Research Article

Effect of Vocalization of the Holy Quran With and Without Translation on Pregnancy Outcomes: A Randomized Clinical Trial

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Abstract

Background: During recent decades, research in Iran in the area of the Quran and medical science has been seriously engaged in. With respect to the tendency toward spirituality and alternative medicine, we tried to find other aspects of the influence of the Quran.

Objectives: This study aimed to determine the effect of vocalizations of the Holy Quran with and without translation on the consequences of pregnancy (the prevalence of preterm delivery, caesarean delivery, and neonatal anthropometric indices) in women admitted to health care centers in Urmia, Iran.

Materials and Methods: This was a three-armed parallel-group randomized clinical trial in which 168 pregnant women (25-28 weeks) in their first and second pregnancies were divided into three groups of 56 (Holy Quran with translation, Holy Quran without translation, and control group) by randomized blocking. The intervention was implemented once a week for three weeks in the health center, and on other days of the week, the participants listened at home to a CD they were given. The intervention and the control groups all received routine pregnancy care once a week. These mothers were tracked during their labor. Outcomes including gestational age at delivery, delivery type, and neonatal anthropometric indices were recorded based on the mother's records.

Results: There was no statistically significant difference between the groups in terms of demographic and obstetric characteristics before the intervention. In comparison with the control group, the probability of preterm delivery was lower in the Holy Quran with translation group (odds ratio: 0.3, CI 95%: 0.1-1.2) and in the Holy Quran without translation group (0.6, 0.2-1.9) as compared to the control group. However, this difference was not statistically significant. Similarly, the probability of caesarean delivery was lower in the Holy Quran with translation group (0.6, 0.3-1.4) and the Holy Quran without translation group (0.5, 0.2-1.2) as compared to the control group. Based on one-way ANOVA, there was no statistically significant difference between the study groups regarding the infants' anthropometric indices.

Conclusions: Based on the results of this study, despite the lower prevalence of preterm labor and caesarean section in the intervention groups as compared to the control group, no statistically significant effect was seen. This was apparently due to the small sample size.

Keywords: Caesarean Section, Anthropometric Indices, Neonatal, Preterm Labor, Quran

1. Background

The Quran is the Muslim holy book that encompasses all aspects of human life (1). God says, "and, what we sent from Quran is cure and blessing for the faithful" (Al-Asra'a, 82) (2). The harmonious tone of the Holy Quran is a type of mystic music (3), which contributes to the secretion of endorphins by affecting the brain and stimulating alpha waves (4). Therefore, it enhances the stress threshold, removes negative emotions, creates a sense of relaxation, and improves the immune system (5).

Based on previous clinical trials, the sound of the Quran has been effective in alleviating labor pain (6), anxiety, post-caesarean pain (7), and the duration of the active phase of labor (6). The positive effect of music has also been shown in various studies (8-11). That is, music reduces labor pain (12, 13) and the intensity of pregnant women's anxiety during and after a caesarean delivery. According to parents' experience (14), music therapy alleviates stress and crying and improves sleep in hospitalized infants. Music therapy also decreases stress (15) and reinforces sucking in

premature infants (16).

Stress, anxiety, and depression are among the main causes of the adverse consequences of pregnancy (17-22). Increasingly, maternal psychiatric symptoms, particularly mood disorder symptoms or diagnoses, have been implicated as important preterm birth risk factors (23-25). Anxiety and stress symptoms during pregnancy have been reported to be associated with low birth weight and preterm delivery in several studies (17, 26, 27). The results of a study by Sanchez et al. (28) showed that women with depressive, anxiety, and stress symptoms during pregnancy had higher odds for a preterm birth when compared with women without such symptoms (28). Also, Varela et al. suggested that prenatal depressive and anxiety symptoms were not associated with neonatal outcomes such as the birth weight of the newborn, the Apgar score, or the newborn's admission to the NICU (29). Hence, the sound of the Quran is likely able to play a role in improving the consequences of pregnancy through its stress and anxiety reduction mechanism.

