

Araştırma makalesi / Research article • DOI: 10.48071/sbuhemsirelik.1478830

Examining the Impact of Health Belief Model-Based Education on Reproductive Health and Family Planning Attitudes Among Married Women¹

Sağlık İnanç Modeli Temelli Eğitimin Evli Kadınların Üreme Sağlığı ve Aile Planlaması Tutumları Üzerindeki Etkisinin İncelenmesi

Neşe ATAMAN BOR² , Tülay ORTABAĞ³ 

Yazarların ORCID numaraları / ORCID IDs of the authors:
N.A.B. 0000-0002-4308-9362; T.O. 0000-0003-1466-7343

¹This research was produced from the Doctorate Thesis.

²Hakkari University, Faculty of Health Sciences, Department of Nursing, Hakkari, Türkiye

³Topkapı University, Plato Vocational School, First and Emergency Aid Program, Istanbul, Türkiye

Sorumlu yazar / Corresponding author: Neşe ATAMAN BOR
E-posta: neseatamanbor@hakkari.edu.tr

Geliş tarihi / Date of receipt: 05.05.2024

Kabul tarihi / Date of acceptance: 03.06.2024

Atf / Citation: Ataman Bor, N., & Ortabağ, T. (2024). Examining the impact of health belief model-based education on reproductive health and family planning attitudes among married women. *UHS Journal of Nursing*, 6(2), 165-174. doi: 10.48071/sbuhemsirelik.1478830

ABSTRACT

Introduction: Reproductive health services include maternal, child, and newborn health, family planning, fertility issues, and reproductive education, primarily benefiting women.

Aim: It was aimed to examine the effects of Health Belief Model based instruction on married women protective attitudes toward reproductive health.

Method: The study was designed as a quasi-experimental method with unequal groups for pre-test and post-test comparison. A total of 175 women, 35 in the experimental group, 70 in the control group-1, and 70 in the control group-2, who met the study criteria and were determined by a comprehensive power analysis, were included in the study. The pre-test data were collected using the Personal Information Form, the Married Women's Reproductive Health Attitudes Determination Scale, and the Family Planning Attitude Scale. Experimental group were given a 3-month group training structured according to the health belief model.

Results: Between-group differences were not statistically significant at baseline regarding mean knowledge and the constructs of the scales used ($p > 0.05$). After the training, it was determined that the Reproductive Health Attitudes Determination Scale and Family Planning Attitude Scale sub-dimensions and total scores of compared to the control groups, the experimental group had a significantly higher ($p < 0.05$). Similarly, it was noted that following the training, the experimental group's use of efficient family planning techniques and breast self-examination techniques increased noticeably ($p < 0.05$).

Conclusion: According to the results, training was determined to have been given had a positive effect on protective attitudes towards reproductive health.

Keywords: Education; family planning; nursing; reproductive health.

Öz

Giriş: Üreme sağlığı, anne, çocuk ve yenidoğan sağlığı, aile planlaması, doğurganlık sorunları ve üreme eğitimi gibi çeşitli hizmetleri kapsamakta ve bu programların birincil yararlanıcıları kadınlar olmaktadır.

Amaç: Bu çalışmada, sağlık inanç modeli temelli eğitimin evli kadınların üreme sağlığına yönelik koruyucu tutumları üzerindeki etkisinin araştırılması amaçlandı.

Yöntem: Çalışma eşit olmayan gruplarda ön test-son test karşılaştırmalı, yarı deneysel olarak dizayn edildi. Araştırma kriterlerini karşılayan ve kapsamlı bir güç analizi ile belirlenen deney grubunda 35, kontrol grubu-1'de 70 ve kontrol grubu-2'de 70 olmak üzere toplam 175 kadın çalışmaya dahil edildi. Ön test verileri; Kişisel Bilgi Formu, Üreme Sağlığını Koruyucu Tutum Ölçeği ve Aile Planlaması Tutum Ölçeği kullanılarak toplandı. Deney grubuna Sağlık İnanç Modeline göre yapılandırılmış üç aylık grup eğitimi verildi.

Bulgular: Başlangıçta, gruplar arasında kullanılan ölçeklerin ortalamaları arasındaki fark istatistiksel olarak anlamlı değildi ($p > 0,05$). Eğitim sonrasında deney grubunun Üreme Sağlığını Koruyucu Tutum Ölçeği ve Aile Planlaması Tutum Ölçeği alt ölçek ve toplam puanlarının kontrol gruplarına kıyasla anlamlı derecede yüksek olduğu saptandı ($p < 0,05$). Benzer şekilde, eğitim sonrasında deney grubunun etkin aile planlaması tekniklerini ve kendi kendine meme muayenesi tekniklerini kullanımının belirgin şekilde arttığı görüldü ($p < 0,05$).

Sonuç: Sonuçlara göre, verilen eğitimin üreme sağlığına yönelik koruyucu tutumlar üzerinde olumlu etkisi olduğu belirlendi.

Anahtar Kelimeler: Aile planlaması; eğitim; hemşirelik; üreme sağlığı



Bu eser, Creative Commons Atf-Gayri Ticari 4.0 Uluslararası Lisansı ile lisanslanmıştır.

Introduction

In today's world, individuals face challenges in accessing reproductive health (RH) services and exercising their RH rights due to various reasons such as inadequate knowledge, risky sexual behaviors, and the lack of quality or suitable RH services (Şahan & Akbulut, 2020). The multitude of physiological changes spanning adolescence to menstruation, fertility, and post-menopausal periods highlights that women have a greater need for health services compared to men (Eryılmaz, 2020). The insufficient fulfillment of RH requirements in women can lead to adverse health outcomes for the triad of mother, baby, and society. In order to meet these requirements, health promotion initiatives should be carefully planned (Özlem & Gökler, 2021). Nurses, as integral parts of the role in health protection, development, and counseling, organize various educational programs (Gedük, 2018). Nurses play a significant role in the lives of women aged 15-49, encompassing adolescent marriages and those recognized as married. They address RH issues including child marriage, unwanted pregnancies, maternity, inadequate birth control, and unsafe abortions (Anık & Ege, 2019; Bilgiç & Gurkan, 2021).

