



The Effect of Video Education on Knowledge of Pregnancy Blood Pressure and Preventive Self-care Among Primiparous Pregnant Mothers: A Quasi-experimental Study

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Abstract

Background: Hypertensive disorders during pregnancy pose a significant public health problem with serious consequences for maternal and fetal health. Women with a good knowledge of pregnancy hypertension are more likely to promptly report symptoms and seek medical attention. In addition, self-care knowledge can effectively prevent or control blood pressure during pregnancy.

Objectives: This study evaluated primiparous women's knowledge of pregnancy blood pressure disorders and self-care by providing video education.

Methods: In this quasi-experimental study, 84 primiparous mothers in Dezful City, Iran, within June to September 2023 were divided into two intervention and control groups based on the multistage sampling technique. Knowledge and self-care questionnaires regarding pregnancy hypertension were sent to both groups before and after the intervention. Education was provided through video education. The data were analyzed using frequency, percentage, mean, standard deviation, and independent and paired *t*-tests.

Results: Video education increased the intervention group's knowledge of hypertensive disorders of pregnancy (pre = 9.76 ± 3.42 ; post = 16.83 ± 3.74 ; $P < 0.001$) and self-care (pre = 50.66 ± 10.63 ; post = 54.07 ± 8.67 ; $P < 0.001$). However, knowledge (pre = 8.35 ± 3.36 ; post = 8.87 ± 3.58 ; $P = 0.519$) and self-care related to pregnancy blood pressure (pre = 50.36 ± 2.79 ; post = 50.30 ± 10.92 ; $P = 0.833$) in the control group did not change before and after the intervention.

Conclusions: Using educational videos can improve mothers' knowledge regarding pregnancy blood pressure and preventive self-care.

Keywords: Hypertension, Pregnancy, Self-care, Education, Knowledge

1. Background

Pregnant hypertension disorders are a serious public health problem with severe consequences for maternal and perinatal health. Pregnancy-induced hypertension affects approximately 10% of pregnancies, contributing to 14% of maternal deaths, 15% of perinatal deaths, and 30% of near-miss maternal events globally (1). The incidence of hypertensive disorders of pregnancy increased from 16.30 million in 1990 to 18.08 million in 2019, a total increase of 10.92% (2). Hypertensive disorders affect 2 - 8% of pregnancies, and their prevalence is 3.54% in Iran (3).

Pregnancy blood pressure is defined as systolic blood pressure ≥ 140 mm Hg, diastolic blood pressure \geq

90 mm Hg, or both at a time interval of at least 4 hours. In addition, high blood pressure after the 20th week of pregnancy is another indicator of pregnancy blood pressure in a person with normal blood pressure (4).

The evidence suggests that complications related to pregnancy blood pressure disorders are caused by insufficient knowledge, negative attitudes toward pregnancy blood pressure, and a lack of preventive measures (5). A previous study showed that 70.7% of pregnant women had poor knowledge of pregnancy blood pressure (6).

In addition, studies have shown that women who have a good knowledge of pregnancy hypertension are more likely to report symptoms promptly and seek healthcare

in the future (7, 8). High blood pressure has been reported to be caused by overweight, obesity, diabetes, gestational diabetes, kidney diseases, chronic blood pressure, and maternal age (9). In addition, factors such as diet, activity, and stress might affect the development or exacerbation of pregnancy blood pressure. Therefore, self-care knowledge can effectively prevent or control pregnancy blood pressure.

Self-care is a conscious, learned, and purposeful action that a person takes to maintain his/her life and the health of him/herself and his/her family (10). Self-care knowledge for pregnancy hypertension includes awareness of skills that help prevent the condition, including stress management (11), along with a diet rich in fruits and vegetables, nuts, whole grains, legumes, olive oil, and fish, limiting the consumption of high-fat foods, salt, and sugar, including sugar-sweetened beverages, and reducing the consumption of red and processed meat (12). In addition, physical activity during pregnancy supports cardiorespiratory fitness, reduces the risk of excessive weight gain and gestational diabetes, and reduces postpartum depression symptoms (13). Weight control is another approach because obesity increases oxidative stress, stimulates an inflammatory response, and damages vascular endothelial cells (14). A previous study showed that 36.4% of pregnant mothers had poor self-care knowledge in this field (6). Therefore, educational interventions should have been part of the prenatal counseling and family planning in this case (10).

