International Journal of Medical Science and Clinical Inventions 4(3): 2797-2807, 2017
DOI:10.18535/ijmsci/v4i3.14 **ICV 2015: 52.82**
e-ISSN:2348-991X, p-ISSN: 2454-9576

Research Article

Effect of Education and Musical Therapy Given During Labor on the Process of Birth in Induced Primipara Pregnant Women

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ABSTRACT:

Objective: This study as a experimentals research, was planned to determine of effects of musical thearpy and labor education at first pregnancy with induction.

Methods: The study has been carried out at the largest obstetrics and childhood diseases hospital that in the Anatolian coast of İstanbul from July 2005 to July 2006. There subjects included total of 80 pregnants, half of pregnants were control and remaining half were experimentals ones. Inclucion criterias of choosen pregnants; primipara, gestasionel age (37 week and ↑), succesfull pregnancy induction, to be voluenter for study.

In this study, the test group receiving Rehavi music used a tape recorder and earphones to listen to the music, with 20 minute each hour; the control group did not listen to any music. The control group had the standard care during labor.

Main Outcome Measures: Data was collected by surveys. In the study group; Survey 1 was applied descriptive characteristics of the pregnants, Survey 2 was applied their knowledge with labor, Survey 3 was applied their relations with music and Survey 6 was applied in order to evaluate their labors. Survey 4 and Survey 5 were applied in order to behavioural and physical reactions of pregnancy. In the control group we applied Survey1, Survey 2, Survey 3 (without 8 and 9 questions) and Survey 4, Survey 5 and 6 (only 1 and 2 questions).

Results: When we evaluated the contraction frequency and times, pupil dilatation, anxiete, crying/screaming and lip beating in the study, there was a statistical difference between the study groups and control groups ($p<0,05$).

The results in this study showed that the education given to the pregnant were could be transformed into positive behaviors. When the events of pain management methods (respectively breating exercises, muscle relaxation and ways of dreaming) were compared there was a statistical difference between the pre-education and post-education values ($p<0,05$).

Education and music decreased both sensation and distress of labor pain and delayed the distress of pain.

Conclusions: At conclusion; to give education and to listen the Rehavi music during the labor primipara with induction was determined to be the positive effectives at labor.

Key Words: **Induction, labor pain, musical therapy, education, pain management methods**

INTRODUCTION

Although pregnancy is a physiological process, it causes a load and stress for all women, and each woman has a separate behavior and reacts against pregnancy according to her psychological, socioeconomical and cultural status.[1,11] Pain and birthgiving are different experiences for every women. The pain treshold, which is the recognition level of pain, is different in every woman. Pain is felt when the severity of the contractions exceeds the pain treshold. Since the pain treshold is different in each individual, timing of the pain onset and duration are different. The pregnant goes into the labour period with the pain becoming more frequent and severe, and with contractions leading to cervical dilatation. Generally, the patients are not informed about the things to do during labour in prenatal monitoring. In particular, in maternity hospitals with large capacities, many pregnant women wait in the same crowded noisy area during the pain period, uninformed about the severity and frequency of the pain they will experince and methods to deal with this pain, and healthcare personnel who are focused on the findings of the patients rather than themselves individually, do not consider the concerns of the patients about themselves and their babies' health. All the afore-mentioed leads to a more severe panic and pain during labour.[1,21,30] Induction of labour, which is rarely known among people, may make the situation even worse.

Due to fetal and/or maternal reasons, enabling cervical maturation, starting uterine contractions that will lead to cervical dilatation and opening are called induction of labour using pharmacological agents or mechanical methods. The most common induction method is oxytocin infusion. There may be complications of induction. Prior to and during the induction, the fetal heart rate and uterine activity should be monitorized, and the patient should be given a proper position. Uterine contractions, cervical changes and fetal reduction should be closely monitored. Complication rates are higher in

induced women compared to spontaneous birth. In addition to the complications that may be observed during spontaneous birth, fetal distress, hyperstimulation and uterine rupture may also be observed. The women induced for labour would easier adapt to the new situation with support. The nurse has a big responsibility. It is known that the anxiety level of the candidate mother is high during labour. Especially in primipara pregnants, it should be considered by the nurse that the anxiety level of the patient would first be high due to inexperience of the patient, and the presence of an increasing pain caused by induction, and her monitoring and approach to the patient should be in that manner. Training of the patients and families is a good opportunity during the relieving effort of the nurses on the patients. It has been recommended that the nurses should inform the patient about labour, regular monitoring should be carried out during labour, particularly with regard to the complications of induction, behavioral symptoms such as worry, concern, discomfort caused by the pain, the unknown foreign environment and the procedures performed should be reduced by a good relationship, adaptation of the patient to the environment should be provided, respiratory exercises and other methods of dealing with pain (relaxing the muscles/dreaming) should be taught and performed by the nurse, and in addition to the professional care given, a medical music should be provided to the mother to listen to, which is believed to be effective on the genital region. Each type of music is effective on different sites of the body and organs. The Rehavi maqam gives people the feeling of infinity, and has positive effects on headache, anxiety and the gential organs. Musicotherapy, which is the positive physical and psychological effect of music on the listener, will provide strength, self-confidence, self-statement and courage for the mother to deal with pain, cooperate with the healthcare personnel, and reduce the anxiety.[4,11,12,21,28,30,34]

The objectives of professional supportive teams are improving the safety of the mother and the baby, save the mother without a major damage and avoiding extremely severe pain or complications, and improving the relationship between the mother, baby and the family. Contribution of the patient to labour as active as possible is currently the desired situation.[1,36]

METHODS

Objective: The aim of this study was to investigate the effect of the information given and the music played during labour on the process of labour in induced primipara pregnant women.