Individuals in the 18 – 24 age group, where the majority of first marriages take place in our country (56.9%), constitute 11.3% of the country's population. This period is the period when the foundation stones of women's health were laid. It is stated that over 50% of the female (58.8%) got married between the ages of 18 and 24. Studies have shown that young adults' knowledge levels about sexual and reproductive health are low and information resources are insufficient, and training should be provided to this group (Duman et al., 2015; Üstündağ, 2017; Çitak, 2021; Oğul, 2021).

Health education, which holds significant importance at every stage of healthcare, intends to deliberately change actions that affect people's health, groups, and communities in the desired direction. Simultaneously, it seeks to enable individuals to acquire health behaviors that enhance their current health status or prevent illness (Akgün & Deniz, 2020). It is advised that evidence-based service models be used in health education to provide high-quality care (Ozan & Okumuş, 2013).

Various cognitive and behavioral models are used as a basis for acquiring preventive health behaviors. One of these models is the Health Belief Model (HBM), which encourages individuals to take responsibility for preserving their health by understanding the reasons behind it. Perceived vulnerability, perceived severity, perceived advantages, perceived obstacles, one's perception of one's own self-efficacy, and behavioral cues are the basic elements of HBM (Kılınç & Gür, 2018). In a randomized controlled study, it was determined that interventions such as education and counseling reduced perceived barriers, defined as the most important obstacles to the emergence of behavior, and increased perceived usefulness, sensitivity, and seriousness (Samami, Seyedi-Andi, Bayat, Shojaeizadeh & Tori, 2021). In the study of Ak (2021), it was determined that the nursing support program based on the HBM applied to women with orthopedic disabilities had a positive effect on improving reproductive health behaviors. Again, Samami et al. (2021) found that HBM based education increased women's knowledge, attitudes, and functions

regarding Pap smear tests. In their study, Yari et al. (2024) came to the conclusion that HBM-based education is useful for increasing girls' understanding of menstrual health and that this model can be applied to both prevent and lessen premenstrual syndrome symptoms. Tehrani et al. (2014) study discovered that health beliefs could be improved through education based on the HBM (excluding perceived barriers) and health behaviors of women with urinary tract infection. In the study of Şenol et al. (2024) was found that providing education to pregnant women using the HBM reduced pregnancy risk perceptions and increased health literacy levels. Khiyali et al. (2017) observed that breast self-examination (BSE) training using HBM had a positive effect on increasing the knowledge and attitudes of women in the experimental group about BSE. Women learn their health beliefs, obstacles, benefits, sensitivities, and motivations regarding reproductive health through experience as they experience marriage, births, miscarriages, induced abortions, and sexually transmitted diseases as they grow older. Education level, urban-rural life, socio-economic status, and marriage decisions vary among women, according to societies and cultures. In this study, it was aimed to evaluate the effect of the education given according to the HBM to married women aged 18-24 living in Hakkari, which is the most extreme city of the Southeast and difficult to reach due to its geography, on the protective attitude towards reproductive health. The 18-24 age group of women, which is risky and needs education, was taken as the education group, and control-1 was determined as the same age group. Control-2 age group was determined between the ages of 25-49 women, and it was aimed to determine how experiences with advancing age caused changes in fertility, family planning experience, perception of awareness and family planning attitudes.

Aim

The aim of this study was to examine the impact of HBM-based education on married women's attitudes toward RH that are protective, ranging from 18 to 24 years old.

Hypotheses of the study

H₁₋₂: Women's attitudes toward RH is positively impacted by education that follows the HBM.

H₁₋₂: Education delivered in line with the HBM influences women's attitudes about family planning in a positive way.

Method

Study Design

This study was conducted the unequal groups pre-test post-test comparison group model of the quasi-experimental method was used.

Study Setting

This study was conducted at a Family Health Center (FHC) in Hakkari province between April 2019 and December 2019. In the city of Hakkari, where the study was conducted, there are six family health center. The fact that the number married women between 18 - 24 years of age in the family health center was higher than other family health center and the ease of transportation to the city where the researcher lived played a role in the determination of family health center.

Study Population and Sample

The study's population was made up of 4020 married women in the 18 - 49 age group registered at a primary health care institution in the east of Turkey. The sample consisted of 175 women determined through power analysis. At the 0.05 level of significance, an effect size of 0.6, and a 95% confidence interval, the sample had a 90% representation power for the population. The simple random sampling method was employed in the selection of women as the sample. A total of 175 women, satisfying the study's requirements, were added to the research: 35 in the experimental group (18 - 24 age group), 70 in control group-1 (18 - 24 age group), and 70 in control group - 2 (25 - 49 age group). The 18 - 24 age group, which is risky and needs education, was taken as the education group, and control - 1 was determined as the same age group. Control - 2 age group was determined between the ages of 25 - 49, and it was aimed to determine how experiences with advancing age caused changes in fertility, family planning experience, perception of awareness and family planning attitudes.

The number of samples in control groups should be at least as large as the intervention group; taking a bigger sample size will help determine how successful the intervention was. For this reason, it was made sure that there were more people in the study's control groups than in the experimental group. The study included voluntary women aged 18 to 49 with a minimum level of literacy, capable of understanding and responding to the survey questions, and without any significant physical or mental barriers that would impede their participation.

Data Collection Tools

Data for the study were gathered using a "Personal Information Form", "Family Planning Attitude Scale", and "Reproductive Health Protective Attitudes Scale for Married Women".

