*Chi-square Fisher's Exact Test Result

Dıscussıon

In the present study, we found no statistically significant difference between women in the intervention group and the control group with respect to age, duration of marriage, perceived economic status, educational level, employment, educational level of the partner, family type, number of pregnancies, previous history of curettage and abortions, and their desire for pregnancy (p>0.05). This result indicates that the women in the intervention group and the control group had comparable characteristics.

However, there was a significant difference in the STAI and continuous anxiety scores f women in the control group compared to baseline values, indicating the level of anxiety and fear towards delivery and baby as labor approaches (Table 1). Pregnancy period is known to be a special phase of life during which pregnant women experience serious mental alterations in addition to biological and physiological changes (Kuğu and Akyüz 2001; Kaplan and Bahar 2006; Taşkın 2009). These data indicate that healthcare professionals dealing with the follow-up of pregnant women should not overlook mental changes in the women while focusing on physiological and biological changes in cases with imminent preterm labor which poses a risk for the mother and fetus.

Bastani et al. (2005) found a significant decrease in the STAI scores of pregnant women that practiced relaxation exercises. Chuang et al. (2012) reported a remarkable decrease in the STAI scores of women in the experimental group that performed relaxation exercises compared to the control group. Similarly, Janke (1999) suggested efficiency of relaxation exercises in preventing preterm labor. Aksu and Şirin (2007) reported significant differences in vital findings of pregnant women in the experimental group before and after performing relaxation exercises.

The mean scores of pregnant women in the intervention group in the WCSI (Table 2) suggest that relaxation exercises in women with imminent preterm labor proved to be efficient in coping with anxiety and stress. The women in the intervention group more frequently used efficient ways of coping with stress, whereas women in the control group usually used inefficient ways of coping. The finding that pregnant women in the intervention group that performed relaxation exercises developed useful ways of coping with stress and presence of a significant difference between the groups suggest that relaxation exercises are an effective means of coping with stress. This result supports the finding that relaxation exercises are easily applicable, cheap and efficient methods that can be administered by the healthcare professionals in the hospital setting to improve

healthy coping responses of individuals. Based on these findings, relaxation exercises were found to be effective to improve skills of coping with stress in pregnant primiparous women diagnosed with imminent preterm labor.

When delivery characteristics of the women included in the study were evaluated (Table 3); there was a 1-week difference in the birth week of women in the intervention group; however, there was no statistically significant difference between the two groups with respect to the length of pregnancy. Aksu and Şirin (2007) evaluated the effects of relaxation exercises on the length of pregnancy in pregnant women diagnosed with imminent preterm labor and they reported approximately 1-week difference in the birth week of women in the experimental group when compared to the control group. In the study by Janke (1999), the mean birth week was reported to be 38.6 weeks in the experimental group and 37.5 weeks in the control group. These data suggest favorable effects of relaxation exercises on the birth week, although they still remain insufficient. Hence, they highlighted the importance of evaluating other risk factors along with administering the relaxation exercise to sustain a healthier pregnancy period.

In the present study, 76.7% of the women in the intervention group and 80% of the women in the control group delivered by Cesarean section. There was no difference between the intervention and control groups with respect to the mode of delivery. Bastani (2005) reported that relaxation exercises positively affected gestational period and reduced the rate of delivery by Cesarean section. The studies in the literature reported that regular relaxation exercised prolonged the duration of gestational period, increased the birth weight, and reduced the rate of delivery by Cesarean section(Field et al. 2004; Teixeira et al. 2005; Urizar et al.2004; Nickel et al. 2006). Higher rates of delivery by Cesarean section in the present study compared to the average data for Turkey (51.4%) (TNSA 2013) can be explained by higher rates of high-risk pregnant women who delivered their babies by Cesarean section.

As a result, high-risk pregnant women are advised to have bed rest at home or in the hospital. Bed rest positively affects the status of fetus; however, it may represent a physical and psycho-social stress factor for the women, and thereby affect all body systems. The ways of coping with stress to change conditions or reactions to that particular condition are known to be important in reducing stress and improve the quality of life(Şahin 1994; Manzoni et al. 2008; Morton et al. 2009). In prenatal care of pregnant women, midwives and nurses should also embrace the role of a counselor to inform and support women about their problems in addition to their roles in delivering examination and treatment services.

