Clinical and Experimental Health Sciences

Effect of the Practice of Guided Imagery on the Perceived Stress Level in High-Risk Pregnancies

Nursel Alp Dal[1], Kerime Derya Beydağ[2], Aysel Doğan[3]

[1] Munzur University, Faculty of Health Sciences, Department of Midwifery, Tunceli, Türkiye.
[2] Istanbul Gedik University, Faculty of Health Sciences, Department of Nursing, İstanbul, Türkiye.
[3] Toros University Faculty of Health Sciences Department of Nursing, Mersin, Türkiye.

Correspondence Author: Kerime Derya Beydağ
E-mail: kderyabeydag@gmail.com
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ABSTRACT

Objective: This research was conducted to identify the effect of the practice of Guided Imagery on the perceived stress level in high-risk pregnancies.

Methods: The study was designed as a prospective, randomized, and single-blind study. The research was performed with the participation of a total of 128 women (64 in the experimental group, 64 in the control group) who had high-risk pregnancies between February-May, 2021. The data were evaluated with the Perceived Stress Scale.

Results: The experimental group obtained a lower mean of post-test scores (26.36±5.96) from the Perceived Stress Scale than the control group (30.48±3.93), and this difference was statistically significant ($p<.05$). Also, the experimental group obtained lower mean scores from the Perceived Stress Scale in the post-test phase than the one in the pretest phase, and this difference was statistically significant ($p<.05$).

Conclusion: Nurses and midwives should include the practice of Guided Imagery in the care processes to reduce the stress levels of women with high-risk pregnancies.

Keywords: Guided imagery, perceived stress, high-risk pregnancies.

1. INTRODUCTION

Even if the pregnancy that is one of the most important events experienced by the women across the lifetime is a natural phenomenon, it is also a process when several physiological, psychological, and social changes take place (1).

The cases that threaten maternal or fetal health, increase morbidity and mortality, and also include physiological, social, and emotional dimensions are described as the 'high-risk pregnancy' (2). In the relevant literature, it is put forward that the prospective mothers had worry and fear about the survival and development of the fetus during the pregnancy, and the pregnant women who had worries about themselves and the fetus felt more intense stress (3). In high-risk pregnancies, uncertainties about having a healthy newborn or a healthy delivery frustrate the pregnant women, and this situation, in turn, can raise maternal anxiety and stress levels. While the increase in stress levels affects maternal and fetal health negatively and gives rise to problems such as the risk of preeclampsia, gestational diabetes mellitus, pre-term labor, and spontaneous abortion, it can also affect fetal development and lead to the delivery of babies with low birth weight (2).

The risky cases that affect maternal and fetal health negatively should be evaluated physiologically, socially, and emotionally as a whole (4). Nurses and midwives offering care to a woman with a high-risk pregnancy should be aware of the stressors in the high-risk pregnancy and ensure that proper stress coping techniques are used hence, the prospective mother and newborn have better health outcomes. One of the methods to be used by nurses and midwives in promoting maternal well-being is guided imagery (5,6).

Guided imagery is the mind-body practice in which the power to imagine physical, emotional, and spiritual dimensions is used. The objects that are seen and the emotions that are felt in daily life are recorded by us. The images stimulate our physical and emotional responses and help us understand and make sense of the events (7).

In general, guided imagery uses imaging techniques that will ensure that the pregnant woman will imagine herself in a

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place where she can feel relaxed, safe, happy, and peaceful. These techniques move the pregnant woman's mind away from her disturbing emotions and thoughts about daily life and positively affect her emotional well-being and quality of life by producing different mental images (8,9).

It is discerned that the guided imagery method is applied to different disease groups. For example, it was used as an analgesic in the postoperative period (10), in alleviating the negative effects of chemotherapy (11), in ensuring the functional remission of individuals with schizophrenia (12), in reducing individuals' stress levels (13), in lowering pregnant women's stress levels (5), and in controlling blood pressure in pregnant women with hypertension (6).