Personal Information Form: This form was created by researchers and has 35 questions in total, with 21 focusing on women's socio-demographic characteristics, 3 on obstetric features, and 11 on gynecological characteristics (Egelioğlu Cetişli, Top, Arkan, Kaba, & Ertop, 2016; Kartal et al., 2017; Uskun et al., 2019).

Married Women's Reproductive Health Attitudes Determination Scale (RHADS): This scale was created by Demirci (2004) and has 39 items with Likert scale ratings ranging from 5 to 7 (1 = Never, 2 = Seldom, 3 = Occasionally, 4 = Mostly, and 5 = Always/Regularly), with a total score range of 39 to 195 (Demirci, 2004). Eight items on visiting a doctor for RH, four questions on preventing breast and reproductive organ cancers, and four questions on general health practices to safeguard RH, four items on protecting against genital tract infections, and three items on preventing unintended pregnancies are included in the five sub-dimensions of the scale. Total raw score of 39 items 39 - 195 ranges between. The increase in total and sub-dimension scores obtained from the scale indicates that women's attitudes and behaviors protective of RH are positive. The scores for items 5, 10, 16, and 28 are inverted. The reliability coefficient of The scale's Cronbach's alpha was determined to be 0.82, whereas in our investigation, it was found to be 0.85.

Family Planning Attitude Scale (FPAS): The scale was developed in Turkish by Örsal and Kubilay (2007). It has three sub-dimensions and 34 items that are rated on a five-point Likert scale (1 = Strongly Agree, 2 = Agree, 3 = Unsure, 4 = Disagree and 5 = Strongly Disagree). Three sub-dimensions make up the scale: attitudes in the community regarding family planning (items 1 - 15), attitudes regarding family planning techniques (items 16 - 26), and attitudes regarding childbirth (items 27 - 34). A total 15 - 75 points can be obtained from the sub-dimension of community attitude towards family planning, 11 - 55 points from the sub-dimension of attitude towards family planning methods, 8 - 40 points from the sub-dimension of attitude towards childbirth, and 34 - 170 points from the scale in total. Positive attitudes toward family planning rise in tandem with an increase in the scale's score. The scale's Cronbach's alpha coefficient is 0.90; in our investigation, it was found to be 0.89 (Örsal & Kubilay, 2007).

Ethical Considerations

In order to conduct the study, Hasan Kalyoncu Scientific Research and Publication Ethics Committee granted approval for the project (Date: 19.02.2019, No: 2019/15) and The Health Directorate of the province in which the study was carried out granted legal permissions (Approval No:49654233-604.02). Furthermore, the study adhered to the criteria outlined in the Helsinki Declaration.

Data Collection

Records of an application used in the FHC were used to identify the women who were part of the study. After obtaining their contact information, they were contacted, provided with a brief explanation about the study, and invited to the FHC for the pre-test after being identified. For those who could not attend, home visits were planned, and the forms were administered (17 women). After collecting pre-test data through face-to-face interviews, the women in the experimental group received three months of education, followed by a three-month follow-up.

The goal of the nursing intervention for women was to improve RH through education and follow-up. The education program, prepared according to the HBM, was conducted in groups of 10 - 15 individuals at three-month intervals (A total of four sessions every 15 - 20 days for three months on average).

Topics of Reproductive Health Education Prepared According to HBM: In the training content reproductive organs, correct RH protective behaviors, the importance of visiting a doctor on issues related to RH, general health behaviors that directly or indirectly affect RH, the importance of early diagnosis in reproductive organ cancers and regular annual gynecological examinations, defense against breast and reproductive organ cancer. Topics include precautions to be taken, protective behaviors to prevent genital tract infections, methods of protection from unwanted pregnancies, the HBM and its subcomponents, the effects of the subcomponents of the health belief model on the development of RH behaviors, and how to overcome the obstacles to these behaviors. The content of the given training program was created according to the sub-components of HBM, individual characteristics, the effect of behavior-specific perceptions (sensitivity, benefit, obstacle, caring/seriousness, health motivation, self-efficacy, activators), and behavioral outcome.

Reproductive Health Education Practice According to HBM:

Before the training implementation, the groups were discussed, and information about the content of the training, training duration, time, and place where the training would be given was shared. The intervention applied to the experimental group was carried out in the form of RH-enhancing face-to-face training and phone monitoring. After each training, reminders were made via phone calls and a free messaging application until the next session. No educational process was applied to the women in the control - 1 and control - 2 groups, and both groups were put into a waiting period after the pre-test data were collected.

The training and three-month telephone follow-up were completed in a total of six months. In this process, a home visit was made to 17 women who could not fill out the scale, and the training given in the group training was briefly explained. After the training given to the women in the training group is completed, the training booklet is also given to the women in the control group.

Data Analysis

Utilizing the Statistical Package for the Social Sciences Version 22.0, the study data was evaluated (IBM Corp., Armonk, NY, USA) in a computer environment. The data analysis involved, in sequence, frequency analysis, percentage calculations, multiple regression analysis, post-hoc Test/Tamhane's T2, one-way ANOVA, the chi-square analysis and the independent samples t-test.

Results

The women in the study had an average age of 25.9 ± 4.5 , with 25.1% having primary education, 24% having completed secondary education, and 50.9% having completed high school or higher education. Additionally, 20% of the women entered into consanguineous marriages. Examining the table reveals that, with regard to control variables, there is no discernible difference between the women in the experimental, control - 1, and control - 2 groups. (except the age variable) ($p > 0.05$). A significant difference was found between the control - 2 and the control - 1 and experimental groups only in terms of age characteristics. As a result, compared to the experimental group and the control - 1 group, the average age of the control - 2 group is considerably higher (Table 1.).

When the women in the education group's follow-ups from the first meeting, following the first training, the second training, and the third training were looked at in Table 2, it was noted that the practice of self-breast examination and the use of effective family planning methods increased in each follow-up compared to the previous ones. The score increase between all follow-ups was found to be significant ($p < 0.05$).