2. Objectives

Regarding the important status of the Holy Quran in Muslims' lives, and since no studies have been conducted so far concerning the effect of the sound of the Quran on the consequences of pregnancy, this study was carried out to examine the effect of this sound, with and without translation, on the consequences of pregnancy (the prevalence of preterm delivery, caesarean delivery, and neonatal anthropometric indices).

3. Materials and Methods

3.1. Study Design and Participants

This study was a randomized clinical trial with three parallel arms, performed on women referred to health care centers in Urmia, Iran, an urban area.

The inclusion criteria included: ages 15-45, the pregnancy being the women's first or second (with no history of repeated abortion or stillbirth), being Muslim and believing in the Quran, having sonography results confirming pregnancy with a single healthy embryo, being 25-28 weeks pregnant, and having reading and writing literacy. The exclusion criteria included: having a depression score above 12 on the Edinburgh scale; a history of being hospitalized due to mental problems; a history of taking tranquilizers, smoking, or abusing drugs; having lost a close friend or family member or experienced a divorce or other major emotional problems within the last three months;

having sensory or nervous deafness; having a chronic disease; or having a complicated pregnancy with problems such as bleeding, placenta previa, placental abruption, etc.

This study was a part of a large trial in which the consequences of pregnancy were examined as the secondary objectives. The sample size was determined based on the basic outcomes. It was measured using G-Power with respect to the existing data of the previous study (30). That is, the sample size was determined as 51 with mL = 5.38 and assuming a 15% reduction in the mean of the state of anxiety after intervention ($m_2 = 7.32$; $sd_1 = sd_2 = 9.9$), $\alpha = 0.05$, and power = 90%. With the 10% sample drop, the sample size was considered to be 56 in each group.

3.2. Sampling

The sampling was implemented in selected health care centers considering economic and social levels and having appropriate space to carry out the study. The health care centers were public, governmental, first-level referral centers in Urmia, Iran. This research was approved by the Iranian Center for Clinical Trial with registration (code: IRCT2013081310324N16) and by the Ethics Council of Tabriz University of Medicine (ethics code: 92231).

To carry out sampling, the researchers extracted the list of pregnant women (between 25 and 28 weeks) by referring to selective health care centers (six crowded health care centers including two centers in the middle of town, two downtown, and two uptown) in Urmia, Iran, from August 2014 until July 2015. Those women who met the inclusion criteria and who were interested in participating in the study were invited by phone contact and were asked to be present at a certain health care center. On the meeting day, after obtaining written informed consent, the Edinburgh postnatal depression scale (EPDS) was completed by the participants. Thirty-eight of the participants scoring 12 or above in EDI were referred to a mental health service to take the proper treatments; nine of these were prescribed anti-depression medicine, and the rest were referred to the counseling department. These women were dismissed from the study before randomizing. After that, the data collection tool was completed by the participants.

3.3. Random Allocation

The participants were divided into three groups of 56 (two intervention groups and a control group) using block randomization with block sizes of three and six and the allocation ratio of 1:1:1. The sequence of allocation was set, using a randomizer, by a person not involved in the sampling and data collection. To conceal the allocation, Quran audio CDs with and without translation and empty CDs for the control group were placed inside sealed packets and were numbered sequentially.

3.4. Intervention

The first intervention group received a Quran audio CD along with its Persian translation (the Maryam Sura from the first verse to verse 50, recited by Master Parhizgar and translated by Fouladvand), and the second group received a Quran audio CD without translation (the whole Maryam Sura recited by Master Parhizgar). During three successive weeks, the CD was played for each group once a week for 20 minutes. The vocalized Quran was played for each participant in a separate room with a light tone, using an MP3 player. Those in intervention groups one and two were also told to listen to the CDs once a day during the three successive weeks (the intervention period) on the days when they did not visit the health center. The intervention and control groups received routine pregnancy care (including weight control, blood pressure care, uterus height, and listening to the fetal heart rate) once a week. In the meantime, once a week by phone contact, one of the researchers was informed that the participants had listened to the CDs.