Knowing the risks associated with increasing levels of anxiety during high risk pregnancies, there is a need for health professionals to be prepared to intervene effectively, reducing the risk of their incidence and promoting recovery through non-pharmacological methods. There is limited evidence to inform practice about the use of guided imagery for high risk pregnancies. Since the nurses and midwifes are responsible for providing care to women in order to promote their health and their adaptation to parenting, it is essential that they are aware of the most effective methods in the prevention or treatment of anxiety. Nurses and midwives can contribute to reducing stress levels by including guided imagery in the care processes of high-risk pregnant women.

1.1. Objective

This study aimed to identify the effect of the practice of guided imagery on the perceived stress level in high-risk pregnancies.

The hypothesis was; The guided imagery has a positive effect on the reduction of perceived stress levels in women with high-risk pregnancies.

2. METHODS

2.1. Study Design and Participants

The study was designed as a prospective randomized single-blind trial. The research was conducted on women who had high-risk pregnancies and received inpatient treatment on 1 February – 1 May 2021 at the perinatology service of a maternity and children's hospital located in the Anatolian side of Istanbul province of Turkey.

The research population was comprised of all women who had high-risk pregnancies and received treatment at the perinatology service of the aforementioned hospital in the above period. To calculate the sample size, the G*Power for Windows (copyright 2010-2013 Heinrich-Heine-Üniversitat Düsseldorf) was utilized. As per the power analysis (α=0.05, 1-β=0.80), the sample size was identified as 128 participants. A total of 64 pregnant women were randomly assigned to each study group. To this end, "Simple Random Sampling", a probability sampling method, was used. A total of 150 participants on the randomization list were invited to the study.

2.2. Randomization

The participants used a computer-aided simple random sampling method and were assigned to the two study groups as per the table of random numbers. The two group lists were put into either of two envelopes; the researchers randomly selected one of the two envelopes as the intervention group and the other as the control group. Sample selection and assignment to groups were made by a researcher other than the principal researcher who did not practice guided imagery. There was no interaction between the participants since the experimental and control groups were included in the study on different days.

Ten participants were excluded from the study because of communication problems, and 4 because they refused to participate. Four participants from the experimental group and four participants from the control group left the study. The study was completed with 128 participants. Details are given in Figure 1.

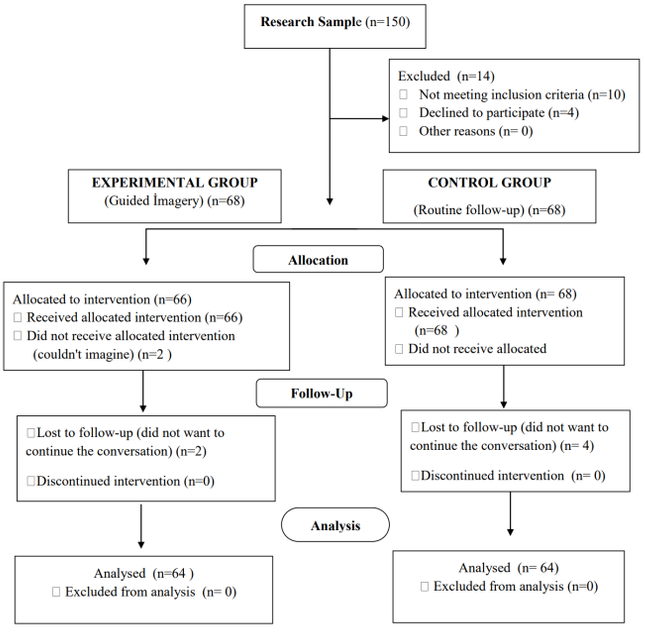

Figure 1. *Study design*

Criteria for being included in the research are having a high-risk pregnancy, being aged 18 years or above, agreeing to participate in the study and being literate in Turkish.