Method: This study, designed as an experimental investigation, was approved by the ethical committee and the chief physician, on 80 pregnant women who were monitored in the hospital and who met the inclusion criteria of the study.

Place and timing of the study: The largest maternity hospital of İstanbul-Anadolu, July 2005 – July 2006.

Sample of the study: A total of 80 pregnant women, 40 meeting the inclusion criteria of the study and 40 controls.

Inclusion criteria: The study included primipara (37 week and ↑), promptly and successfully induced pregnant women who were willing to participate in the study.

Data Collection Forms

The following surveys were prepared by the investigators acoording to their literature knowledge, experience and observations:

Information Form on the Individual Characteristics of the Pregnant Woman (Survey 1); includes 10 questions including age, education, occupation, age at marriage, age of menarche, number of abortions, number of curettages and location.

Information Form on the Labour Process of the Pregnant Woman (Survey 2); includes 16 questions including pregnancy planning, gender of the infant, gender preference, knowledge on labour, sources of knowledge, fear of labour, information on the methods of dealing with pain, known methods, feeling ready for labour, definition of induction, information on induction methods, fear of induction and causes of the fear.

Question Form on the Relation of the Pregnant Woman With Music (Survey 3); includes 9 questions including status of enjoying music, types of musics listened to, timing and causes of listening to music, relaxing types of music, any possible education on music, status of playing an instrument, instrument playing status of the husband, effects of prenatal music playing on labour and the types of effects.

Monitoring Form of the Induced Pregnant Woman (Survey 4); includes the dose of induction, heart beat sounds of the baby, frequency of contractions, duration of contractions, severity of contractions, pupil dilatation, number of respirations, pulse, and blood pressure.

Observational Monitoring Form of the Induced Pregnant Woman (Survey 5); nervous, uncomfortable, crying, complaining, screaming, lip beating, pressing the palms or other things, self-harming behaviors, not wishing to stay alone, uncommunicating, reduced privacy, increased sensitivity susceptibility, and exercise performing situation.

Post-Natal Procedures Evaluation Form (Survey 6); includes 13 questions on the difficulty of labour, definition of the pain sfelt during labour, status of using pain dealing methods, methods used, causes of inability to use the methods, benefits of the methods if performed, satisfaction from the training, effects of the music played on pain, willingness/non-willingness to listen to music during labour, music type preferance, efficacy of the music, willingness/non-willingness to play the music for the infant, timing and situations of playing music for the baby.

Musicotherapy develops the hearing ability of a person and is a mediator for the treatment of the person.[5] Music of Rehavi maqam is one of the therapeutic types and is

known to be effective between the times of night and dawn. It has benefits on the right shoulder, headaches, and mental diseases. It helps labour. It gives the feeling of infinity and being independent from gravity (comfort).[12, 34] A walkman was used in order to play the rehavi maqam music, which is believed to be effective on the reproductive organs, to pregnant women prepared by obtaining pieces from TÜMATA (Investigation and Presentation Group of Turkish Music).

Steps of application: Survey 1, Survey 2, Survey 3 were applied to the primipara pregnant women in the study group prior to the induction. These patients were then informed on the importance of labour, induction, why induction was applied, effects of induction, labour pain, methods of dealing with pain, and effects of music on the process of labour for 10 – 15 minutes.

Rehavi maqam music was played to the pregnant women during the induction process at the beginning, in 1-hour-intervals, for at least 6 times for 20 minutes using the walkman.

The pregnant women were then followed-up, observed by the investigator for the application of the methods trained, the pregnant monitoring form and pregnant observation forms were filled, the heart sounds of the infant, duration and frequency of the contractions, the dose of the induction, the pulse, blood pressure, respiration count and application status of the exercises were checked.

The postnatal evaluation form (Survey 6) was carried out in order to understand if the training and music were effective approximately 1,5 hours after the labour.

Survey 1, Survey 2 and Survey 3 were carried out on the induced primipara pregnant women in the control group prior to induction, except for questions 8 and 9 in Survey 3.

The pregnant women in the control group were not informed about the labour or birth; only music was played for them.

The pregnant women were followed-up during labour and the investigator carried out the pregnant monitoring form (Survey 4) and pregnant observation form (Survey 5).

Approximately 1,5 hours after birth, the post-natal evaluation form (Survey 6) (questions 1 and 2 only) was carried out.

Evaluation of the study data: The data obtained in the study were evaluated using percentages, chi-square, and the t test.

RESULTS

The individual characteristics of the patients in each group were similar (Table1). The mean ages in the study and the control groups were group were 22.85±3.44 and 23.27±3.28 ($p>0.05$), respectively. The rate of educational status was 52.5% for secondary school/university in the study group, 67.5% for the reader-writer/primary school in the control group; the educational statuses of the partners were similar to those of the patients (65%, 57.5%); the pregnant women were non-working in both groups (92.5%, 87.5%), and they mostly lived in cities (75%, 52.5%).