The World Health Organization (WHO) has set 17 global targets to be achieved by 2030, including a reduction in maternal mortality and an end to preventable deaths of children. This issue requires a comprehensive understanding of the problems that contribute to the complications and mortality of mothers (15), among which blood pressure disorders during pregnancy must be considered. Therefore, education in this field should be a priority for health programs. The use of videos is an educational method. A video can be used to convey information to educate patients in a short time, and because it has predetermined content, it will be more useful than immediate training. Other advantages of video training include the ability to store more information, create continuity in information, not cause confusion in training, and add new information to previous materials (16).

2. Objectives

Studies in this field have mainly focused on the prevalence of gestational hypertension disorder and quality of life. Therefore, to the best of our knowledge, the

effect of video education on pregnant women's knowledge and self-care has been less considered in previous studies. Therefore, this study aimed to evaluate pregnant women's knowledge of pregnancy blood pressure disorders and self-care by providing video education in this field in health centers in Dezful City, Iran.

3. Methods

3.1. Study Design

This semi-experimental study was conducted in Dezful City, Iran, within June to September 2023.

3.2. Sampling Technique

A multistage sampling technique was used to select the samples. The researchers first identified three regions as sample clusters, and a list of comprehensive health centers in each cluster was identified. Two centers in each cluster were selected using random sampling in the next step. Finally, six health centers were selected based on simple randomization: 3 centers in the intervention group and 3 centers in the control group. Pregnant mothers who visited comprehensive health centers for prenatal care were then included in the study based on availability and inclusion criteria.

The total sample size was calculated at 84 subjects based on the findings of a previous study (17). The sample size for each group was calculated to be 38 subjects with a 10% attrition rate, resulting in a final sample size of 42 subjects in each group.

$$n = \frac{2s^2(Z_{1-\alpha/2} + Z_{1-\beta})^2}{(\mu_1 - \mu_2)^2} = \frac{2 \times 0.26^2(2 + 1.84)^2}{(2.6 - 2.43)^2} \cong 38 \quad (1)$$

The inclusion criteria included being under the 20th week of pregnancy and not having high blood pressure (systolic blood pressure ≥ 140 mm Hg or diastolic blood pressure ≥ 90 mm Hg or both on 2 occasions with an interval of at least 4 hours) (4), being primiparous, and an age range of 18 to 45 years. The exclusion criteria included the participation of mothers in previous training courses related to high blood pressure and abortion caused by pregnancy.

3.3. Research Tools

Three questionnaires were used in this study: A pregnancy blood pressure knowledge questionnaire, a pregnancy blood pressure self-care questionnaire, and demographic information.

3.3.1. Demographics Questionnaire

Demographic data included age, gestational age, education level, prior knowledge of pregnancy hypertension, and sources of information.

The questionnaires were first translated into Farsi and then translated into English by two different individuals. Then, the two versions were matched, and finally, an expert in the field of women matched the English version with the original version, and the final Persian version was obtained according to the absence of differences. Considering that the final versions were given to 10 pregnant mothers and there was no problem in understanding the meanings, we confirmed the face validity of the tools. Then, the questionnaire was given to 10 members of the academic staff of the university to evaluate the validity of the content.

3.3.2. Knowledge of the Pregnancy Hypertension Questionnaire

The knowledge of pregnancy hypertension questionnaire included questions related to risk factors (7 scores), signs and symptoms (8 scores), actions in case of symptoms (1 score), complications (6 scores), and prevention of pregnancy hypertension (4 scores). Each correct answer was assigned one point, and each incorrect answer was assigned zero points. Based on this scoring system, individuals who scored 60% have sufficient knowledge (1). Cronbach's alpha was 0.75. Scores of content validity index (CVI) and content validity ratio (CVR) in this study were 0.80 and 0.76, respectively.

3.3.3. Self-care Pregnancy Hypertension Questionnaire

A self-care questionnaire was used in this study (18). This questionnaire consisted of 23 questions that measured diet, stress control, and physical activity. Respondents rated their answers on a Likert scale with three options: Never (score 3), sometimes (score 2), and always (score 1). The scores for questions 2, 3, 4, 5, 7, 11, and 12 were calculated in reverse. A score below 46 indicates inadequate self-care. Cronbach's alpha was 0.77. Additionally, CVI and CVR in this study were 0.81 and 0.76, respectively.

Questionnaires were prepared using Porsline software and provided to the mothers of both groups before and one month after the intervention.

3.4. Intervention Method

One educational video in the form of PowerPoint and lectures about pregnancy blood pressure disorder and preventive self-care for the intervention group and one educational video related to the general fundamentals of prenatal care and self-care for the control group

(prepared by researchers at the Virtual Education Center of Dezful University) were available to the mothers. The content of the instructional videos was gathered from reputable medical books, scientific articles, and medical and nursing websites. Five members of the nursing and medical groups reviewed the videos and provided additional recommendations to ensure the content of the videos. The final version of the videos was prepared after incorporating their suggestions. The duration of each film was approximately 25 minutes.

