

The role of relaxation training in health index of infants in pregnant mothers

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Abstract:

Introduction:

Different Investigations have shown that the effect of Relaxation Training on emotional stress. This study was conducted to investigate the effect of relaxation training on health index such as Apgar index, weight, height in infants after delivery in pregnant mothers.

Materials and Methods:

This is a clinical trial in which 84 pregnant women who referred to two health centers of Shiraz (Hafez and Shoshtary) in 2010 were selected using simple sampling method and assigned randomly to case and control groups. The case group was taught about relaxation whereas the control groups did not undergo any training. At the time of delivery, Health Index of Infants including Apgar index, weight, and height was assessed.

Results:

The results showed a significant difference between the two groups in height, infant reflex and intensive crying (with better situation in case group). There was no significant difference between the two groups in delivery, Apgar scores, weight and cephalic index, meconium defecation and Apgar score in 1-5 minute.

Conclusion:

It seems that teaching pregnant women on relaxation could be effective in mother and her children. Therefore, attention should be paid to different methods for reducing stress in this group of mothers.

Keywords: Relaxation, Pregnant Women, Education

Introduction

Pregnancy, childbirth, and postpartum are the turning points of a woman's life. They have serious effects on women, children, and families and have important and long-term effects on communities (1). The first postnatal phase is a transitional phase connecting the embryonic period and the neonatal period. It is the most important,

vulnerable, and stressful phase of everyone's life. For these reasons, it is vital to pay attention to the caring methods that facilitate a balance to the nervous and behavioral systems and help a newborn to adapt to the first postnatal environment (2). Therapeutic and pharmaceutical complications have made natural methods prominent because they cause fewer

complications (3 and 4). Among the most important advantages of non-pharmaceutical methods is their lack of effect on childbirth process as well as no side effects on mothers and embryos (5). The world is using more non-medical treatments than ever, like massaging, local heating and cooling and psychological methods of pain relief like relaxation, hypnosis, and guided imagery. Among the mentioned non-medical methods, relaxation has more positive effects on maternal and embryonic health (6). Relaxation is associated with a series of exercises for the nervous system and muscles helping a mother to go through pregnancy and childbirth experiencing fewer complications with less likely postpartum depression and more inclinations toward breast-feeding her newborn (7). Studies show that this method lowers postpartum stress, and that it can ease and shorten childbirth process. Relaxation and imagery have effects on the autonomic nervous system, causing comfort. Relaxation exercises during pregnancy can emotionally strengthen a pregnant woman in her relationship with her unborn child as they can contribute to her adjustment. In addition, the positive compatibility will help the development of general health of pregnant mothers dramatically. It will also help create a stronger emotional bonding between mothers and their fetuses. Moreover, such trainings can have positive effects on the newborn's health (8). Painful childbirth can cause a long imbalanced emotional situation, which will disrupt a mother's mental health. Pain may have negative effects on a mother and her newborn's relationship in the very critical first days. If the mother has a pleasant experience with childbirth pain and if she does not lose her strength in the first hours after giving birth, she will feel more effectively attached to her newborn. Researches show that pain relief through non-medical methods like relaxation is imperative and it helps mother's breast feeding and

motherhood behaviors. Thus controlling childbirth pain through safe methods and relaxation is among the primary and most important responsibilities of a healthcare team (9). During various check-ups in pregnancy, physicians check mother's and her fetus's health status and they provide vital healthcare. Pregnant mothers will also be trained during these checkups. Training is one of the most important preventers of maternal mortality and prenatal complications (10). The results of relaxation during pregnancy proved it effective as a proper way of mental relaxation, focus on the fetus, making positive visualizations about pregnancy, and causing a stronger relationship and attachment between a mother and her newborn. Visualizing embryo during pregnancy can strengthen a mother's emotions toward her unborn child as it contributes to her adjustment to her new role and fetus's growth. In addition, relaxation will result in an increase in endorphin that relieves pain and a decrease in adrenaline (11). In developing countries, the low neonatal physical growth rates and the high neonatal mortality rates are considered as one of the main problems that need especial attention (12). This study aimed at evaluating training for relaxation on neonatal physiological indexes.