Table 1.*Individual characteristics of pregnants*

Properties of pregnancy		Study group (n=40)		Control group (n=40)		P
		$\overline{X}$	SD	$\overline{X}$	SD	
Age (average)		22.85	3.44	23.27	3.28	>0.05
		N	**%**	**N**	**%**	
Marriage age	15-20	18	45.0	21	52.5	0.710
	21-26	19	47.5	16	40.0	
	≥27	3	7.5	3	7.5	
Educational status	Primary	19	47.5	27	67.5	0.05
	upper level	21	52.5	13	32.5	
Partner educational status	Primary	14	35.0	23	57.5	0.481
	upper level	26	65.0	17	42.5	
Urban settlement		30	75.0	21	52.5	0.855
Working status		7	7.5	5	12.5	0.875
Abortion		2	5.0	2	5.0	0.739
Curettage		1	2.5	3	7.5	0.773

No statistical difference was observed between the groups with regard to the data on labour (Table 2). 72.5% of the pregnancies were planned in both groups; the sexuality of the baby was known in 92.5% of the patients in the study group and in 85% of the patients in the control group (p=0.449). It was observed that 80% of the cases in the study group and

75% of the cases in the control group were ready/partially ready for labour (P= 0.8). However, according to the surveys performed, 75% of the cases in the study group and 70% of the cases in the control group had insufficient information about birth (p=0.426), and the sources of information were the healthcare personnel in only 23.2% of the cases in the study group and 38.5% of the cases in the control group (Table 2). Additionally, the rates of fear about labour was very high in both groups. 77.5% of the patients in the study group and 85% of the patients in the control group answered the question as scared or mildly scared. The most common reasons of fear were pain and possible negative events to be observed during labour (Table 2). 77.5% of the patients in the study group and 80% of the patients in the control group were observed not to know the methods of dealing with pain, and the small rate of patients who knew the methods, commonly knew (63.6%, 88.9%) breathing and pushing (Table 2). 47.5% of the patients in the study group did not know what induction was, 62.5% did not know how induction was performed, 67.5% were afraid/partially afraid of induction, and the common cause of fear was the possibility of an increase in pain in 74.2% of the patients. The results were similar in the control group, which were 62.5%, 75%, 42.5% and 52.6%, respectively. No statistically significant difference was observed between the groups with regard to the outcomes of induction (Table 2).

Table 2. *Labour process*

		Study group		Control group		P
		n	%	n	%	
Planned pregnancy		29	72.5	29	72.5	0.439
Sex of the baby is known		37	92.5	34	85.0	0.449
Sex of the baby	Desired	18	48.6	11	32.3	0.088
	Undesired	-		2	5.9	
	Does not matter	19	51.4	21	61.8	
Data on birth		10	25.0	12	30.0	0.426
		n =13		**n=13**		
Sources of information	Media	6	46.1	5	38.3	0.22
	Relatives	4	30.8	3	23.0	
	Health personnel	3	23.1	5	38.5	
Fear of labour		31	77.5	34	85.0	0.491
		n=38		**n=39**		
Causes of fear	Lack of knowledge on birth	7	18.4	8	20.5	0.283
	Pain	10	26.3	11	28.2	
	Concern of unsuccessful birth	7	18.4	4	10.3	
	Concern of impaired health of the baby	4	10.6	3	7.7	
	Others	10	26.3	13	33.3	
Knows how to deal with pain		9	22.5	8	20.0	0.85
		n=11		**n=9**		
Dealing methods	Breathing/pushing	7	63.6	8	88.9	0.62
	Muscle relaxation/dreaming	4	36.4	1	11.1	
Birth induction	Knows what it is	21	52.5	15	37.5	0.935
	Knows how it is performed	15	37.5	10	25.0	0.850
	Fear of induction	27	67.5	17	42.5	0.314
Causes of fear from induction	Concern of increased pain	23	74.2	10	52.6	0.790
	Concern of unsuccessful birth despite induction	4	12.9	3	15.8	
	Not known	3	9.7	3	15.8	
	Concern of impaired health of the baby	1	3.2	3	15.8	

No significant difference was observed between the groups with regard to enjoying the music, type of the music and duration of rest (Table 3). The rate of enjoying music was 100% in the study group and 90% in the control group. The type of the music listened to was pop/foreign/rhythmic (study group 34%, control group 29.7%) and was mostly listened to during working (study group 37.2%, control group 35.9%). Despite all, only 27.5% of the patients in the study group wanted to listen to music during labour. The patients in the study group were asked if the music had a pain relieving effect during labour, and 60% answered as "yes"; this rate was 92.5% after birth (p= 0.02). 4.8% of the patients mentioned that music had "no effect". 97.5% of the patients in the study group stated that they played music for their babies when they were crying, sleeping or when they had pain. Only10% of the patients did not enjoy the music we played during labour and requested another type of music.

Table 3.*Relationship of the pregnant patient with music before and after the birth*

		Study group		Control group		P
		n	%	n	%	
Enjoying music		40	100.0	36	90.0	
Pop/foreign/rhythmic		16	34.0	11	29.7	0.94
Arabesque/fantasy		13	27.7	8	21.6	
Turkish Folk Music/ Turkish Art Music		10	21.3	6	16.3	
Turkish Western Music		3	6.4	2	5.4	
Any type		5	10.6	10	27.0	
Times of listening to music	Calm/Quiet/alone	6	13.9	4	10.2	0.954
	During working	16	37.2	14	35.9	
	Anxious/stressed/nervous/upset	11	25.6	11	28.2	
	Different times of a day	2	4.6	1	2.6	
	Always	8	18.6	9	23.1	

Study group		**Pre-natal**		**Post-natal**		
						0.02
Positive effect of music on pain		24	60.0	37	92.5	
Relaxes		11	45.8			
Asleeps		7	29.2			
Emotional effects		4	16.7			
Makes feel good		2	8.3			
Relaxed				19	30.2	
Gave peace and confidence				17	26.9	
Reduced pain				15	23.8	
Provided compliance				9	14.3	
Had no effect at all				3	4.8	
Desire to listen to music		11	27.5			
Desire another type of music during labour		4	10.0			
Desire to play music for babies				39	97.5	
Times of playing music for bebies	When they are crying/uncomfortable			20	44.5	
	To make them asleep			20	44.5	
	When they are ill /when they have pain			5	11.0	

Table 4 presents the monitorized data of the patients within the first 5 hours during induction. Accordingly, the frequency of contracion in the study group was significantly higher compared to that of the control group in the first 4 hours; and duration of contraction was always lower in the study group ($p<0.05$). Furthermore, the systolic pressure at the 4^{th} and 5^{th} hours and the diastolic pressure at the 3^{rd}, 4^{th} and 5^{th} hours were significantly higher in the control group compared to the study group. However, no significant difference was observed in the heart sounds of the child, respiration count and the pulse data ($p>0.05$). The data regarding the severity of contraction (mild-severe) and the pupil dilatation (present-absent) were not included in the table, since they had numeric values. No pupil dilatation was observed in the study group in the first 3 hours; pupil dilatation onset was observed at the 4^{th} or 5^{th} hours (17.5%, 50%); severity of contraction was present in both groups and this increased as the time progressed.