2.3. Criteria for being excluded from the research

The pregnant women who voluntarily wanted to leave the research at any stage after being included in the study, could not communicate verbally, had a visual or hearing disorder, and were previously diagnosed with a psychiatric disease were excluded from the research.

2.4. The experimental group (practicing guided imagery)

The women who were hospitalized at the perinatology service for having high-risk pregnancies and agreed to participate in the research were asked to consent in written format to take part in the study.

Upon receiving consent in written format from the pregnant women to take part in the study, the pregnant women's stress levels were evaluated by using the Perceived Stress Scale in a period when they felt comfortable.

The researcher invited the pregnant woman to imagine herself in a calm and peaceful place. After the pregnant woman said that she was ready, the researcher asked her to imagine herself at the edge of 20-step stairs and instructed her to step down the stairs and reach the place where she desired to be and felt happy, stressless, and carefree. Next, the pregnant woman was asked to imagine that, in each step, her entire body gradually had relaxation starting from her toes. The pregnant woman was given time (2-3 minutes) to imagine, in a stressless manner, experiencing a situation, which she liked or enjoyed, in a place or state that she dreamed about. When the pregnant woman stated that she had relaxation to the extent that she desired, she was once again told to come to the edge of the same stairs. This time, she was instructed to step up the stairs and imagine that her entire body, again starting from her toes, gradually gained strength in each step and she reached the 20th step by growing stronger with each step that she took (14).

The first practice of guided imagery was performed face-to-face with pregnant women. At the end of 20 minutes, the pregnant women's stress levels were reevaluated by using the Perceived Stress Scale.

Control group (routine follow-up): The guided imagery was applied also to the pregnant women in the control group due to ethical considerations after the collection of research data was finalized.

2.5. Measurements

The research data were collected with the Demographic Questionnaire and the Perceived Stress Scale.

Demographic questionnaire form is comprised of 11 questions that were prepared by the researchers in light of the relevant literature and addressed the participant pregnant women's descriptive characteristics such as age, gender, marital status, education level, and income level and the number of their previous pregnancies (6, 14-16).

Perceived Stress Scale was developed by Cohen, Kamarck, and Mermelstein (1983). Comprised of 14 items in total, the scale was designed to measure the extent to which circumstances in one's life are perceived as stressful. The respondents evaluate the items based on a five-point Likert scale that is scored from '0: Never' to '4: Very Often'. Seven positively-stated items are reverse scored. The minimum and maximum scores to be obtained from the scale are successively 0 and 56 points. A high score obtained from the scale indicates that the respondent has high-level stress perception. Eskin et al. (2013) performed the study to test the validity and reliability of the scale in Turkish and the Cronbach's Alpha coefficient was calculated as 0.87 for the scale in this respect (17). The Cronbach alpha coefficient value of the scale in this study was found to be 0.84.

2.6. Data collection

The data were collected during the time period from February 2021 to May 2021. The duration of each session of data collection was approximately 20-25 min per patient. The face-to-face interview technique, performed by the researcher, was used for data collection. The application was carried out between 15:00 and 17:00, which is the most suitable time for pregnant women (time interval other than visit, treatment and sleep hours). Only the pregnant was allowed to stay in the room during the interventions.

2.7. Data Analysis

The research data were analyzed via IBM SPSS 26.0. The frequencies (number, percentage) were used for the categorical variables in the research whilst the descriptive statistics (mean, standard deviation) were utilized for the numerical variables. The Kolmogorov-Smirnov test was employed to test whether the numerical variables were normally distributed, and it was ascertained that some variables were not normally distributed. Therefore, both parametric and non-parametric statistical methods were utilized in the study. The relationships between the two independent categorical variables were examined via the chi-square test. In cases where the assumption of expected frequencies did not hold under the chi-square test, the Fisher Exact Test was utilized. The independent samples t-test was used in the comparison of differences between the two groups of independent variables with normal distribution whilst the Mann-Whitney U Test was employed in the comparison of differences between the two groups of independent variables with non-normal distribution. The dependent samples t-test was utilized in the comparison of differences between the two groups of dependent variables with normal distribution. Statistical significance was determined as p-value of $p<.05$. As per the results of Post Hoc power analysis, it was found that the research had an effect size of.816 and power of 98.4%.