3.5. Data Collection Tool

Instruments including sociodemographic and obstetric questionnaires were used for data collection. They were filled out by the participants before the intervention. Labor details and the infants' anthropometric characteristics were also completed after birth, based on the household's medical records.

3.6. Data Analysis

The data was analyzed using SPSS21. Descriptive statistics (number, percentage, mean, and SD) were applied to describe the participants' sociodemographic and obstetric characteristics. The normality of the quantitative data was evaluated by Kurtosis and Skewness tests. All variables had normal distribution. The groups' consistency was examined using one-way ANOVA, Chi-square, and trend Chi-square. A logistic regression test was applied to compare the frequency of preterm labor and caesarean section between the groups under study. One-way ANOVA was used to compare neonatal anthropometric indices between the groups under study. A post-hoc test including a Tukey test was applied after the ANOVA test. ANOVA assumptions including independency, homoscedasticity, and normality were checked.

4. Results

The current study was performed in selective health care centers in Urmia, Iran, from August 2014 to July 2015. Among 875 pregnant women, 522 did not meet the inclusion criteria. From each of the groups (Holy Quran with translation, Holy Quran without translation, and the control group), one woman exited the study one month later due to a lack of cooperation (Figure 1).

The groups under study were similar regarding sociodemographic characteristics (except occupation and newborn sex, which were adjusted). The participants' mean age was 27.2 (SD: 6.6). The average duration of marriage was 4.7 (SD: 3.6). Eleven participants were Sunni, and the other participants (157 women) were Shia Muslims. Over half (54.8%) were experiencing their first pregnancy, and less than one-fifth of the participants (16.7%) had experienced one miscarriage. Most of them (81.5%) were intentionally pregnant. Almost all of them (95.8%) were household (Table 1).

In the group with translation of the Holy Quran, 29 (53.7) had vaginal delivery, 5 (9.3%) underwent emergency caesarean section, and 20 (37%) underwent elective caesarean section. In the group without translation of the Holy Quran, 32 (57.1%) had vaginal delivery, 4 (7.1%) underwent emergency caesarean section, and 20 (35.7%) underwent elective caesarean section. In the control group, 24 (43.6%) had vaginal delivery, 6 (10.9%) underwent emergency caesarean section, and 25 (45.5%) underwent elective caesarean section. As compared to the control group, the odds of caesarean section in the group with translation (odds ratio: 0.6; 95% confidence interval: 0.3-1.4) and of the group without translation (0.5, 0.2-1.2) was lower compared to the control group. However, this difference was not statistically significant.

The number who experienced preterm labor was 3 (5.6%) in the group with translation of the Holy Quran, 6 (10.7%) in the group without translation, and 9 (16.4%) in the control group. Based on logistic regression test, the probability of preterm labor in the translation group (odds ratio: 0.3, 95% confidence interval: 0.1-1.2) and in the group without translation (0.6, 0.2-1.9) was lower as compared to the control group (Table 2).

