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EVALUATION OF THE EFFECTIVENESS OF DIGITAL STORYTELLING ON FERTILITY AWARENESS AMONG WOMEN: A RANDOMIZED CONTROLLED EXPERIMENTAL STUDY

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Abstract: This study aims to determine the effectiveness of the digital storytelling (DS) method to raise fertility awareness (FA). This research is a pretest-posttest randomized controlled experimental study. The population of the study consisted of women who applied to the gynecology and obstetrics outpatient clinics of state hospital in March and October 2023 for who voluntarily agreed to participate in the study. Data for the study were gathered using Personal Introduction Form and Fertility Awareness Scale. physical and cognitive awareness levels of women in the intervention and control groups were similar before FA (P>0.05), and after training was given to the experimental group, all awareness levels increased significantly in the intervention group (P<0.05). When the development in each group is taken into account, there is an increase in the post-test scores in both groups. However, when the increase amounts in each group in the intervention and control groups were examined, it was determined that all awareness levels increased more in the intervention group. The DS method for gaining FA given to the intervention group was effective.

Keywords: Fertility awareness, Digital storytelling, Woman, Midwife

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1. Introduction

In order for individuals to have fertility awareness (FA), they must have knowledge about female/male genital system anatomy/physiology, fecundability, the importance of fertility and negatively affecting lifestyle behaviors (Harper et al., 2017; Pedro et al., 2018). Among the risk factors related to fertility, lifestyle-related factors such as smoking and alcohol use, insufficient exercise, sexually transmitted diseases, advancing age, caffeine consumption, obesity and stress appear to have an important place (Delbaere et al., 2020; Pedro et al., 2022). It is noteworthy that these behaviors or situations that negatively affect reproductive potential are changeable or preventable factors (Simmons and Jennings, 2020).

FA plays a key role in improving fertility self-care, increasing the chances of conception and preventing one's fears and anxiety when faced with pregnancy-related problems (Derya, 2018; Symul et al., 2019). However, it seems that there is a lack of information about lifestyle behaviors that harm fertility in the world and in our country (Moore et al., 2022). The World Health Organization recommends planning various education and health programs to ensure FA. However, there are very few studies evaluating the effects of educational interventions on FA (Wojcieszeck and Thompson, 2013; Conceição et al., 2017; Özşahin, 2020). Although educational interventions are effective, the effectiveness of a digital storytelling intervention on FA has never been evaluated.

A new health education method to increase awareness and knowledge is digital storytelling (DS). It is defined as the idea of telling a story, often with strong emotional content, using a variety of digital multimedia such as images, sound, music, and video. Using DS, applications provide deep learning and are described in the literature as an effective educational tool (Price et al., 2015; Paliadelis and Wood, 2016; Urstad et al., 2018). DS can convey many streams of information to viewers in a short time. Apart from the transferred knowledge and skills, emotions and attitudes are also transferred (Siu, 2018). DS interventions have been effective in changing other health behaviors, such as breast self-examination, prostate cancer screening, and HIV testing. Compared to written information, DS is often more accessible in terms of language and communication and can be more cost-effective. Moreover, DS can reach a wide audience very quickly through social media (Paliadelis and Wood, 2016; Siu, 2018; Urstad et al., 2018).

Creating and disseminating FA in society is important for couples to maintain a healthy perinatal period and give birth to healthy individuals, thus increasing the health level of the society. In this context, the planned study aims to determine the effectiveness of DS given to fertile women in increasing FA.

2. Materials and Methods

2.1. Study Design

This research is a pretest-posttest randomized controlled experimental study. Made according to CONSORT guidelines (Figure 1) (Schulz et al., 2010).

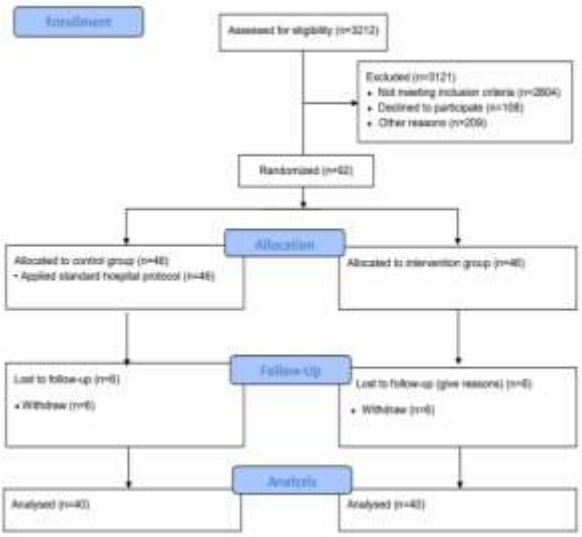

Figure 1. CONSORT flow chart

2.2. Setting and Samples

The population of the study consisted of women who applied to the gynecology and obstetrics outpatient clinics of state hospital in March and October 2023 for who voluntarily agreed to participate in the study.