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Table 4. *Comparison of monitorized data ın ınduced patients*

Monitorized Data In Induced Patients	1st hour			2st hour			3st hour			4st hour			5st hour		
	Study group	Control group	t p	Study group	Control group	t p	Study group	Control group	t p	Study group	Control group	t p	Study group	Control group	t p
Heart sounds of the child	137.25	137.65	0.21 0.83	137.30	136.85	0.21 0.82	137.70	137.40	0.13 0.89	139.05	138.05	0.44 0.65	139.60	138.30	0.61 0.53
Contraction Pressure	210.75	285.25	3.91 **0.00**	193.62	250.40	3.51 **0.00**	165.87	216.62	3.50 **0.00**	150.12	185.87	2.39 **0.01**	124.00	146.40	1.67 0.09
Contraction Time	23.50	33.87	4.11 **0.00**	25.62	40.92	6.09 **0.00**	28.50	40.82	4.65 **0.00**	30.87	44.87	5.48 **0.00**	35.00	47.12	5.98 **0.00**
Respiratory Rate (Number / minute)	17.10	16.85	0.57 0.56	16.75	17.30	1.29 0.20	17.30	17.75	0.87 0.38	17.10	17.70	1.02 0.31	17.65	18.55	1.46 0.14
Pulse (Number / minute)	84.65	84.65	0.00 1.00	84.40	85.00	0.37 0.71	85.05	87.22	1.30 0.19	86.05	88.15	1.35 0.17	87.15	88.55	0.98 0.32
Systolic Blood Pressure (MmHg)	103.75	105.50	0.60 0.54	103.25	105.25	0.69 0.48	103.75	105.50	0.74 0.46	100.00	107.25	2.73 **0.00**	102.25	108.50	2.63 **0.01**
Diastolic Blood Pressure (MmHg)	66.75	69.50	1.15 0.25	67.25	71.25	1.70 0.09	65.50	70.00	2.29 **0.02**	64.00	71.50	3.93 **0.00**	66.25	73.50	3.88 **0.00**

Table 5 presents the behavioral findings of the patients during induction within the first 5 hours. Accordingly, patients in the study group were significantly excited compared to the control group from the first hour to the end, and excitement was observed in 70% of the patients in the study group and in 15% in the control group (p=0.01). Patients in the study group were uncomfortable in the first hours (72.5% vs 32.5%, p=0.00), which regressed in the following hours, whereas patients in the control group were uncomfortable in the latest 2 hours. No difference was observed in the means between groups (25% vs 20%, p= 0.81). No crying/complaining/screaming was observed in the study group within the first 3 hours, whereas it was increasingly observed in the control group. The mean observation was 12.5% in the study group and 25% in the control group (p=0.04). Lip biting/palm biting demonstrated no significant difference between groups in the 1st hour, but was increasingly observed in both groups as the time progressed. A significant difference was observed in the control group in the 2nd, 3rd, 4th and 5th hours; the mean of the study group was 12.5% and that of the control group was 37.5% (p=0.03). No self-harmfing behaviour was observed in the study group, whereas it was observed in the control group, except for the first hour. A significant difference was observed between the groups for the 5th hour (p<0.05). No fear of staying alone was observed in the control group, whereas it was observed from the beginning to the end in the study group. A significant difference between the groups was observed only in the first hour (p<0.05).

Table 5.*Behavioral data of the induced patients*

Behaviors of the patients	1st hour					2st hour					3st hour					4st hour					5st hour					MEAN				
	Study group		Control group		t p	Study group		Control group		t p	Study group		Control group		t p	Study group		Control group		t p	Study group		Control group		t p	Study group		Control group		t p
	n	%	n	%		n	%	n	%		n	%	N	%		n	%	N	%		n	%	n	%		n	%	n	%	
Excited	28	70.0	17	42.5	2.54 **0.01**	28	70.0	13	32.5	3.57 **0.01**	28	70.0	6	15.0	5.91 **0.00**	28	70.0	1	2.5	8.70 **0.00**	28	70.0	-	-	9.53 **0.00**	28	70.0	6	15.0	5.43 **0.01**
Anxious	29	72.5	13	32.5	3.86 **0.00**	16	40.0	10	25.0	1.43 0.15	7	17.5	6	15.0	0.29 0.76	-	-	6	15.0	2.62 **0.01**	-	-	8	20.0	3.12 **0.00**	10	25.0	8	20	3.42 0.81
Crying/complaining Screaming	-	-	1	2.5	2.76 0.32	-	-	3	7.5	2.76 0.07	-	-	8	20.0	3.23 **0.02**	3	7.5	13	32.5	4.31 **0.01**	8	20.0	25	62.5	4.23 **0.00**	5	12.5	10	25.0	3.44 **0.04**
Lip biting/ palm biting	-	-	1	2.5	5.43 0.32	-	-	5	12.5	3.87 **0.02**	1	2.5	12	30.0	2.54 **0.00**	6	15.0	23	57.5	3.21 **0.00**	22	55.0	34	87.5	23.4 **0.00**	5	12.5	15	37.5	3.44 **0.03**
Self-harming behaviours	-	-	-	-	- -	-	-	1	2.5	1.00 0.32	-	-	1	2.5	1.00 0.32	-	-	2	5.0	1.43 0.15	-	-	5	12.5	2.36 0.02	-	-	2	5.0	2.44 0.15
Fear of staying alone	5	12.5	-	-	2.36 **0.02**	3	7.5	-	-	1.77 0.07	-	-	-	-	- -	-	-	-	-	- -	2	5.0	-	-	1.43 0.15	2	5.0	-	-	3.44 0.15
Denying communication/ reduced privacy	-	-	1	2.5	3.87 0.32	-	-	1	2.5	3.57 0.32	-	-	-	-	- -	1	2.5	1	2.5	5.41 1.00	3	7.5	2	5.0	32.4 0.73	1	2.5	1	2.5	4.55 1.00
Being Sensible/ sensitivity	1	2.5	-	-	3.98 0.32	-	-	-	-	-	-	-	1	2.5	3.57 0.32	2	5.0	2	5.0	5.45 1.00	2	5.0	4	10.0	4.32 0.40	1	2.5	1	2.5	4.55 1.00