The mean weight (SD) of the babies was 3221.3 (SD: 401.9) in the Holy Quran with translation group, 3260.7 (SD: 371.6) in the Holy Quran without translation group, and 3231.5 (SD: 448.5) in the control group. The mean height (SD) was 49.5 (SD: 1.2) in the group with translation, 49.7 (SD: 1.1) in the group without translation, and 49.6 (SD: 1.2) in the control group. The mean head circumference (SD) was 34.3 (SD: 1.1) in the group with translation of the Holy Quran, 34.4 (SD: 1.0) in the group without translation, and 34.4 (SD: 1.3) in the control group. The difference between groups was not statistically significant (P > 0.05) (Table 3).
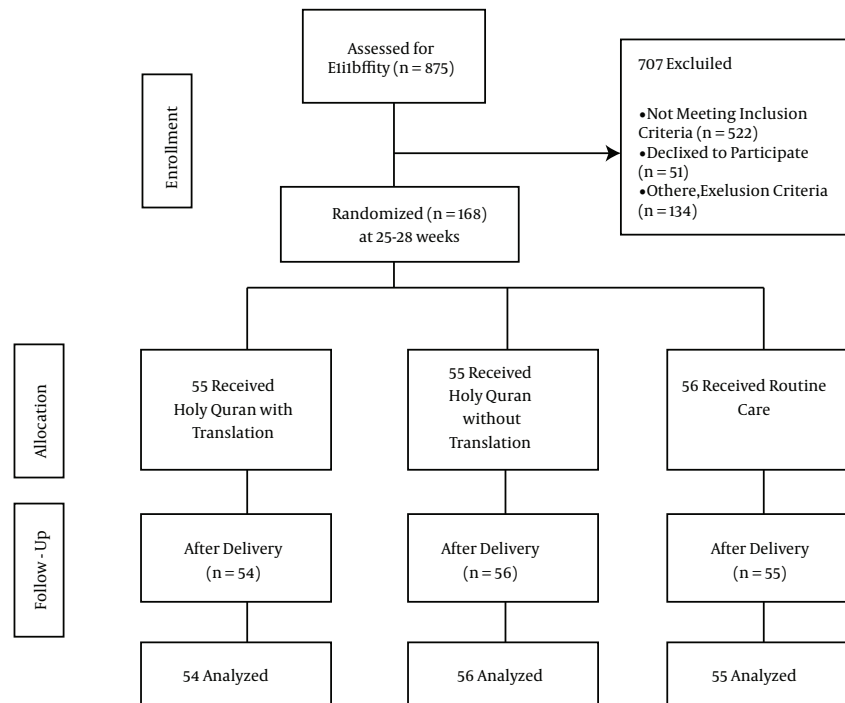
Figure 1. Flowchart of the Study

5. Discussion

This study was a part of an extensive trial where stress, anxiety, and depression were examined as the primary outcomes and the frequency of caesarean section, preterm labor, and neonatal anthropometric indices as the secondary outcomes. Based on the results of the primary outcomes of this research, the vocalized Quran with and without translation was effective in alleviating the intensity of stress, anxiety, and depression in pregnant mothers.

In this study, the probability of preterm delivery and caesarean delivery was lower in the group with the Holy Quran with translation and the group without translation as compared to the control group. One of the probable causes of low preterm delivery or caesarean delivery in the groups either with or without translation of the Holy Quran may be the reduction of stress, anxiety, and depression in mothers. Mulder et al. (31) showed that high levels of anxiety and stress were accompanied by an increasing probability of preterm labor, delivery of underweight babies, spontaneous abortion, or deformities of the newborn. This correlates with many other studies (16, 17, 32-34). The probable mechanism can be described as follows: anxiety, especially when it persists, affects the autonomous nervous system. This results in the contraction of the smooth muscles and vessels (35), which consequently decreases oxygen transfer to the uterus and increases the abnormal pattern of the child's heart. This, in turn, can bring about preterm labor. However, Andersson et al. (36) did not find a significant relationship between pregnancy anxiety and depression and infancy consequences such as an underweight infant, premature labor, a low Apgar score, or fetal asphyxia. Depression may cause an increase in the release of corticotrophin-releasing hormone (CRH) from the placenta via the actions of catecholamines and cortisol. Thus, an association between depression and stress and increased odds of preterm birth are biologically plausible (37-39).

Results of some studies showed that delivery by caesarean and delivery by the intervention of vacuum and forceps are more frequent among depressed women (40). In the Andersson study (36), depressed women further tended toward elective caesarean section. This correlates with the results of the present study in which the number of elective caesareans was 20 in both intervention groups and 25 in the control group.