Materials and Methods

This interventional clinical trial enrolled 84 mothers going to the pregnancy clinics of Hafez and Shoushtari Hospitals in Shiraz in summer 2010. The sample size for each group was 36, and to cover a possible loss during the study, 44 people comprised the final sample size for each group. After the beginning of the study, two participants of the control group and two of the experimental group were excluded. The final analysis was performed on 84 participants. The convenience sampling method was used and the samples were hereafter randomly allocated to the two experimental and

control groups. The researcher went to the center every second day to select eligible primiparas to allocate them randomly to the two groups. The inclusion criteria were as follows: being a primipara and singleton pregnant, ages of 18 to 35 years, the minimum of completion of grade nine, gestational age of 32-35 weeks, having no obstetrics problems, and wanted pregnancy. The exclusion criteria were as follows: pregnancy-related complications like bleeding, diabetes, hypertension, preterm childbirth, internal diseases, not regularly attending training classes, not doing exercises at home, experiencing mental harms and serious stresses during the interventions. Data were collected through questionnaires on personal information, and a form of physiologic indexes and reflexes of the newborn. At the beginning of the study each sample completed a questionnaire on personal information including demographics and pregnancy. Then the samples were divided randomly between the experimental and control groups at Hafez and Shoushtari hospitals. The experimental group was divided into two groups of 21 participants to attend classes and to be trained. Each group was separately trained in the third trimester of pregnancy for four 90-minute sessions in four weeks (each week, one session, on Saturdays). The researcher trained them all. The experimental group received training on relaxation techniques in addition to routine care at certain times. The following was taught: session one: anatomical, physiological, and hormonal changes during pregnancy, the effect of changes caused by pregnancy on pregnant mothers' body and mind, approaches for adaptation to pregnancy changes like proper nutrition, personal, physical, and mental health, and learning about the methods that improve adaptation to pregnancy changes like relaxation and their effects on pregnancy. Session two: embryonic development at different stages of pregnancy, nutrition during pregnancy,

the effect of nutrition and healthcare on mother's and embryo's health, the effect of relaxation on feeling less stressed during pregnancy and also its effect on the physical and mental health of the trained mother and her embryo. Session three: signs and symptoms of risks during pregnancy and how to deal with them and cure them, the effect of relaxation on mother's having better experiences of sleeping and nutrition, mother's attachment to embryo and its effects on embryonic development. Session four: the effect of relaxation on childbirth and relaxation as an imperative to childbirth process, the effect of relaxation on postpartum recovery, breastfeeding, and how to deal with postpartum depression. In the last session, relaxation was performed according to Benson's technique, in which you can do the relaxation exercises during pregnancy either sitting or lying down. These exercises are easy, incur no risks, and take 10 to 20 minutes. Furthermore, they are easy to learn. It is a safe method for pregnant mother and is already confirmed by a gynecologist. In order to make sure that pregnant mothers would do relaxation exercises at home, in addition to the training CD, a checklist was given to them to record their routine practices at home. They were asked to do these exercises at least once a day. At the beginning of each session when the checklists were handed back, what had been taught in the last session was first reviewed and questions were answered. The most important practical parts of Benson's relaxation response technique included being in a calm environment, mindfulness meditation, having a passive attitude, experiencing a comfortable situation, deep relaxation of muscles from feet to head for 10 to 20 minutes and finally ending relaxation very smoothly. After childbirth, the researcher went to the postpartum section everyday to record the information of the newborns like Apgar coefficient, weight, height and head circumference. The mean score for