The experimental and control groups' RHADS general and sub-dimensions scores are contrasted in Table 3. There was no discernible difference between the experimental and control groups' women's pre-test RHADS sub-dimension and total scores, according to the table analysis ($p > 0.05$). Nonetheless, it was discovered that the experimental group's post-test RHADS sub-dimension and total scores were substantially higher than the control groups' ($p < 0.05$).

The FPAS pre- and post-test total and sub-dimension ratings for the

experimental and control groups are shown in Table 4. There was no discernible variation in the pre-test results after looking at the table. Nonetheless, it was discovered that the experimental group's post-test FPAS sub-dimension and total scores were substantially higher than the control groups' ($p < 0.05$). In the distribution according to age groups of women, the highest mean score of the family planning subscale of the FPAS was obtained in the control - 2 group, the lowest score was obtained in the control - 1 group, and the lowest was obtained in the intervention group. The attitude towards family planning methods and birth, which did not change with age, reached a high mean score in the intervention group and was found to increase gradually after each training (Table 4).

The FPAS scale total score of the scale [mean \pm standard deviation (SD)] taken according to the education level after the second training given to the women in the experimental group was 96.50 ± 9.22 for literate-primary school, respectively; 112.00 ± 8.98 for primary education; and for high school and above, it was found to be 125.63 ± 9.77 . The total score of the scale (mean \pm SD) obtained according to the education level after the fourth education was 124.83 ± 10.41 for literate-primary school, respectively; 119.71 ± 12.21 for primary education; and for high school and above, it was found to be 136.54 ± 8.74 . It was found that as the education level increased in the experimental group, the mean score increased significantly ($p < 0.05$).

Table 5 presents the impact of the participants' sociodemographic characteristics on the total scores of the RHADS and the FPAS after the fourth education session. Upon examining the table, it was determined that some variables belonging to the experimental group explained 34.8% of the total variance for the RHADS and 34.8% for the FPAS (Table 5).

According to the results, a one-unit increase in education level increased the total score of the RHADS after the fourth application by 0.584 and the total score of the FPAS by 0.463 points. It was found that the education level influenced the total score averages of both scales (Table 5).

Discussion

Behavioral theories and models can offer fresh perspectives on health problem prevention because human behavior is closely linked to a number of health issues (Nekooi, Ayazi, Gandomi, Moosavi & Fakhri, 2016). One of the most popular models for analyzing behavioral traits is the HBM model. It is clear that research on various samples and subjects has been conducted to assess the efficacy of HBM-based education (Tehrani, Nikpour, Kazemi, Sanaie & Panahi, 2014; Abd El Aziz, Ibrahim & Elgzar, 2016; Samami, Seyedi-Andi, Bayat, Shojaeizadeh, & Tori, 2021; Şenol, Özkan & Ağralı, 2024). Nevertheless, it appears that few research has looked at how HBM-based education affects married women's protective attitudes toward RH, particularly among those in the 18 - 24 age range (Yari et al., 2024). This study aims to investigate the effect of HBM-based education on the protective attitudes towards RH of married women aged 18 - 24 who are registered with a primary health care institution in eastern Turkey.

In the study, women in the experimental group had significantly higher RHADS total scores in the post-test measurements than in the pre-test. The experimental group's pre-test RHADS total

Table 1: Comparison of Control Variables of the Study (n = 175)

Characteristics		Experimental (n=35)		Control-1 (n=70)		Control-2 (n=70)		Test Statistics	P
		n	%	n	%	n	%		
Educational status	Literate-elementary school	6	17.1	15	20.0	23	34.3	4.740‡	0.315
	Primary education	7	20.0	23	34.3	12	15.7		
	High school and above	22	62.9	32	45.7	35	50.0		
Educational level of the woman's spouse	Literate-elementary school	3	6.9	4	5.7	5	7.1	8.631†	0.076
	Primary education	5	14.9	6	8.6	9	12.9		
	High school and above	27	78.3	60	85.7	56	80.0		
Consanguineous marriage	Yes	6	17.7	9	12.9	20	28.6	5.286‡	0.071
	No	29	82.9	61	87.1	50	71.4		
Employment status	Yes	1	2.9	2	2.9	8	11.4	11.426†	0.51
	No	34	97.1	8	97.1	2	88.6		
Income status	Income is less than expenses	24	68.6	55	78.6	57	81.4	2.227‡	0.320
	Income equals/exceeds expenses	11	31.4	15	21.4	13	18.6		
Social security	Yes	21	60.0	44	62.9	53	75.7	0.037‡	0.982
	No	14	40.0	26	37.1	17	24.3		
Knowledge of self-breast examination	Yes	8	22.9	14	20.0	16	22.9	0.202‡	0.904
	No	27	77.1	56	80.0	54	77.1		
Performing self-breast examination	Yes	2	5.71	2	2.9	4	5.6	37,524†	0.221
	No	33	94.29	68	97.1	67	94.4		
Use of family planning methods	Yes	22	62.8	30	42.9	32	45.9	5.641‡	0.060
	No	13	37.2	40	57.1	38	54.1		
Method	Withdrawal	13	37.1	12	17.1	7	10.0	34.561†	0.130
	Condom	5	14.3	14	20.0	19	27.1		
	Other	4	11.5	4	5.7	6	8.6		
	No	13	37.1	40	57.2	38	54.3		

Characteristics	Mean ± SD	Mean ± SD	Mean ± SD	Test Statistics	p
Age when married	20.5 ± 2.2	19.7 ± 2.6	23.5 ± 4.4	1.623 [§]	0.402
Age	23.2 ± 1.05	22.7 ± 1.5	30.5 ± 3.5	1.531 [§]	0.001*
Number of children	1.2 ± 1.1	0.9 ± 0.75	1.7 ± 1.49	1.363 [§]	0.176
Number of pregnancies	1.71 ± 0.95	1.57 ± 1.16	2.65 ± 1.69	1.956 [§]	0.053
Number of abortions	0.1 ± 0.34	0.02 ± 0.16	0.18 ± 0.45	1.531 [§]	0.130

SD: Standard deviation; †: Fisher's exact test; ‡: Chi-square test; §: Independent samples t-test.