The items taught in the control group included the explanation of routine care during pregnancy, including routine tests during pregnancy, the number of ultrasounds, the rate of weight gain during pregnancy, the time to hear the fetal heartbeat, danger signs during pregnancy, individuals at risk of pregnancy problems, and the use of supplements and nutrition.

The topics taught in the intervention group included the classification of pregnancy blood pressure disorders, predisposing factors, related symptoms and complications, prevention of weight and stress control, physical activity, nutrition, and regular blood pressure control.

Because all mothers did not have the same application, educational videos were sent to them individually through popular applications, such as WhatsApp, and media messages, such as Bale and Eitaa. The main researcher's contact number was provided in the video attachment for individuals to ask questions.

The duration of viewing or repeating the viewing of the video was the responsibility of the mothers themselves, and the researcher only asked the mothers of both groups questions about whether the videos had been viewed and whether there was any ambiguity that required an explanation about the film.

3.5. Analysis

Frequency, percentage, mean, standard deviation, and independent and paired *t*-tests were used for data analysis. The analysis was conducted using SPSS software version 21. A significance level of 0.05 was considered statistically significant.

3.6. Ethical Considerations

Before data collection, written consent was obtained from the pregnant women. Both groups received routine prenatal care at health centers. At the end of the study, educational videos from each group were given to the control group. This study was approved by the Ethics Committee of the Dezful University of Medical Sciences (IR.DUMS.REC.1402.002).

4. Results

All mothers completed the study. Most mothers in both groups were in the age range of 31 - 40 years and the 12 - 20th gestational age. [Table 1](#) summarizes the sociodemographic characteristics of the participants.

The results demonstrated an increase in mothers' knowledge regarding pregnancy hypertension in the intervention group, and according to the paired *t*-test, this change was statistically significant. In the control group, there were changes in the mothers' knowledge scores regarding pregnancy hypertension after the intervention, compared to those before the intervention. However, according to the paired *t*-test, these changes were not statistically significant.

[Table 2](#) presents the scores of mothers' knowledge regarding pregnancy hypertension in the control and intervention groups before and after the intervention.

The study results showed that the self-care knowledge of mothers in the intervention group changed after video education; however, there were no significant changes in the control group. The results are presented in [Table 3](#).

5. Discussion

The results showed that video education provided to pregnant mothers increased their knowledge of blood pressure during pregnancy. This result is consistent with a study conducted in Indonesia, which showed that the use of videos and leaflets has a significant effect on improving pre-eclampsia knowledge among pregnant women (19). The abovementioned study showed that pregnant women's knowledge of the definition of pre-eclampsia, its signs and symptoms, risk factors, complications, and prevention increased after education. The aforementioned findings encourage health providers to use videos and pamphlets for education (19).

A study in Canada in which pregnant women were educated about pre-eclampsia using a three-part tool, including a pamphlet, a video, and a pictogram, also showed that pregnant mothers' knowledge of pre-eclampsia improved with these methods (20). Other studies have also been conducted, all of which showed the positive effect of the educational film on the knowledge of pregnant mothers in other health fields. A study in India showed that the use of an educational video improved pregnant mothers' knowledge of gestational diabetes (21). Another Indonesian study showed that video-based education could improve pregnant mothers' awareness of the dangers of smoking exposure (22). A study conducted in Egypt demonstrated that the use

of an educational video improved pregnant women's knowledge of self-medication (23).

This study showed that video education improves self-care knowledge related to high blood pressure during pregnancy. A study in Egypt showed that pregnant women's level of knowledge about self-care regarding the management of minor diseases during pregnancy was improved with the help of pamphlets and educational videos (24). A study conducted in India showed that using an educational video improves self-care in pregnant women with gestational diabetes (25). Studies have shown that self-care with the help of educational videos can be used for individuals with different health conditions. A study conducted in Iran showed that video training had a positive effect on self-care in cataract patients (26). A study conducted in India indicated that video training can improve self-care in patients with epilepsy (27). A study conducted in the United States demonstrated that video training can have a positive effect on self-care in patients with heart failure (28).