The research sample consisted of a total of 80 participants, 40 experimental and 40 controls. Criteria for inclusion in the study; Being 18 years of age or older, not being pregnant, being sexually active, planning to have children, not receiving infertility diagnosis or treatment, not having been diagnosed with menopause, and not having a verbal communication problem.

G*Power application (version 3.1.9.3) was used to calculate the sample size of the study. In the literature review, it was determined that there was no study on raising fertility awareness using the digital story method, and the COHEN standard effect size was assumed to be 0.70 in determining the sample size in the study. Accordingly, the amount of Type I error is 0.05, the power of the test is 0.80 ($\alpha = 0.05$, $1-\beta = 0.80$, effect size = 0.70) and the minimal sample size is 80 according to the distribution ratio among one-to-one groups. (n=40 for each group) were found as subjects. Considering that there would be losses in cases, it was decided to recruit a total of 92 subjects (n = 46 for each group). In the study, https://stattrek.com/statistics/random-number-generator.aspx#error program was used to create intervention and control groups, and the groups were recorded by the researcher as a list (Figure 1).

2.3. Intervention Protocol

2.3.1. Intervention group (digital storytelling intervention)

A storytelling FA video intervention, approximately 10 minutes in length, guided by a situation-specific theoretical framework and storytelling/narrative communication theory (Lee et al., 2016), was developed by the researchers.

2.3.2. Control group

Routine hospital protocol was applied to the women in this group. Storytelling fertility awareness video intervention was also given to the control group after the study.

2.4. Data Collection Method and Instruments

2.4.1. Data collection tools

"Personal Information Form" and "Fertility Awareness Scale", which determine the socio-demographic characteristics of women, were used to collect data.

2.4.2. Personal introduction form (PIF)

It aims to determine the socio-demographic characteristics of women.

2.4.3. Fertility awareness scale (FAS)

This scale is a Likert-type scale consisting of 19 items and two dimensions. The lowest score that can be obtained in the total score of FAS is 19 and the highest score is 95 (Özşahin and Derya, 2022).

2.5. Data collection

In the research, the consent form was taken from women who volunteered to participate, in line with the consent of the participants at the beginning of the survey form. Data were collected face to face. Filling out the form: PIF and FAS were filled in before watching the video, and FAS was filled in again after watching the video. The data was filled in approximately 10 minutes. In practice, the FAS scale was applied separately to women in the experimental and control groups, and the results between the groups were evaluated by a statistician who was blind to the study and masked.

2.6. Evaluation of data

Independent groups' t test method was used to compare fertility awareness and its sub-dimensions between groups according to the experimental and control groups, and dependent groups t test method was used for intra-group comparison. Eta-squared effect size was calculated for the significant differences in the independent and dependent groups' t test methods. Chi-square analysis method was used for the relationship between demographic categorical variables and groups. All statistical analyzes were examined at the $P<0.05$ significance level.

3. Results

There is no significant difference as a result of the chi-square analysis between the demographic variables of women in the intervention and control groups ($P>0.05$). In other words, the rates of education level, employment status, place of residence and income level of patients in the intervention and control groups are similar. The ages of the patients in the intervention and control groups were compared using the independent groups t test method, and there was no significant difference between the women's groups according to their ages ($P>0.05$).

The average age of patients in the intervention and control groups is similar (Table 1). There is no significant difference between the FAS total and subscale pretest scores of women in the intervention and control groups (P>0.05) and the pretest score averages are similar (Table 2). A significant difference was obtained between the FAS total and subscale posttest scores of women in the intervention and control groups (P<0.05). The FAS total posttest mean scores and the physical and cognitive subscale posttest mean scores of women in the intervention group are higher than those of women in the control group (Table 2). There is a significant difference between the pretest and posttest scores of women in the intervention group on the FAS total (t=-34.269, P>0.05), physical (t=5.405, P>0.05) and cognitive (t=-5.063, P>0.05) subscales. In the intervention group, women's FAS total posttest mean score and physical and cognitive subscale posttest score mean were higher than the pretest (Table 2). There was a significant difference between the pretest and posttest scores of the FAS total (t=-46.996, P>0.05), physical (t=-3.365, P>0.05) and cognitive (t=-2.308, P>0.05) subscales of women in the control group. There is difference. The FAS total posttest mean score and the physical and cognitive subscale posttest score mean of the women in the control group are higher than the pretest (Table 2).