Table 2: Follow-ups on the Findings of the Experimental Group Regarding Breast Self-Examination and the Use of Effective Family Planning Methods (n = 175)

Characteristics		1st training post		2nd training post (15 days after the 1st training)		3rd training post (15 days after the 2nd training)		4th training post (15 days after the 3rd training)		Test statistics	p
		n	%	n	%	n	%	n	%		
Self-breast examination	Yes	2	5.71	10	28.6	17	48.58	25	71.4	34.615†	0.001*
	No	33	94.29	25	71.4	18	51.42	10	28.6		
Use of effective family planning methods	Yes	12	34.3	18	68.6	24	68.6	28	80.0	5,486‡	0.001*
	No	23	65.7	17	31.4	11	31.4	7	20.0		

†Fisher's exact test; ‡: Chi-square test; *p < 0.05.

Table 3: Comparison of Pre-test and Post-test Total and Subdimension Scores of the Reproductive Health Protective Attitudes Scale Between the Experimental and Control Groups (n = 175)

		Experimental Mean ± SD	Control-1 Mean ± SD	Control-2 Mean ± SD	Test statistics	P
Visits to a doctor for reproductive health	Pre-test	23.02 ± 8.74	24.82 ± 8.72	25.05 ± 7.15	0.870†	0.421
	Post-test	36.77 ± 2.22	25.20 ± 7.00	26.54 ± 6.52	44.927‡	0.001*
	Test statistic	9.026§	0.955§	1.864§		
	p	0.001*	0.343	0.067		
Protection against cancers of the reproductive organs and breasts	Pre-test	5.14 ± 2.08	5.01 ± 2.25	5.44 ± 2.48	0.616†	0.541
	Post-test	10.37 ± 1.81	4.94 ± 2.15	5.32 ± 2.13	88.920‡	0.001*
	Test statistic	12.878§	1.840§	1.653§		
	p	0.001*	0.070	0.103		
General health behaviors for reproductive health protection	Pre-test	25.68 ± 8.27	28.17 ± 7.62	26.87 ± 6.56	1.557†	0.214
	Post-test	37.25 ± 5.08	29.18 ± 8.27	27.02 ± 6.55	22.477‡	0.001*
	Test statistic	7.795§	1.933§	0.802§		
	p	0.001*	0.057	0.425		
Protection against genital tract infections	Pre-test	48.62 ± 7.88	50.10 ± 8.46	51.48 ± 6.68	1.682†	0.189
	Post-test	57.85 ± 4.19	49.98 ± 8.43	51.08 ± 6.60	15.820‡	0.001*
	Test statistic	7.575§	1.818§	1.852§		
	p	0.001*	0.073	0.068		
Prevention of unwanted pregnancies	Pre-test	7.82 ± 3.69	7.85 ± 4.15	9.08 ± 3.66	2.147†	0.120
	Post-test	10.37 ± 1.81	8.14 ± 3.68	9.42 ± 3.88	5.807‡	0.001*
	Test statistic	4.026§	0.439§	2.573§		
	p	0.001*	0.663	0.012		
Total RHADS score	Pre-test	112.57 ± 24.58	119.07 ± 25.93	120.15 ± 18.63	1.352†	0.261
	Post-test	154.65 ± 8.91	119.90 ± 22.72	119.75 ± 16.03	52.105‡	0.001*
	Test statistic	10.334§	0.719§	0.491§		
	p	0.001*	0.465	0.625		

SD: Standard deviation; †: ANOVA; ‡: Post-Hoc Test/ Tamhane's; §: Independent samples t-test; RHADS: Reproductive Health Protective Attitudes Scale; *p < 0.05.

score was found to be significantly higher than the post-test score in Ak's (2021) study. In an assessment of the efficacy of the health promotion model-based training, women in the experimental group demonstrated significantly higher RHADS total scores at posttest measurements compared to pretest results (Akhtari-Zavare et al., 2016). Some studies evaluating the effectiveness of education without using a specific model also found that following education, the experimental group's overall RHADS scores dramatically improved (Demirci, 2004; Topatan & Demirci, 2015; Akhtari-Zavare et al., 2016; Ak, 2021). The experimental group's female members exhibited noticeably greater RHADS post-test total and sub-dimension scores than the two control groups. This result supports the study's hypothesis that women's attitudes towards RH are positively affected by the education provided in accordance with HBM. The fact that the RHADS scale post-test total score average in the study was

higher than the post-test average of studies using the same scale may be due to the number and frequency of the four trainings given.

Within the sub-dimensions of RH visits to doctors, breast and reproductive organ cancer prevention, and general health practices to safeguard RH, and prevention of genital tract infections, the experimental group's post-education average scores were discovered to be considerably greater than the control groups. This result is in line with study by Demirci (2004), Topatan & Demirci, 2015, Ak (2021), Kılınc and Hacıoğlu (2021) and which found that experimental groups' post-education sub-dimension ratings were considerably higher than control groups' (Demirci, 2004; Topatan & Demirci, 2015; Ak, 2021; Kılınc & Hacıoğlu, 2021). In the study conducted by Adibelli and Kılınc (2021), it was noted that the average scores of women's genital hygiene behaviors increased after education (Adibelli & Kılınc, 2021).