newborns' reflexes in the first postnatal checkup including Moro reflex, palmer and planter grasping, rooting, Babinsky, and sucking were determined by the neonatologist and they were evaluated on a Brazelton scale (0-4). If there were no reflex, the score would be zero; for asymmetry, weak, average and strong reflexes, respectively, they were given scores between zero to four. Neonatal jaundice was diagnosed by the pediatrician and hospitalization on the 3rd to 5th postnatal day when they went to clinic for hypothyroidism screening. The mother was asked in each shift about the newborn and the frequency of their newborn crying hard (long and uncontrollable crying which continues regardless of receiving routine healthcare) and the frequency of passing meconium during hospital stay. The responses were recorded on the checklist. The data were analyzed by SPSS-18. To compare the two groups, Chi-square and t-test were used. In all tests

p-values less than 0.05 was considered statistically significant.

Results

The results show that both groups were not significantly different and they were homogeneous in terms of the mothers' mean age of, their educational level, occupation, satisfaction with spouse, income, embryo's sex (Table 1).

Among the experimental group, 21 participants (50%) and among the control group, 23 participants (54%) experienced a caesarian delivery, but there was statistically no significant difference ($p=0.662$). In fact they both were homogenous in terms of caesarian and natural childbirth (Table 1).

The results showed that there was no significant difference between the two groups in terms of weight, head circumference, and the Apgar scores at the first and fifth minutes after birth (Table 2).

Table 1: Absolute and relative frequency of the subject based on demographic details

Group Variables	Experiment (relaxation)		Control (relaxation)		P.value
	Number	Percentage	Number	Percentage	
Education	Junior High School	6	14.3	18	0.078
	High School Completed	26	61.9	21	
	University	10	23.8	3	
Embryo's Sex	Male	22	52.4	18	0.869
	Female	13	31	20	
	Unknown	7	16.6	4	
Employment	employed	5	11.9	2	0.241
	Housewife	37	88.1	40	
Satisfaction with Husband	Not Satisfied	5	11.9	5	1.000
	Satisfied	37	88.1	37	
Income Mean	Less Than 3000000 IRR	24	57.2	27	0.372
	More than 3000000 IRR	18	42.8	15	
Mother's Age	18-25	24	57.3	32	0.097
	25-35	18	42.7	10	
Labor	Natural	21	50	19	0.662
	Caesarian	21	50	23	

Table 2: Comparison of neonatal growth and physiologic indices of mothers in the experimental and control groups at hospitals affiliated to Shiraz University of Medical Sciences in 2010

Index	Groups				p-value
	Experimental		Control		
	Mean	Standard Deviation	Mean	Standard Deviation	
Weight at Birth (grams)	3126.6	435.1	3176.1	334.6	0.560
Height at Birth (cm)	51.8	2.3	50.8	2.2	0.047
Head Size at Birth (cm)	34.2	1.7	34.1	1.5	0.737
Apgar at Minute One	9.2	0.1	8.9	0.4	0.485
Apgar at Minute Five	10	0.7	10	1.9	0.519
Crying Hard	1	0.5	2	1.0	0.001
Discharge of coniumem	1	0.7	1	0.9	0.145
Jaundice	2	0.4	2	0.4	0.804

Evaluating the neonatal health indexes of both groups showed that the newborn's mean height in the experimental group (51.8 ± 2.3) was higher than that of the control group (50.8 ± 2.2). This difference was statistically meaningful ($p=0.047$). Also, the newborns of the control group cried hard more often than the newborns of the experimental group and the difference was significant ($p=0.001$) (Table 2). Moreover, the results showed that there was no meaningful difference between the

groups when the means were measured for passing meconium at hospital ($p=0.145$) and neonatal jaundice after the third day (respectively 13.9% and 16.3%). Also, the total mean for neonatal reflexes and Moro reflex, palmer and planter grasping, and Babinsky was higher in the experimental group than the control group. The statistical difference was significant between the two groups (respectively $p<0.001$, $p=0.002$, $p<0.001$, $p=0.010$) (Table 3).