Advantages of this study included observation of the principles of randomized clinical trials such as random allocation and allocation concealment in order to control biases. Also, this study is the first study that has assessed the effect of the Holy Quran on pregnancy outcomes.

Table 1. Sociodemographic Characteristics of Participants by Study Groups[a,b]

Characteristics	Control Group n = 56	Holy Quran Without Translation n = 57	Holy Quran with Translation n = 55	P Value
Age (Years), mean (SD)	28.0 (5.3)	27.5 (5.2)	26.2 (4.9)	[d] 0.137
15 - 24	20 (35.7)	20 (35.1)	22 (40.0)	[c] 0.735
25 - 34	32 (57.1)	33 (57.9)	32 (58.2)	
35 - 45	4 (7.1)	4 (7.0)	1 (1.8)	
Duration of marriage (years), mean (SD)	5 (3.8)	5.1 (3.9)	4.1 (2.9)	[d] 0.277
Pregnancy				[c] 0.502
Nullipara	27 (48.2)	33 (57.9)	32 (58.2)	
Primipara	29 (51.8)	24 (42.1)	23 (41.8)	
Having abortion history	11 (19.6)	11 (19.3)	6 (10.9)	[c] 0.376
Planned pregnancy	46 (82.1)	45 (78.9)	46 (83.6)	[c] 0.654
Education				[e] 0.974
Secondary school	13 (23.2)	15 (29.3)	12 (21.8)	
High school	10 (17.9)	8 (14.0)	11 (20.0)	
Diploma	17 (30.4)	20 (35.1)	17 (30.9)	
University	16 (28.6)	14 (24.6)	15 (27.3)	
Being housewife	50 (89.3)	57 (100)	54 (98.2)	[c] 0.009
Spouse's educational level				[e] 0.890
Elementary school	3 (5.4)	5 (8.8)	3 (5.5)	
Secondary school	9 (16.1)	14 (24.6)	13 (23.6)	
High school	10 (17.9)	10 (17.5)	8 14.5)	
Diploma	16 (28.6)16	16 (28.1)	19 (34.5)	
University	17 (30.4)	12 (21.1)	12 (21.8)	
Spouse's job				[c] 0.648
Employee	9 (16.1)	11 (19.3)	6 (10.9)	
Worker	7 (12.5)	7 (12.3)	6 (10.9)	
Shopkeeper	13 (23.2)	16 (28.1)	16 (29.1)	
Other	25 (44.6)	23 (40.4)	27 (49.1)	
Sufficiency of income for living expenses				[e] 0.863
Enough	13 (23.2)	16 (28.1)	15 (27.3)	
Relatively enough	32 (57.1)	33 (57.9)	33 (60.3)	
Not enough	11 (19.6)	8 (14.0)	7 (12.7)	
Marital satisfaction				[e] 0.170
Very much	6 (10.7)	11 (19.3)	17 (30.6)	
Much	33 (58.9)	26 (45.6)	23 (41.8)	
Average	16 (28.6)	19 (33.3)	15 (27.3)	
Newborn sex				[e] 0.020
Male	37 (67.3)	29 (51.8)	22 (40.7)	
Female	18 (32.7)	27 (48.2)	32 (59.3)	

[a] The data indicates the number (percent) unless specified.
[b] In spouse's educational level, one person was illiterate. In spouse's job, two people were unemployed in the control group. In marital satisfaction, one person in the broadcast of the holy Quran without translation and control group reported very low rates.
[d] One-way ANOVA test.
[c] Fisher's exact test.
[e] Chi-square test.