Table 1. Comparison of socio-demographic characteristics of women

Variable	Group	Intervention (N=40)	Control (N=40)	Statistics	p
		f(%)	f(%)		
Education	Primary education and below	13(32.5)	15(37.5)	$\chi2$=0.22	0.639
	Secondary education and above	27(67.5)	25(62.5)		
Working status	Yes	31(77.5)	28(70)	$\chi2$=0.581	0.446
	No	9(22.5)	12(30)		
Place of residence	Province	23(57.5)	20(50)	$\chi2$=0.916	0.633
	District	11(27.5)	15(37.5)		
	Village	6(15)	5(12.5)		
Income level	Income is less than expenses	19(47.5)	17(42.5)	$\chi2$=0.229	0.892
	Income equals expenses	16(40)	18(45)		
	Income exceeds expenses	5(12.5)	5(12.5)		
Age (Mean±sd)		28.73±4	27.38±4.87	t=1.356	0.179

χ^2= Chi-square test statistic; t= independent groups t test statistics

Table 2. Comparison of women's fertility awareness scale total and sub-dimension scores within and between groups

Scale Scores	Intervention (N=40)	Control (N=40)	[a]Test request & p value	Eta squared
	Mean±sd	Mean±sd		
Physical pretest	30.63±3.39	31.58±3.03	t=-1.321 p=0.19	
Physical posttest	35.35±4.08	32.03±3.32	t=4 p=.000	0.17
[b]Test request & p value	t=-5.405 p=.000	t=-3.365 p=0.002		
Eta kare	0.43	0.23		
Cognitive pretest	23.4±2.28	22.63±2.36	t=1.492 p=0.14	
Cognitive posttest	28.2±5.2	23.35±3.14	t=5.045 p=.000	0.25
[b]Test request & p value	t=-5.063 p=.000	t=-2.308 p=0.026		
Eta kare	0.40	0.12		
FAS total pretest	54.03±3.63	54.2±4.18	t=-0.2 p=0.842	
FAS total posttest	82.23±5.68	77.55±6.63	t=3.387 p=0.001	0.13
[b]Test request & p value	t=-34.269 p=.000	t=-46.996 p=.000		
Eta squared	0.97	0.98		

a= independent groups t test statistical value; b= dependent groups t test statistical value, FAS= fertility awareness scale

4. Discussion

In this study, the effectiveness of the DS method for gaining FA in women was evaluated. The DS method was effective in the intervention group. To the best of the author's knowledge, this study is the first randomized controlled study investigating the effect of the DS method on FA. Since there is no study on the effect of the DS method on FA, the study findings are discussed within the framework of the results of other studies.

In this study, the physical and cognitive awareness levels of women in the intervention and control groups were similar before FA, and after training was given to the experimental group, all awareness levels increased significantly in the intervention group. When the development in each group is taken into account, there is an increase in the post-test scores in both groups. However, when the increase amounts in each group in the intervention and control groups were examined, it

was determined that all awareness levels increased more in the intervention group. Willis et al. (2014) applied DS therapy to 12 HIV-positive adolescents, and in the therapies, the adolescents were asked to express their feelings and create their own stories. As a result of the study, adolescents declared that it increased their self-confidence and belief. Laing et al. (2017a), 16 adolescents were asked to prepare training and digital stories about the DS method. In the interview conducted after the completion of the stories, the adolescents stated that digital stories were a way to understand others' cancer experiences and to tell their own experiences. As a result of the study, the DS method was shown as a promising method to reduce psychosocial negativities in the treatment and care of adolescent oncology patients, and it was recommended to include digital stories in clinical practice and develop follow-up programs (Laing et al., 2017b). There are many experimental studies in the literature showing that the DS method facilitates learning, provides in-depth understanding and remembering, and improves critical thinking-research and information analysis skills (Gubrium et al., 2015; Conceição et al., 2017). Digital stories are reflective, creative and value-laden, revealing important things about the human condition (Siu, 2018). DS is one of the methods increasingly used in health promotion efforts (Price et al., 2015). Patients in the digital narrative have the potential to be portrayed at various stages of health and disease throughout their lives (Ogston-Tuck et al., 2016).

5. Conclusion and Recommendations

The DS method for gaining FA given to the intervention group was effective. Developing FA is a current issue that will improve maternal and child health, and therefore public health. It is recommended to conduct studies that more comprehensively compare the use of the DS method in the training of midwives and its effect with other intervention formats.

Author Contributions

The percentage of the author contributions is presented below. The author reviewed and approved the final version of the manuscript.

	E.D.
C	100
D	100
S	100
DCP	100
DAI	100
L	100
W	100
CR	100
SR	100
PM	100

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management.

Conflict of Interest

The author declared that there is no conflict of interest.

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Ethical Approval/Informed Consent

Ethics committee approval was received for the research by the decision of Çukurova University Medicine Non-Interventional Clinical Research Ethics Committee (approval date: dated 4 Feb 2023, protocol code: 130/76). Permission was received from the hospital. Written consent was obtained from the participating in the research by means of an Informed Voluntary Consent Form. All procedures were in accordance with the 1964 Helsinki Declaration of Human Rights and its subsequent amendments or comparable ethical standards. The subjects were free to discontinue their participation at any stage.

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