The rates of knowing the methods of dealing with pain before training was 22.5% and performing the methods after training was 100% the in the study group. A significant difference was observed between pre- and post-training knowledge and application of respiratory exercises (13.8%, 67.5%), and muscle relaxation/dreaming (7.5%, 70%) ($p<0.05$). As seen in the obtained data, the rate of patients who believed that the relaxation methods had a positive effect was 100%. The satisfaction level of the patients from the training they were given was 100%.

DISCUSSION

Pain is a multi-dimensional term that includes neurohysiological, biochemical, psychological, ethnocultural, religious, cognitive, spiritual and environmental factors. Perception of pain differs between individuals. According to the International Association for the Study of Pain (IASP) Taxonomy Committee, pain is described as the undesired accompanying sensorial or emotional experience or described by a present or possible tissue damage.[10,32,35,42] Loneliness, tiredness, inability, unawareness, anxiety, fear from pain, expectation of pain, noise, bright light, cold or excessive heat may increase the complaints. On the contrary, rest, sleep, apprehension and sympathy, listening to the individual, explanation and information, sociability and honoring may be effective in reducing the perception of pain.[3,14] In conclusion, pain is one of the most important issues that necessitates the help of the healthcare personnel.[42]

Labour consists of 3 stages. The first stage is painful, except for the latent phase. It comprises the time until birth. The second stage is the period from the complete opening of the cervix until the birth of the baby. Contractions in this stage are generally more regular than those in the first stage, but probebly less painful. The third stage (takes 5 minutes- half an hour) includes the birth of the placenta. Mild contractions are observed that take a mean of 1 minute. The whole period takes approximately 14 hours for patients with their first labour, and 8 hours for those who had previous labours. Pain is characterized by increasing and getting more severe and frequent, leading to cervical dilatations. Contractions start at the corpus uteri and progress inforiorly. Effective uterine contractions take 30 - 90 seconds, create a 20 - 50 mmHg pressure and recur at every 2 - 4 minutes.[6,11,26] There are physical (such as age or history of obesity, primipara, dysmenorrhea), physiological, psychological (fear, undesired baby, relationship with the father) and sociocultural-ethnic factors that affect pain during labour as well.[17] In the study of Gençalp investigating the effect of supportive nursing during labor on the process of labor, 77% of the patients were reported to state negative concerns about birth.[21] In our study, 77.5% of the patients in the study group and 85% of the patients in the control group had fear/mild fear from birth. Causes of fear were pain and possible negative events to be experienced during labor in both groups (Table 2). When the data of birth and the primipara property of the participants are considered, this high rate may be accepted to be normal.

Pregnancy is a physiological process and every women reacts to pregnancy according to her own psychological, socioeconomic and cultural sturcture. A healthy pregnancy, birth and post-natal periods for both the mother and the baby may be possible via regular care, training and consultation given during pregnancy.[1] Information on birth in the study and control groups in different studies are as follows: Ergin : 53.8% and 75% [18], Gençalp: 56% and 52% [21]. In our study, 25% of the patients in the study group and 30% of the patients in the control group had sufficient/partial information on birth ($p=0.426$). The sources of information were the healthcare personnel in only 23.2% of the patients in the study group and 38.5% of the patients in the control group. In the study of Ergin (2005), the sources of information were physicians in

19.2%, nurses in 11.5% in the study group, and physicians in 42.3% and nurses in 9.6% in the control group.[18] No such difference was considered in our study. Despite this low rate of getting information, 80% of the patients in the study group and 75% of the patients in the control group were observed to be/partially be prepared for birth in our study. This high rate indicates the importance of being a family and mother in our society.

Pregnancy and birth are a physiological process; however, it forms a load and stress on the mother.[1,11] When the induction procedure, which is rarely known, is added, the situation becomes more serious. 47.5% of the patients in the study group and 62.5% of the patients in the control group in our study did not know what induction was, and neither of the groups knew how induction was performed (62.5%, 75.0%). Therefore, 67.5% of the patients in the study group and 42.5% of the patients in the control group were observed to fear/partially fear from induction. The most important cause of this fear was the concern of increased pain by induction (74.2% and 52.6%, respectively).