Table 3: Comparison of neonatal reflexes in the experimental and control group of mothers at hospitals affiliated to Shiraz University of Medical Sciences in 2010

Index	Groups				p-value
	Experimental		Control		
	Mean	Standard Deviation	Mean	Standard Deviation	
Moro	3.8	0.3	3.5	0.5	0.002
Planter Grasp	3.8	0.4	3.4	0.5	0.001
GraspPalmer	3.5	0.5	3.2	0.4	0.010
Rooting	3.6	0.5	3.4	0.5	0.109
Babinsky	3.5	0.5	3.1	0.4	0.001
Sucking	3.9	0.3	3.2	0.2	0.697
Total Scor for Reflex	22.3	1.8	20.6	1.6	0.001

Discussion

Pregnancy is a very important and vulnerable time in a woman's lifetime and relevant training to them is imperative (4).

Due to the special importance of embryonic development in pregnancy any unnatural increases or decreases in this regard will affect the mortality and

complications during pregnancy (13). Learning effective methods to control stress can decrease the risks of pregnancy and neonatal period (14, 15). Given the results, certain indexes like height, the frequency of crying hard, and neonatal reflexes proved significant differences between the experimental and control groups, determining the effect of learning relaxation techniques on such indexes. The meaningful difference between the neonate's height in both groups can be attributed to relaxation. A study proved that mothers were more likely to effectively absorb nutrients suitable to embryonic development if they strongly coped with mental pressures. This means contributions to embryonic development (16). Another study proved that learning how to cope with stress during pregnancy like through relaxation could cause effective absorption of nutrients and better embryonic development (17). In addition, training during pregnancy is effective on embryonic development through causing comfort and improvement in physical activities as maternal and embryonic blood plasma, cardiac output, and uterine blood flow increase (18). Thus, certain neonatal indexes will be improved, which was proved in the present study. Also, researches have shown that pregnant mothers who do the exercises and relaxation feel more comfortable, and show better coping skills for neonate's restlessness. Newborns feel relaxed when embraced by such mothers, they easily are breastfed, and feel less anxious during breastfeeding. They also cry less (17). In this study, practicing relaxation was associated with positive results for mothers and newborns in terms of height growth, reduced frequency of severe crying at hospital, and showing more neonatal reflexes. Cohen proved that preparation for childbirth affects labor pain and duration. He reported a higher Apgar for the newborns of the experimental group in comparison with the control group (19). Researches studied more than 9000

women attending pregnancy care classes and concluded that prenatal care can reduce pain and anxiety during pregnancy, and complications of pregnancy and childbirth like low birth weight, preterm childbirth, and more importantly can reduce maternal and neonatal mortality and disability (20). Conosci et al. also reported that consultation and pregnancy training like relaxation during pregnancy causes an increase in vaginal delivery, a better neonatal first minute Apgar, an increase in neonatal weight and a decrease in duration of neonatal stay at neonatal ward (21). However, a study that aimed at determining the effect of the respiratory training during pregnancy on embryonic development, neonatal weight, and Apgar showed no significant difference between the two groups of experimental and control (22). Mahdizadeh et al. studied the effect of pregnancy training and relaxation but they did not observe a significant difference between the two groups in term of neonatal weight and Apgar (23). The results of this study showed that there was no meaningful difference between the two groups' Apgar coefficients. The Apgar coefficient did not confirm the effect of such trainings. Molavi and Mousavi's research confirmed this (24, 25). In this research, implementation of relaxation was associated with positive results on mothers and newborns through positive effects on height growth, less neonatal crying at hospital, and more neonatal reflexes. We hope that such methods are used more effectively at hospitals nationwide because without doubts they have positive, long- and short-term effects on mothers and their newborns.

Conclusion

Relaxation training during pregnancy has considerable effects on embryonic development. Simple and low-cost trainings can help pregnant mothers give birth to healthier children. Thus we suggest relaxation education as part of a healthcare program for pregnant mothers.

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