Table 4: Comparison of Pre-test and Post-test Total and Subdimension scores of the Family Planning Attitude Scale Between the Experimental and Control Groups (n = 175)

		Experimental Mean ± SD	Control-1 Mean ± SD	Control-2 Mean ± SD	Test statistics	p
Attitude of Society of family planning	Pre-test	45.91 ± 13.03	46.57 ± 13.34	49.54 ± 14.76	1.137 [†]	0.32
	Post-test	57.74 ± 7.37	48.14 ± 13.31	50.00 ± 14.64	6.628 [‡]	0.001*
	Test statistic	5.799 [§]	0.719 [§]	0.181 [§]		
	p	0.001*	0.475	0.857		
Attitude towards family planning methods	Pre-test	31.80 ± 4.96	32.01 ± 5.68	32.15 ± 5.96	0.047 [†]	0.95
	Post-test	41.42 ± 6.20	32.04 ± 5.64	32.08 ± 5.86	36.419 [‡]	0.001*
	Test statistic	11.001 [§]	0.031 [§]	0.068 [§]		
	p	0.001*	0.975	0.946		
Attitude towards pregnancy	Pre-test	24.28 ± 8.23	23.17 ± 7.65	25.05 ± 9.09	0.894 [†]	0.41
	Post-test	32.00 ± 5.08	22.72 ± 7.20	25.40 ± 8.79	18.123 [‡]	0.001*
	Test statistic	5.072 [§]	0.824 [§]	0.224 [§]		
	p	0.001*	0.413	0.413		
Total family planning score	Pre-test	102.00 ± 22.47	101.75 ± 23.44	106.75 ± 24.80	1.682 [†]	0.189
	Post-test	131.17 ± 11.93	104.45 ± 23.44	107.58 ± 24.20	15.820 [‡]	0.001*
	Test statistic	7.734 [§]	0.694 [§]	0.192 [§]		
	p	0.001*	0.490	0.849		

SD: Standard deviation; †: ANOVA test; ‡: Post-Hoc Test/ Tamhane's; §: Independent samples t-test; *p < 0.05.

Table 5: The Impact of Sociodemographic Characteristics of Women in the Education Group on Post-Fourth Education Total Scores of the Reproductive Health Protective Attitudes Scale and the Attitude Towards Family Planning Scale (n =175)

Variables for RHADS Total Score	B	Standard Error	Beta	Test statistics [†]	p
Age	-2.283	1.499	-0.269	-1.524	0.139
Educational background	13.207	3.143	0.584	4.202	0.001*
Income Level	3.159	3.910	0.119	0.808	0.426
Family Type	5.544	4.156	0.197	1.334	0.193
Consanguineous marriage	-5.001	4.227	-0.153	-1.183	0.247
Social security	1.523	1.642	0.128	0.927	0.362

Model Summary: F = 5.614, p < 0.001

R = 0.739, R² = 0.546, Adjusted R Square = 0.449, Standard Error = 9.28051

Variables for FPAS Total Score.	B	Standard Error	Beta	Test statistics [†]	p
Age	0.980	1.870	0.086	0.524	0.604
Educational background	10.021	3.460	0.463	2.896	0.001*
Income Level	4.269	4.134	0.169	1.033	0.311
Family Type	7.143	4.686	0.255	1.525	0.139
Consanguineous marriage	3.357	6.803	0.080	0.493	0.626
Social security	-2.010	4.118	-0.084	-0.488	0.629

Model Summary: F = 2.490; p < 0.047

R = 0.590, R² = 0.348, Adjusted R Square = 0.208, Standard Error = 10.61804

†: Multiple Regression Analysis; *p < 0.05

Similarly, a literature study found that group training HBM increased women's mean scores on cervical screening knowledge (Shobeiri, Javad, Parsa & Roshanaei., 2016). While the study's scale sub-dimension pretest score average was close to the literature, it was found that the posttest average score was higher than the studies in the literature. It is thought that the result obtained is due to the number and frequency of the four trainings given.

According to the study, the experimental group's post-education scores in the sub-dimension of preventing unintended pregnancies were substantially higher than the control groups. Similarly, in the Shobeiri et al. (2016) study, it was stated that group training based on HBM increased women's average scores regarding cervical screening knowledge. (Shobeiri et al., 2016). Again, the study by Abd et al. (2016) found that improving health behaviors could be achieved through reproductive health education based on HBM and health beliefs of pregnant women to prevent reproductive infections. In addition, the results of the study are parallel to the studies conducted by Demirci (2004), Topatan and Demirci (2015), Ak (2021), Kılıç, and Hacıoğlu (2021), in which the post-training subscale scores of the experimental groups were significantly higher than the control groups (Demirci, 2004; Topatan & Demirci, 2015; Ak, 2021; Kılıç & Hacıoğlu, 2021). While the scale pretest score average of the study was close to the literature, it was found that the average score was higher than the studies in the literature. It is thought that the result obtained is due to the number and frequency of the four trainings given.

The results of the study showed that the experimental group's post-training scores in the sub-dimension of avoiding unintended pregnancies were considerably higher than the control group's. Similar results were obtained in the study conducted by Ak (2021). Again, in the study of Abad (2014), after the reproductive health education intervention, the experimental group's rate of modern contraceptive use increased significantly in comparison to the control group, as determined by using a measurement tool based on HBM ($p < 0.05$). However, in the studies conducted by Demirci (2004), Topatan and Demirci (2015), Kılıç, and Hacıoğlu (2021), no significant difference was seen between the groups in the subscale scores of preventing unwanted pregnancies after training. As stated in the literature, women's fertility behaviors are affected by their knowledge and attitudes on issues such as the number of children, gender decisions, birth spacing, and family planning methods (Karaoğlu & Duman, 2017). In light of this information, longer-term follow-ups and the participation of spouses in education are required to ensure a change in attitudes towards preventing unwanted pregnancies in women. It is thought that the result obtained is due to the number and frequency of the four trainings given.