Conclusion and Recommendations
The following conclusions were drawn from the current experimental study that was designed to evaluate the effects of relaxation exercises on the ways of coping with stress and anxiety level in primiparous women diagnosed with preterm labor.
- Relaxation exercises caused further reduction in the continuous and the STAI scores, compared to the control group,
- Relaxation exercises favorably affected ways of coping with stress and increased the strength to use efficient ways of coping,
- Relaxation exercises prolonged gestational period approximately 1 week in the preterm labor group compared to the control group.

Following recommendations can be generated based on the current results;
- Pregnant women diagnosed with imminent preterm labor and advised to have bed rest should be informed of relaxation exercises to get through this interval in a healthier and non-stressful manner,
- In cases of imminent preterm labor, nurses and midwives should consider incorporating medical therapy with relaxation exercises,

- Inclusion of the subject of relaxation exercises in in-service training delivered in the scope of prenatal care to midwives and nurses working at the gynecology and obstetrics clinics,
- Creation of suitable environment for performing relaxation exercises in gynecology and obstetrics clinics,
- And, studies on larger group of patients covering a longer period must be conducted and the results drawn from the studies must be reflected to the clinical and on-site practice.

Limitations

This study is limited to pregnant women in the university hospital, the results can be generalized only for this group. Working in a larger group may increase the effectiveness of the results.

REFERENCES

Aksu, H., Şirin, A. (2007). Preterm eylem tanısı konmuş gebelerde solunum ve progressif egzersizlerin gebelik süresine etkisi. Turkiye Klinikleri J Gynecol Obst, 17, 368-75.

Alder, J., Fink. N., Bitzer, J., Hoesli, I., Holzgreve, W.(2007). Depression and anxiety during pregnancy: a risk factor for obstetric,fetal and neonatal outcome? A critical review of the literature. J. Matern. Fetal Neonatal Med., 20, 189-209.

Bastani, F., Hidarnia, A., Kazemnejad, A., Vafaei, M., Kashanian, M.A. (2005). Randomized controlled trial of the effects of applied relaxation training on reducing anxiety and perceived stress inpregnant women. J. Midwifery Womens Health, 50,36-40.

Beck, S., Wojdyla, D., Say, L., Betran, A.P., Merialdi, M., RequejoJ, H.(2010). The worldwide incidence of preterm birth: a systematic review of maternal mortality and morbidity. Bulletin of the World Health Organization, 88,31–8.

Chuang, LL., Lin, LC., Cheng, PJ., Chen, CH., Wu, SC., Chang, CL. (2012). The effectiveness of a relaxation training program for women with preterm labour on pregnancy outcomes: a controlled clinical trial. Int J Nurs Study, 49, 257-64.

Damus, K. (2008). Prevention of preterm birth: a renewed national priority. Current Opinion in Obstetrics &Gynecology, 20, 590-596

DiPietro, JA., Costigan, KA., Gurewitsch, ED.(2003). Fetal responseto induced maternal stress.Early Hum. Dev.74, 125-138.

Ege, E., Akın, B., Altuntuğ, K., Arıöz, A., Koçoğlu, D. (2009). Spontan preterm doğum sıklığı ve ilişkili faktörler. Türk Jinekoloji ve Obstetrik Derneği Dergisi,6,197-205.

Erganhouse, DJ.(1994). A nursing model for a community hospital preterm birth prevention program. JOGNN, 23,756-64.

Field, T., Diego, M., Hernandez –Reif, M. (2006)Prenatal depression effects on the fetus and the newborn. Infant Behav Dev, 27,216-29.

Fink, NS., Urech, C., Berger, CT., Hoesli, I., Holzgreve, W., Bitzer, J., Alder, J. (2010). Maternal laboratory stress influences fetal neurobehavior: cortisol does not provide all answers. J. Matern.Fetal Neonatal Med. Early, June 23(6), 488-500.

Gilbert, ES., Harmon, JS.(2002). Yüksek riskli gebelik ve doğum, Çev. Ed. Taşkın L. Palme Yayıncılık, Ankara, 540-581.

Goldenberg, RL.(2002). The management of preterm labor. Obstet Gynecol 100,1020-37.

Günenç, B.(2007). Preterm eylem ve tokoliz. Yüksek riskli gebeliklerde tanı ve tedavi protokolleri,Çev. Ed. Göl, K. Atlas Kitapçılık, Ankara, 479-494.