Induction may be performed whenever the continuation of pregnancy would be dangerous for the health of the mother or the baby. The objective is to start labour and to save the lives of the mother and the baby. Induction of birth is the stimulation of contractions via a mechanical procedure or pharmacological agents. These agents called uterotonic drugs stimulate the contraction of uterine muscles. These agents are oxytocine, prostoglandins and ergot preparations. The most common induction method is oxytocine infusion.[6,11,26] Besides, it should be considered that the response to these agents may be different in each individual. Compared to spontaneous birth, the rates of complications such as fetal distress, hyperstimulation and uterine rupture are higher in inuced women.[4,11] Thus, the well-being of the baby should be considered before induction, the patient should be informed and informed consent should be obtained prior to the application. Furthermore, multiple pregnancies, hydroamnios, multigravida and previous uterine operations-related risk of uterine rupture should be considered. In the presence of fetal distress and in cases with no vaginal birth option such as head-pelvis incompatibility or abnormal presentation, induction should be avoided.[3,26]

The uterus and the placenta are less circulated due to contractions. This may lead to insufficient oxygenation of the baby. In order to recover from this, the patient should relax in the non-painful term by using different methods such as relaxation, dreaming or breathing.[1,10,32] In the study of Ergin, 44.2% of the patients in the study group and 44.6% of the patients in the control group were observed to have knowledge on breathing techniques.[18] In our study, the patients were not well-informed about the methods of dealing with pain. 22.5% of the patients in the study group and 20% of the patients in the control group mentioned that they knew these methods (p=0.8). The results of Gençalp were similar.[21] Patients in the study group were informed about consecutive relaxation of the muscles, dreaming and breathing techniques. The rate of patients in the study group who could apply these techniques was 100%.

The fact that music is loved by many people of all ages has made it a flexible treatment tool.[12,27] Platon, the student of one of the most important philosophers of Old Greece has mentioned in 400 BC that music has resulted in a comfortable feeling by affecting the deep soul of a person with its harmony and rhythm.[34] Use of music in physical diseases has been more common recently, and its effects on the blood circulation, respiration and other systems have been investigated and determined.[15,27,45] Data obtained from investigations on music and the brain indicate a possible biological effect of music as well. The number of scientific studies demonstrating its positive effects on hormones effective in the development of psychological disorders such as serotonin, norepinephrine, dopamine, melatonin, cortisol, adrenalin and testesterone, and physiological events such as blood pressure, respiratory rhythm, quality of respiration and pulse, is increasing every day.[9,12,24,31,45] Musicotherapy is a cheap and natural application with no side effects and has an efficient role in physical, psychological, social, emotional and spiritual well-being.[28,40] According to Örter (2005), Licht investigated musicotherapy in two groups as active and passive, and stated that music increased attention, continued interest and provided a relaxation by affecting the behaviour.[34] People who listen to music feel the pain less, and the concern they feel is reduced.[2,7,9] Musicotherapy is believed to have positive effects on the pain of labour as well. In the study of Good and Anderson (2002), postoperative pain was reported to decrease via relaxation methods and music.[22] Use of music as a tool for therapy provides focusing on a direction other than pain as in the method of redirecting the attention. Thus, the patient protects herself from perceiving the pain and increases her strength against pain.[5] Sürmeli and Karaca (2012) indicated the positive effects of music on the control of acute and chronic pain, anxiety, depression, fatigue and the quality of life.[39] As a result, musicotherapy has been used successfully at all age groups.[12,34] Musicotherapy[5] is the physically and psychologically positive effect of music on people. In many studies, musicotherapy has been demonstrated to provide strength, self-confidence and courage for the mother, self-expression, reduced anxiety, ability to deal with pain and increased cooperation, successful dealing with pain, and to have a related positive effect on labour and birth.[4,11,12,21,30,34] In the study of Yıldırım and Gürkan (2007), 76.67% of the patients mentioned that music had a positive contribution to therapy. These patients stated that music made them feel at rest, relaxed them, gave peace, made them happy, made them feel special and important, took their attention away from the disease, treatment and the environment, helped them dream, and made life more tolerable. Additionally, in studies conducted on healthy and sick pople and animals, music has been demonstrated to affect the blood circulation and vessel pressure, to increas muscle contractions and to release respiratory movements.[12,16,20,27,30,33,34,43,44] It is obvious that

listening to or playing music may be used as an effective treatment method that leads to better feeling and dealing with the present physiological and psychological problems.[29]

Rehavi maqam, which is one of the therapeutic music types (includes the sound of ney) has been known to be effective between the evening and night. It provides the feeling of being independent from gravity and infinity (relaxing).[12,30,34] In our study, patients in the study group were played music of Rehavi maqam. Paients in the study group mentioned that pre-natal music may be effective/partially effective at a rate of 60%, which increased to 92.5% after the music was played $p<0.05$). Besides, 97.5% of the patients in the study group wished to play music to their babies in the presence of a problem or concern. In the study of Sezer (2011), individuals who preferred music types such as slow music, ney music, and pop music, were demonstrated to have a less frequent situation of psychological findings.[38] This may be due to the positive effect of the music they listened to. Goodall and Etters (2005) suggested that preferred music had a higher rate of positive effect.[23] Our rates could have been 100% instead of 92.5% if we would have done the same thing. 100% of the patients in the study group and 90% of the patients in the control group gave the answer 'yes'. This indicates the place and importance of music in the life of an individual. The severity of the pain on birth depends on the duration, frequency and severity of uterine contractions and cervical dilatation. The first step in controlling the expected pain is to evaluate it correctly.[8] According to the frequency of contractions, no significant difference was observed between the study and the control groups at the 5th hour ($p>0.05$), and the contractions in the study group at the 1st, 2nd, 3rd and 4th hours were more frequent than those observed in the control group. Kömürcü revealed in his study that contractions were more frequent among music listeners (66.6%) compared to the other group (76.6%).[30] If these similar results are considered, it may be said that music has an effect on the frequency of contractions. Music is very effective on taking the attention away from pain. Sound stimulation amuses the patient effectively and provides a cognitive strategy to supress the pain response and pain control.[25] Considering our study with regard to other data, patients in the study group were more excited ($p=0.01$), were more uncomfortable only at the first hours ($p=0.00$), did not want to stay alone, being significant in the first hour, showed no crying/complaining/screaming in the first 3 hours, or attempt of self-destruction, had shorter durations of contractions ($p<0.05$), systolic blood pressures at the 4th and 5th hours and diastolic blood pressures at the 3rd, 4th and 5th hours were higher compared to the control group. Studies have shown that patients undergoing musicotherapy had significantly lower systolic and diastolic blood pressure, pulse, respiratory count values in the post-therapy period compared to the pre-therapy period.[15,45] In the study of Voss, Good and Yotes (2004), the music group had 72% less concerns, 57% had less pain perception and 69% had less pain feeling compared to the control group.[41] Davis and Cooke (2005) have indicated that music with aromatherapy reduced anxiety.[13] In the study of Ikonomidou and Rehnstrom (2004), music was demonstrated to reduce concern.[24]