Multiple regression analysis was used in the study to assess the impact of demographic factors on the RHADS fourth application total score, including age, education level, family type, consanguineous marriage, and social security in the education group. The analysis results show that the most important factor affecting RH protective behaviors is the education variable. In the study, participants in the experimental group whose education level was high school or above were "RHADS IV". The total mean score of the application was

found to be significantly higher than those whose education level was secondary school or below. In the study conducted by Topatan and Demirci (2015), those with an education level of high school and above were RHADS III. The total mean score of the application was found to be significantly higher than those whose education level was secondary school or below. A similar study was conducted in seven different provinces (Istanbul, Ankara, Izmir, Adana, Gaziantep, Erzurum, Trabzon) and it was found that those with higher education levels had better reproductive health behaviors (Apay et al., 2014).

The FPAS subscale mean scores and posttest general scores of the experimental group are significantly higher than the two control groups and show a statistically significant difference. This finding confirms the study's hypothesis that "education, according to HBM, positively affects women's attitudes towards family planning." In the studies conducted by Topatan and Demirci (2015), it was found that the FPAS total and subscale score averages after the training were significantly higher than before the training (Topatan & Demirci, 2015). Similarly, Erenoğlu and Şekerci (2020), and Akar and Yıldız (2023) concluded in their studies that educational interventions positively affected the family planning attitudes of the participants (Erenoğlu & Şekerci, 2020; Akar and Şekerci, 2023). Again, in a pilot study investigating the HBM approach to adolescent fertility control, adolescents who received HBM-based training showed statistically significant improvements in their consistent use, perceptions, and knowledge of contraceptives (Eisen, Zellman, & McAlister, 1985). The study's findings are in line with earlier investigations.

In the study, it was found that the pre-test mean score of the control - 2 group in the community-related family planning subscale of the FPAS was higher than the mean score of the control-1 and control - 2 groups. The control - 2 group, which has a high age range, reached this score through experience. It was determined that the training given to the intervention group reached an average score above both control groups. Therefore, family planning attitudes increased at later ages, and this attitude score increased at earlier ages with the education provided. In the study, attitudes towards family planning methods and birth, which did not change with age, reached a high mean score in the intervention group and it was also determined that it increased gradually after each training. In other words, it can be said that increasing age does not have as much effect as education on attitudes towards labor and birth in this process.

In the study, the FPAS scale total score of the scale (mean \pm SD) taken according to the education level after the second training given to the women in the experimental group was 96.50 ± 9.22 for literate-primary school, respectively; 112.00 ± 8.98 for primary education; and for high school and above, it was found to be 125.63 ± 9.77 . The total score of the scale (mean \pm SD) obtained according to the education level after the fourth education was 124.83 ± 10.41 for literate-primary school, respectively; 119.71 ± 12.21 for primary education; and for high school and above, it was found to be 136.54 ± 8.74 . It was found that as the education level increased in the experimental group, the mean score increased significantly ($p < 0.05$). It was found that the average score of women who were high school graduates and above in their second education was reached by women who were literate and primary school graduates at the end of their fourth education.

Especially when the difference in education levels was evaluated, it was evaluated that the training provided for women contributed more to those with low education levels. A woman's education level is one of the most important determinants of her fertility and her behavior and attitudes towards reproductive health (Baizan & Nie, 2024). In this sense, the importance of the training provided for this purpose is also high. In the regression analysis regarding education level, a one-unit increase in education level increases the FPAS fourth application total score by 0.463 points.

Individuals in the 18 - 24 age group, which constitutes 11.3% of the country's population, are in the age range where the majority of first marriages (56.9%) occur in our country. In our country, more than half of the women get married between the ages of 18 and 24, when the cornerstones of women's health are laid. This situation increases the meaning and importance of the four trainings given to this age group in the study.

Study Limitations

The results obtained from the study were limited to individual statements. The phrase 'being married', which is one of the conditions for participation in the study, was the reason why unmarried women could not be evaluated within the scope of this study. Since the study covers the age range of 18 - 49, married women over the age of 49 could not be included. The fact that the control - 2 group process was similar to control - 1 was among the limitations of the study.

Conclusion

In the study, it was determined that the training and monitoring received by the women in the experimental group between the ages of 18 and 24 in line with HBM changed their views on RH positively. Based on the findings, it can be recommended that nurses providing primary health care to women organize their training in accordance with the HBM. Being married and between the ages of 18 and 49, which is one of the conditions for inclusion in the study, limits the generalizability of the study to women of reproductive age.

Ethical Considerations: Ethical approval was obtained from the Ethics Committee of Hasan Kalyoncu University for this study (Date: 19.02.2019 and No: 2019/15).

Author Contribution: Study Idea (Concept) and Design – NAB, TO; Data Collection / Literature Review – NAB, TO; Analysis and Interpretation of Data – NAB, TO; Preparation of the Article – NAB, TO; Approval of the Final Version to be Published – NAB, TO.

Peer Review: External independent.

Conflicts of Interest: The author reports no conflicts of interest.

Sources of Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not for profit sectors.