Table 1. *Demographic characteristics each study group*

Characteristics	Experimental group (n=64)		Control group (n=64)		Total (n=128)		Z	p
	Mean	SD	Mean	SD	Mean	SD		
The average age	31.97	5.90	29.91	5.82	30.94	5.93	-1.942	0.052
	n	%	n	%	n	%	Chi-Square	p
Education level								
Primary school	19	29.7	13	20.3	32	25.0	2.91	.23
High school	21	32.8	30	46.9	51	39.8		
Associate/Undergraduate program or higher	24	37.5	21	32.8	45	35.2		
Employment status								
Working	26	40.6	30	46.9	56	43.8	0.50	.47
Not working	38	59.4	34	53.1	72	56.3		
Duration of marriage								
Below 1 year	5	7.8	9	14.1	14	10.9	6.16	.10
1-5 years	28	43.8	37	57.8	65	50.8		
6-10 years	18	28.1	12	18.8	30	23.4		
11 years or above	13	20.3	6	9.4	19	14.8		
Gravidity								
First pregnancy	23	35.9	28	43.8	51	39.8	0.81	.36
Two pregnancies or above	41	64.1	36	56.3	77	60.2		
Month of Pregnancy								
1-3 months	2	3.1	5	7.8	7	5.5	5.22	.07
4-6 months	30	46.9	39	60.9	69	53.9		
7-9 months	32	50.0	20	31.3	52	40.6		
Diagnosis								
Risk of miscarriage	8	12.5	13	20.3	21	16.4	7.76	.10
Premature rupture of membrane/risk of premature birth	23	35.9	12	18.8	35	27.3		
Preeclampsia/eclampsia	13	20.3	22	34.4	35	27.3		
Hyperemesis gravidarum	1	1.6	2	3.1	3	2.3		
Gestational diabetes	19	29.7	15	23.4	34	26.6		
Income level								
Income below expenses	19	29.7	9	14.1	28	21.9	4.74	.09
Income equaling expenses	32	50.0	37	57.8	69	53.9		
Income above expenses	13	20.3	18	28.1	31	24.2		

Z: Mann-Whitney U Test

Table 2. *Inter-group and intra-group comparisons of the pretest and post-test Perceived Stress Scale scores*

	Experimental group (n=64)		Control group (n=64)		Inter-group comparisons	
	Mean	SD	Mean	SD	t^a	p
Pretest	31.53	4.40	30.50	3.92	1.40	.16
Post-test	26.36	5.96	30.48	3.93	-4.62	**.000***
Intra-group comparisons	t^b=9.548	p=**.000***	t^b=.08	p=.93		

*a: Independent samples t-test b: Dependent samples t-test *p<.05*

2.8. Ethical Considerations

The written permissions necessary for conducting the research and collecting data were obtained (decision dated: 23.12.2020 and numbered: 130/10) from the Scientific Research and Publications Ethics Committee of a university and the hospital where the research took place. After information about the research was presented to the pregnant women, they were asked to consent in written format and verbally to participate in the research before the study was launched. Social distancing and other protective measures related to the pandemic were taken during the data collection process.

3. RESULTS

To the results of this study, there was no statistically significant difference between the pregnant women in the experimental and control groups as per the variable of age ($p>.05$) (Table 1). According to the results of the chi-square test, there was no statistically significant difference between the participant women in the experimental and control groups as per the variables of education level, employment status, duration of the marriage, gravidity, month of pregnancy, diagnosis, income level, mental state ($p>.05$) (Table 1). In light of these results, it is discerned that the experimental and control groups were homogeneous in terms of the variables of age, education level, employment status, duration of the marriage, gravidity, month of pregnancy, diagnosis, income level ($p>.05$) (Table 1).