CONCLUSION

In conclusion, training the patients and playing music during labour for induced primipara pregnants have been shown to positively affect the labour process, to increase control and cooperation in the mother, to reduce anxiety, labour pain and sensitivity. This result has been supported by the literature.[2,7,12,37] Larger studies with larger series should be performed in order to access an optimal labour environment.

Music affects some people deeply. People who listen to music feel less pain and have reduced anxiety.[2,7,9] During musicotherapy, social and personal communications are increased and lack of stimulation may be removed. Playing music for the patients that stimulates the areas in the brain concerning happiness and safety, may contribute to removal of fear and discomfort.[2,7,12,15,37]

Use of music as a tool for therapy provides focusing on a direction other than pain, as in the method of redirecting attention. Thus, the patient protects herself from the perception of pain and increases the strength against pain.[5]

In the study of Good and Anderson (2002), postoperative pain has been shown to decrease via relaxing methods and music.[22]

In an experimental study investigating the effect of musicotherapy and relaxing on reducing the stress of the patients, musicotherapy has been shown as an effective method in reducing stress.[34]

In a study investigating if music reduced the pain and fear observed as a result of wound therapy in the emergency units, music was shown to be a safe and effective method.[34]

It has been known that Rehavi maqam, which is played for pregnant women, included ney sound and that ney gave a feeling of relaxation and peace for the people.[12,30] In musicotherapy the instruments used have an important effect in the treatment, in addition to the efficacy of the sound.[33]

Music is also used effectively for physical and mental relaxation. During the training of relaxation, music may be added to the techniques improving physical relaxation. Relaxation may be provided easily with the help of music. Music facilitates dreaming as well. Together with the proper instruments, relaxing and peaceful dreaming are easier. These dreams have been used in clinics frequntly in order to reduce anxiety and provide positive feeling and thoughts. Music helps both the physician and the patient within this process. Listening to a relaxing music takes the patient away from uncomfortable thought and feelings.[8,12,15,19]

RECOMMENDATIONS

At the end of this study, the following suggestions were constructed:

- Pregnant women, especially primipara pregnant women, should be trained on the process of birth in the birth preparation class and these educations should be generalized.
- Such studies should not only be performed during labour, but be performed during birth and in the post-natal period.
- The therapeutic music should be the choice of the patient (TSM, classic, zen music) and comparison of different types of music should be carried out.
- Studies should include cutaneous resistant masurement as well.
- Effect of music on the healthcare personnel in the labour area should be investigated.
- Rehavi maqam music should be played in labour rooms as background music.

REFERENCES

[1]. *Program hazırlayanlar ve eğiticiler için rehber, doğum öncesi eğitim*. Istanbul University Faculty of Medicine Women's and Children's Health Education and Research Unit, s.57-73, Istanbul; 2000.

[2]. Agwu KK, Okoye IJ. The effect of music on the anxiety level histerosalfingografy. *The Society and College of Radiographers*. 2006;xx:1-4.

[3]. Aksakal O. Psychosocial-medical aspects of gynecologic examination. *Türkiye Klinikleri Jinekoloji Obstetrik Dergisi.* 2001;11(2):62-67.

[4]. Arısan K. *Propedötik kadın doğum*. 2. Edition, s.380-446, Nobel Tıp Bookstore; 1997.

[5]. Babacan S. *Sezeryan sonrası ağrı kontrolünde ilaç dışı farklı iki yöntemin (masaj/dokunma ve müzik/gevşeme) etkinliğinin karşılaştırılarak incelenmesi* [Disertation]. Izmir, Turkey: Ege University Institute of Health Sciences; 1999.

[6]. Bankowski B, Hearne A. *Johns Hopkins jinekoloji ve obstetrik el kitabı*. 2. Edition, Atlas Kitapçılık; 2005.

[7]. Başağaoğlu İ, Kalkan T, Sarı N. The physiological and psychological effects of classical music and pop music on female high school students. *Yeni Symposium*. 2004;42(2):82-90.

[8]. Brewer C, McCaffery R. Vibroacoustic sound therapy improves pain management and more. *Holistic Nursing Practise.* 2004;18(3):111-118.

[9]. Brunges M, Avigne G. Music therapy for reducing surgical anxiety. *Aorn Journal.* 2003;78(5):816-818.

[10]. Çelik S. Pain management in intensive care patients. *Yoğun Bakım Hemşireliği Dergisi*. 2006;20(1):1-8.

[11]. Çiçek N, Mungan T. *Klinikte obstetrik ve jinekoloji*. Güneş Tıp Kitabevleri; 2007.

[12]. Çoban A. *Müzikterapi*. Timaş Yayınları; 2005.