The findings showed that the media and health centers were the primary sources of information regarding pregnancy hypertension in both the intervention and control groups. The aforementioned findings indicate the efficacy of health centers in education and, consequently, the reduction of health risks, particularly during pregnancy. A study in Bangladesh showed that health centers and the media were the most important sources of knowledge related to high blood pressure in pregnant women after personal experience, which is consistent with the results of the present study (9). A study in Egypt showed that 41.8% of women received information about pre-eclampsia blood pressure from the health team, 31.3% from the media, and 26.9% from friends (29). In addition, a Canadian study showed that the care team and the media played little role in informing pregnant women about pre-eclampsia (20). Differences in the results can be related to the level of education of participants. Most of the individuals who studied in Canada were educated professionally. Individuals with higher education are able to search and acquire the required knowledge due to their awareness and access to information sources, such as the Internet, social networks, books, and other sources. The healthcare system and the media are mainly responsible for this knowledge in communities with a lower education level.

In the current study, 59.5% of the intervention group and 50% of the control group had no prior knowledge of pregnancy hypertension, which is much higher than that in similar studies. One study in Bangladesh showed that 15% of mothers had no information about pregnancy hypertension (9). In Karbala Hospital in

Table 1. Sociodemographic Characteristics of Pregnant Women in the Training and Control Groups^a

Variables	Control Group	Intervention Group	P-Value
Age (y)			0.35
20 - 30	20 (47.6)	15 (35.7)	
31 - 40	21 (50)	23 (54.8)	
41 - 50	1 (2.4)	4 (9.5)	
Gestational age (week)			0.28
1 - 12	15 (35.7)	16 (38.1)	
12 - 20	27 (63.4)	26 (61.9)	
Education level			0.41
Illiterate high	6 (14.3)	8 (19)	
Under diploma	14 (33.33)	12 (28.6)	
School diploma and postgraduate diploma	19 (45.2)	17 (40.5)	
Bachelor's degree	3 (7.1)	5 (11.90)	
Source of information			0.23
Family	7 (16.7)	5 (11.9)	
Friends	5 (11.9)	4 (9.5)	
Social media	17 (40.5)	14 (33.3)	
Comprehensive health centers	13 (31)	19 (45.2)	
Previous knowledge of pregnancy blood pressure			0.33
Yes	21 (50)	17 (40.5)	
No	21 (50)	25 (59.5)	

^a Values are presented as No. (%).

Table 2. Knowledge Scores for Pregnancy Hypertension in the Intervention and Control Groups^a

Knowledge of Pregnancy Hypertension	Control Group	Intervention Group	P-Value	Independent t-test
Before intervention	8.35 ± 3.36	9.76 ± 3.42	0.534	0.382
After intervention	8.87 ± 3.58	16.83 ± 3.74	0.011	6.64
Paired t-test	P = 0.607, t = 0.519	P < 0.001, t = 8.844		

^a Values are presented as mean ± SD.

Table 3. Self-care Knowledge of Pregnancy Hypertension in the Control and Intervention Groups^a

Pregnancy Hypertension Self-care Knowledge	Control Group	Intervention Group	P-Value	Independent t-test
Before intervention	50.36 ± 2.79	50.66 ± 10.63	0.334	-0.184
After intervention	50.30 ± 10.92	54.07 ± 8.67	0.023	-4.64
Paired t-test	P = 0.833, t = -0.213	P < 0.001, t = -6.318		

^a Values are presented as mean ± SD.

Iraq, 18.3% of pregnant women did not know about pregnancy hypertension (7). The aforementioned results indicate that Iranian society needs significant structured planning and continuous follow-up to enhance the

level of knowledge among pregnant mothers regarding pregnancy hypertension.

Due to the lack of regular visits of mothers to comprehensive health centers, we were compelled to

use convenience sampling, which was the main limitation of the present study. In addition, only the effect of the educational video on the knowledge of pregnant mothers was measured in this study; therefore, in future studies, a comparison of two or more methods should be used to check the effect on learning. In this study, only primiparous women were included, and it was not possible to measure some factors, including the effect of birth rate on the research results, by excluding multiparous women from the study.

5.1. Conclusions

The results of this study indicate that video education could increase knowledge about pregnancy hypertension and preventive self-care. Improving the knowledge of pregnant women could motivate earlier diagnosis and management and reduce complications and mortality in this vulnerable group.

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Footnotes

Authors' Contribution: N. S., A. M., and S.G.SH. were involved in designing the idea and preparing the proposal. Data collection and analysis were performed by N.S. and S.A. All researchers participated in data interpretation, preparation, and article preparation.

Conflict of Interests: The authors declare that they have no conflict of interest.

Data Availability: Data will be made available as needed.

Ethical Approval: This study was approved by the Ethics Committee of the Dezfoul University of Medical Sciences (IIR.DUMS.REC.1402.002).

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Informed Consent: Written consent was also obtained from pregnant women before data collection.

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