Limitations of this study included the relatively small sample size, the short duration of intervention, and also the impossibility of assessing other factors such as quality of life and lifestyle, which might have been involved in the pregnancy outcomes. Thus, clinical trials with larger sample sizes and longer durations of intervention are recommended. Also, it is suggested that the effects of the sound of the Quran on pregnancy outcomes (including preterm delivery, caesarean sections, and neonatal anthropometric indices) are examined as the primary outcomes.

5.1. Conclusion

Results show that the vocalization of the Holy Quran either with or without translation has no effect on neonatal

Table 2. Comparison of Delivery Type and Frequency of Preterm Labor by Study Groups[a,b,c]

Outcomes	Int. 1 (n = 55) n (%)	Int. 2 (n = 57) n (%)	Control (n = 56) n (%)	Int. 1 vs. control OR (95% CI)	P	Int. 2 vs. control (95% CI)	P
			Comparison among the groups				
Comparison Between Groups in Terms of S-C[d] Delivery Odds							
Delivery type				0.6 (0.3 to 1.4)	0.294	0.5 (0.2 to 1.2)	0.156
Vaginal	29 (53.7)	32 (57.1)	24 (43.6)				
Emergency S-C[d]	5 (9.3)	4 (7.1)	6 (10.9)				
Elective S-C[d]	20 (37.0)	20 (35.7)	25 (45.5)				
Comparison Between Groups in Terms of Preterm Labor Odds							
Frequency of preterm labor							
< 37 weeks	3 (5.6)	6 (10.7)	9 (16.4)				
>37 weeks	51 (94.4)	50 (89.3)	46 (83.6)	0.3 (0.1 to 1.2)	0.087	0.6 (0.2 to 1.9)	0.393

Abbreviations: Int., intervention; SD: standard deviation; OR, odds ratio (95% confidence interval).
[a]Int. 1: Holy Quran with translation, Int. 2: Holy Quran without translation.
[b]Logistic regression test was used to compare groups. (emergency and elective caesarean were considered as a one group for comparison of delivery type between groups).
[c]There was a drop of samples in each group at the end of the first month after the intervention.
[d]S-C: Caesarean section.

Table 3. Comparison of Neonatal Anthropometric Indices by Study Groups[a,b,c]

Outcomes	Int. 1 (n = 55) Mean (SD)	Int. 2 (n = 57) Mean (SD)	Control (n = 56) Mean (SD)	Int. 1 vs. control MD (95% CI)* P	Int. 2 vs. control MD (95% CI)* P	Int. 1 vs. int. 2 MD (95% CI)* P
				Comparison Among The Groups		
Infants' Anthropometric Indices						
Weight	3216.9 (401.9)	3260.7 (371.6)	3231.5 (448.5)	9.3 (-161.2 to 179.8) 0.914	48.7 (120.3 to -217.7) 0.570	-39.4 (-209.1 to 130.2) 0.647
High	49.5 (1.2)	49.7 (1.1)	49.6 (1.2)	-0.1 (-0.6 to 0.3) 0.463	0.1 (-0.4 to 0.5) 0.684	-0.3 (-0.7 to 0.2) 0.254
Head circumference	34.3 (1.1)	34.4 (1.0)	34.4 (1.3)	-0.1 (-0.5 to 0.4) 0.709	-0.0 (-0.4 to 0.4) 0.965	-0.1 (-0.5 to 0.3) 0.676

Abbreviations: Int., intervention; SD, standard deviation; MD (95% CI), mean difference (95% confidence interval).
[a]Int. 1: Holy Quran with translation, 2: Holy Quran without translation.
[b]One-way ANOVA with pospost-hoc (Turkey) test as was used for comparing groups.
[c]There was a drop of samples in each group at the end of the first month after the intervention.

anthropometric indices. However, preterm delivery was less frequent in the intervention groups as compared to the control group. Elective caesarean was also more frequent in the control group. Thus, listening to the vocalization of the Quran (especially when recited with its translation) is recommended for pregnant women.

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Footnote

Conflict of Interests: The authors declare that there is no conflict of interest.

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