[13]. Davis C, Cooke M. The effect of aromatherapy massage with music on the stress and anxiety levels of emergency nurses. *Australasian Emergency Nursing Journal*. 2005;8:43-50.

[14]. Demir A. *Hamileliğe hazırlık, doğum ve sonrası annenin el kitabı*. Hayat Publishing, s.245-281, Istanbul; 2002.

[15]. Demir Ö, Arslantaş H. Effects of progressive muscle relaxation and music listening on vital signs of patients who will have operatıons of coronary angiography and percutaneous transluminal coronary angioplasty. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*. 2016;19(1):10-17.

[16]. Doğan B. *Avrupa'da müzik ile terapi*. Mephisto Basım-yayım; 2006.

[17]. Ergin A. *Ağrısız doğum*. Akut Ağrı, Güneş Bookstore; 2005.

[18]. Ergin AB. *The effects on birth process of positions suggested to pregnancies during the first and second stages* [Disertation]. Istanbul, Turkey: Marmara University Institute of Health Sciences; 2005.

[19]. Geden EA, Lower M. Effects of music and imagery on physiologic and self-report of analogued labor pain. *Nursing Research*. 1989;Abst.:38(1):37.

[20]. Genç G. *Tedavi edici ve zihin gelişimi açısından müzik*. 19 May University Psychological Counseling and Guidance Department, Samsun; 2002.

[21]. Gençalp N. *Doğum eyleminde anneye verilen destekleyici hemşirelik bakımının doğum sürecine etkisi.* 1. Uluslararası & 8. Ulusal Hemşirelik Kongresi Kitabı, s.276-280, Antalya; 2000.

[22]. Good M, Anderson G. Relaxation and music reduce pain after gynecologic surgery. *Pain Management Nursing*. 2002;3(2):61-70.

[23]. Goodall D, Etters L. The therapeutic use of music on agitated behavior in those with dementia. *Holistic Nursing Practise.* 2005;19(6):258-262.

[24]. Ikonomidou E, Rehnstrom R. Effect of music on vital signs and postoperative pain. *Aorn Journal.* 2004;80(2):269-278.

[25]. İmseytoğlu D, Yıldız S. Music therapy in neonatal intensive care unit. *İ.Ü.F.N. Hemşirelik Dergisi*. 2012;20(2):160-165.

[26]. Kandemir Ö, Yalvaç S. Günaşımına ne zaman müdahale edilmelidir? *Türk Jinekoloji ve Obstetri Derneği Uzman Sonrası Eğitim Dergisi*. 2004;7(3):176-180.

[27]. Khan SI. *Müzik insan ve evren arasındaki köprü*. 2. Edition, Arıtan Yayınevi; 2001.

[28]. Kılıç C. The effect of music therapy during vaginal delivery on postpartum pain relief and mental health. *Sağlık Akademisyenleri Dergisi*. 2016;3(2):64-66.

[29]. Korkmaz L. *İçimdeki müzik*. *PiVOLKA*. 2012;22(7):5-8.

[30]. Kömürcü N. Travayda dinletilen tedavi müziğinin gebenin anksiyetesine etkisi. *Hemşirelik Forumu Dergisi*. 1999;2(3):89-96.

[31]. Lai H, Chen C. Randomized controlled trial of music during kangaroo care on maternal state anxiety and preterm infants' responses. *International Journal of Nursing Studies*. 2006;43:139-146.

[32]. Ocakcı A, Yiğen E. Atravmatic nursing care of children (The approach to the pain in nursing). *Ege Üniversitesi Hemşirelik Yüksekokulu Dergisi*. 2004;20(1):117-126.

[33]. Oyan S, Sağlamtimur B. Evaluating the effects of music on humans and varıous living creatures. *İnönü Üniversitesi Kültür ve Sanat Dergisi*. 2016;2(1):77-82.

[34]. Örter HC. *Müzik ile terapi*. 1. Edition, Can Matbaacılık; 2005.

[35]. Özyalçın S. *Ağrı nörofizyolojisi*. Akut Ağrı, Güneş Bookstore; 2005.

[36]. Pernoll M. *Obstetric & gynecologic diagnosis & treatment*. 7. Edition; 1991.

[37]. Phumdoung S, Good M. Music reduces sensation and distress of labor pain. *Pain Management Nursing.* 2003;Abst.:4(2):54.

[38]. Sezer F. The effects of music on anger and psychological symptoms. *Uluslararası Insan Bilimleri Dergisi.* 2011;8(1):1472-1493.

[39]. Sürmeli Z, Karaca B. Music and cancer treatment. *Türkiye Klinikleri J Med Oncol-Special Topics.* 2012;5(1):24-6.

[40]. Uyar M, Korhan EA. The effect of music therapy on pain and anxiety in intensive care patients. *Ağrı*. 2011;Abst.:23(4):139-146.

[41]. Voss J, Good M, Yotes B. Sedative music reduces anxiety and pain during chair rest after open-heart surgery. *Pain*. 2004;112:197-203.

[42]. Yava A. *Postoperatif ağrı tedavisi ve hemşirelik uygulamaları*. Gülhane Military Medical Academy Printing House; Ankara; 2004.

[43]. Yıldırım S, Gürkan A. The influence of music on anxiety and the side effects of chemotherapy. *Anadolu Psikiyatri Dergisi*. 2007;8:37-45.

[44]. Yıldırım V, Koç T. *Müzik felsefesine giriş*. Bağlam Publishing; 2004.

Yılmaz DU, Korhan EA, Baysan B, Tan E, Erem A, Çelik S, Çelik GO. *The effect of music therapy on sedation levels and vital signs of patients under mechanical ventilatory support: a pilot study*. *İzmir Kâtip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*.2016;1(3):21-27.