Türkiye Nüfus ve Sağlık Araştırmaları (2008). Erişim Tarihi: 11.06.2016 Erişim Adresi: http://www.hips.hacettepe.edu.tr/TNSA2008-AnaRapor.pdf

Hadımlı, A. (2011). Hemşirelik bakımının erken doğum tehdidi tanısı alan gebelerin gebeliklerine uyumuna etkisi, Doktora Tezi, Ege Üniversitesi Sağlık Bilimleri Enstitüsü, İzmir.

Hagberg, H., Jacobsson, B.(2005). Brain injury in preterm infants--what can the obstetrician do? Early Hum Dev, 81,231-5.

Iams, JD., Romero, R., Culhane, JF., Goldenberg, RL. (2008). Primary, secondary, and tertiary interventions to reduce the morbidity and mortality of preterm birth.Lancet.,12 ,164-75.

Janke, J.(1999). The effect of relaxation therapy on preterm labor outcomes. Journal of Obstetric, Gynecologic and Neonatal Nursing,28,255-263.

Kaplan, S., Bahar, A., Sertbaş, G. (2006).Gebelerde doğum öncesi ve doğum sonrası dönemlerde durumluk kaygıyı düzeylerinin incelenmesi. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi,9,45-53.

Khianman, B., Pattanittum, P., Thinkhamrop, J., Lumbiganon, P. (2012). Relaxation therapy for preventing and treating preterm labour. Cochrane Database Syst Rev. ,15(8):45-51

Kuğu, N., Akyüz, G.(2001). Gebelikte ruhsal durum. C. Ü. Tıp Fakültesi Dergisi,23,61-64.

MacKey, MC., Williams, CA., Tiller, CM. (2000). Stress, pre-term labour and birth outcomes. Journal of Advanced Nursing,32,666– 674.

Manzoni, GM., Pagnini, F., Castelnuovo, G., Molinari, E.(2008). Relaxation training for anxiety: a ten-years systematic review with meta-analysis. BMC Psychiatry 8,1-12.

Martin, JA., Hamilton, BE., Ventura, SJ., Osterman, MJ., Kirmeyer, S., Mathews, TJ.(2011). Births: final data for 2009. National Vital Statistics Reports 60,1–70.

Moore, ML. (2003).Preterm labor and birth:what have we learned in the past two decades? Journal of Obstetric Gynecologic and Neonatal Nursing, 32,638-649.

Morton James, P., Anna, C., Kayani Anne, M., Barry, D.(2009). The exercise-ınduced stress response of skeletal muscle, with specific emphasis on humans. Sports Med,39,643-662.

Nickel, C., Lahmann, C., Muehlbacher, M.(2006). Pregnant women with bronchial asthma benefit from progressive muscle relaxation: a randomized, prospective, controlled trial. Psychotherapy and Psychosomatics,75,237-243.

Reedy, NJ.(2007). Born too soon: the continuing challenge of preterm labor and birth in the United States. J Midwifery Womens Health,52,281-90.

Serçekuş, P., Okumuş, H.(2004). Yüksek riskli gebelerde uzun süre hastanede yatmanın etkileri. Atatürk Üniv. Hemşirelik Yüksekokulu Dergisi, 7,107-11.

Şahin, NH.(1994). Gevşeme teknikleri ve yararları, stresle basa çıkma. Ankara: Türk Psikologlar Derneği Yayınları,2,101-6.

Taşkın, L.(2009). Doğum ve Kadın Sağlığı Hemşireliği (9. Baskı), Sistem Ofset Matbaacılık, Ankara,567-583 .

Teixeira, J., Martin, D., Prendiville, O., Glover, V. (2005). The effects of acute relaxation on indices of anxiety during pregnancy. J Psychosom Obstet Gynaecol.,26,271-6.

Urizar, G., Milazzo, M., Delucchi, K., Sotelo, R., Munoz, RF.(2004). Impact of stress reduction instructions on stress and cortisol levels during pregnancy. Biology Psychology, 67,275-282.

Wen, SW., Smith, G., Yang, Q., Walker, M.(2004). Epidemiology of preterm birth and neonatal outcome. Seminars in Fetal & Neonatal Medicine, 9, 429–435.

World Health Organization. Born Too Soon= The Global Action Report on Preterm Birth, Geneva, 2012 http://www.who.int/pmnch/media/news/2012/201204_borntoosoon-report.pdf (Erişim Tarihi 01.06.2014)

Yurdakok, M., Erdem, G.(2004). Neonataloji.Türk Neonatoloji Dernegi Turkish Neonatology Society Alp Ofset, Ankara, 119–124.