According to the results of the independent samples t-test, there was a statistically significant difference in the means of the post-test Perceived Stress Scale scores of the experimental and control groups ($p<.05$) and the experimental group obtained a lower mean of post-test Perceived Stress Scale scores than the control group (Table 2). As per the results of the dependent samples t-test, there was a statistically significant difference in the means of pretest and post-test Perceived Stress Scale scores of the experimental group ($p<.05$), and the experimental group obtained a lower mean of Perceived Stress Scale scores in the post-test phase than the one in the pretest phase (Table 2).

4. DISCUSSION

The effect of the practice of guided imagery on the perceived stress level in high-risk pregnancies was analyzed in this study.

In this research, it was found that the women who practiced guided imagery in high-risk pregnancies obtained a lower mean of perceived stress scores after the practice than the one obtained before the practice whereas there was no statistically significant difference in the means of perceived stress scores obtained in the pretest and post-test phases by the pregnant women who did not practice guided imagery (Table 2). The advent of a high-risk case in pregnancy raises the stress experienced by the woman during the pregnancy period and can exert additional emotional, mental, and physiological effects on the pregnant woman (2,3). Guided imagery is an evidence-based complementary practice that is effective in lowering stress levels, developing the positive emotional state further, and improving the negative emotional state (18,19). The results in the relevant literature are similar to the finding of this current study. Likewise, in the study performed by Jallo et al. (2014) on African American pregnant women, it was identified that the practice of guided imagery reduced maternal stress and was effective in lowering stress in pregnant women who received inpatient treatment for having high-risk pregnancies (16). In the study by Shakiba et al. (2019), it was ascertained that the practice of guided imagery was effective in lowering nausea and vomiting in pregnancy (20). In the study by Furtado et al. (2019), it was found that the practice of guided imagery reduced maternal anxiety and perceived discomfort during pregnancy (21). In the study conducted by Khojasteh et al. (2016) on the nulliparous pregnant women in Iran, it was discerned that the practice of guided imagery lowered anxiety in pregnant women (22). In the study conducted by Mokaberian et al. (2021) on primiparous women with unwanted pregnancies, it was ascertained that the practice of imagery-based progressive muscle relaxation was effective in enhancing attachment between the prospective mother and fetus and ensuring that the pregnant women felt mentally better (23). In the study performed by Azimian et al. (2017) to examine the effect of progressive relaxation and guided imagery on gestational hypertension, it was identified that both methods significantly reduced blood pressure values (24). In the study by Jupriyono et al. (2017), it was indicated that guided imagery was effective in lowering maternal anxiety and stress (15).

The strength of this study is; as a research method, it was carried out with a single-blind method and randomization in the experimental design. Its limitation is; data is limited by the accuracy of the answers given by the participants to the scale items. Another limitation was that the application was performed only once, and the result was measured immediately. Studies requiring longer follow-ups are needed for long-term results.

5. CONCLUSION

At the end of the research, it was identified that the practice of guided imagery reduced the perceived stress in women with high-risk pregnancies. In this respect, ensuring the use of guided imagery as a complementary method to make pregnant women relax and making the use of this practice more popular are recommended. It is recommended that nurses and midwives support women with high-risk pregnancies by helping them imagine through assuring narratives likely to make them relax (i.e. asking them to imagine pleasing scenes such as sea, lake, and forest).

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Author Contribution:

Research idea: NAD, KDB, AD
Design of the study: NAD, KDB, AD
Acquisition of data for the study: AD
Analysis of data for the study: NAD, KDB, AD
Interpretation of data for the study: NAD, KDB, AD
Drafting the manuscript: NAD, KDB
Revising it critically for important intellectual content: NAD, KDB
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