References

- Abad, F. N. S. (2014). Enhancing modern contraceptive practices through web-delivered and printed health education module among married female staff in University Putra Malaysia (Doctoral dissertation). Retrieved date: 05.08.2022. Retrieved from: [http://psasir.upm.edu.my/id/eprint/41502/1/FPSK\(p\)%202014%201R.pdf](http://psasir.upm.edu.my/id/eprint/41502/1/FPSK(p)%202014%201R.pdf)
- Abd El Aziz, M. S., Ibrahim, H. A. F., & Elgzar, W. T. I. (2016). Effect of application of health belief model on pregnant women' knowledge and health beliefs regarding urogenital infections. *Nursing Health Sciences*, 5(5), 34-44. doi: 10.9790/1959-0505013444
- Adibelli, D., & Kılınc, N. Ö. (2021). Genital hygiene practices in 18-49 age group women working in greenhouse agriculture in rural areas. *Journal of Academic Research in Nursing*, 7(1), 26-35. doi:10.55646/jaren.2021.43255
- Ak, Y. E. (2021). The effect of support program based on the health belief model on reproductive health behavior in women with orthopedic disabled. Faculty of Health Sciences, İstanbul University Cerrahpaşa, Doctorate Thesis.
- Akar, N., & Yıldız, S. E. (2023). Evaluation of the attitudes of married women aged 15-49 living in Kars/Digor district about family planning before and after the training. *Kafkas Journal of Medical Sciences*, 13(1), 32-38. doi: 10.5505/kjms.2023.39112
- Akgün, G., & Deniz, L. (2020). Development of an attitude scale toward the health education news education news delivered by mass media. *Journal of Health and Social Welfare Research*, 2(2), 51-64.
- Akhtari-Zavare, M., Juni, M. H., Said, S. M., Ismail, I. Z., Latiff, L. A., & Ataollahi Eshkoo, S. (2016). Result of randomized control trial to increase breast health awareness among young females in Malaysia. *BMC Public Health*, 16, 1-11. doi: 10.1186/s12889-016-3414-1
- Anık, Y., & Ege, E. (2019). Nursing approach to early marriages and adolescent pregnancies. Çelebioğlu A, editor. Adolescent health and nursing approaches. First Edition. Turkey Clinics. Ankara.
- Apay, S. E., Özdemir, F., Nazik, E., Potur, D. C., Hadımlı, A., Tanrıverdi, D., & Yurttaş, A. (2014). Determination of the genital hygiene behaviours of women in seven different provinces: A multicentred cross-sectional study. *Anatolian Journal of Nursing and Health Sciences*, 17(4), 250-245. doi: 10.17049/ahsbd.05569
- Baizan, P., & Nie, W. (2024). The impact of education on fertility during the Chinese Reform Era (1980-2018): Changes across birth cohorts and interaction with fertility policies. *European Journal of Population*, 40(1), 7. doi: 10.1007/s10680-023-09691-2.
- Bilgiç, G., & Gurkan, O. C. (2021). Mindfulness and its use in women's health. *Istanbul Gelisim University Journal of Health Sciences*, 14, 363-375. doi: 10.38079/igusabder.760381
- Çıtak, G. (2021). Reproductive health problems in adolescents. *Halic University Journal of Health Sciences*, 4(Special Issue of I. National Women's Health Congress), 93-100. doi: 10.48124/husagbilder.798730
- Demirci, H. (2004). Çalışan evli kadınlarda üreme sağlığını koruyucu davranışların geliştirilmesi. İstanbul Üniversitesi, Sağlık Bilimleri Enstitüsü, Hemşirelik Ana Bilim Dalı, Doktora Tezi.

- Duman, B. N., Yılmazel, G., Topuz, Ş., Başçı, A. B., Koçak, Y. D., & Büyükgönel, L. (2015). The knowledge, attitudes and behaviours of the university youths about reproduction health and sexual health. *Yıldırım Beyazıt University Faculty of Health Sciences Nursing Journal*, 3(1), 20-32.
- Egelioglu Cetişli, N., Top, E. D., Arkan, G., Kaba, F., & Ertop, F. (2016). The effects that family planning methods have on married women's sexual health and selfesteem. *Journal of Education and Research in Nursing*, 13(2), 101-106. doi:10.5222/HEAD.2016.101
- Eisen, M., Zellman, G. L., & McAlister, A. L. (1985). A Health Belief Model approach to adolescents' fertility control: Some pilot program findings. *Health Education Quarterly*, 12(2), 185-210. doi: 10.1177/109019818501200
- Erenoglu, R., Şekerci, Y. G. (2020). Effect of training program given to the students upon family planning attitudes: a semi-experimental study. *Cukurova Medical Journal*, 45(3), 840-850. doi: 10.17826/cumj.715555
- Eryılmaz, S. (2020). The gender roles and women's health. *Kırşehir Ahi Evran University Journal of Health Sciences*, 1(1), 5-13.
- Gedük, E. A. (2018). Developing roles of the nursing profession. *Journal of Health Sciences and Professions*, 5(2), 253-258. doi: 10.17681/hsp.358458.
- Karaođlan, S., & Duman, M. Z. (2017). The effects of religious beliefs and attitudes on fertility (Van province example). *Journal of International Social Research*, 10(50), 391-404.
- Kartal, A., İnci, F. H., Koştu, N., & Çınar Özen, İ. (2017). Effect of individual training given to women in the home environment on health beliefs for breast self-examination. *Pamukkale Medical Journal*, 10(1), 7-13. doi: 10.5505/ptd.2017.35651
- Khiyalı, Z., Aliyan, F., Kashfi, S. H., Mansourian, M., & Jeihooni, A. K. (2017). Educational intervention on breast self-examination behavior in women referred to health centers: application of Health Belief Model. *Asian Pacific Journal of Cancer Prevention*, 18(10), 2833. doi: 10.22034/APJCP.2017.18.10.2833
- Kılınç, E., & Gür, K. (2018). The effect of health belief model-based initiatives in preventing school injuries. *Journal of Health Science and Profession*, 5(3), 467-475. doi: 10.17681/hsp.362244
- Kılınç, N. Ö., & Hacıođlu, N. (2021). The effect of training given according to the health promotion model on women's reproductive health attitudes and self-efficacy. *International Journal of Nursing*, 8(2), 70-81. doi: 10.15640/ijn.v8n2a8
- Nekooi, M. S., Ayazi, S., Gandomi, M., Moosavi, S. G. H., & Fakhri, A. (2016). Level of knowledge about human papillomavirus infection among women of Kashan City, Iran. *International Archives of Health Sciences*, 3(1), 7-12.
- Ođul, Z. (2021). Sexual and reproductive health in adolescents and youth: affecting factors and problems. *Journal of Women's Health Nursing*, 7(2), 149-165.
- Ozan, D. Y., & Okumuş, H. (2013). Nursing care of women with unsuccessful infertility treatment according to Watson's Theory of Caring. *Journal of Anatolian Nursing and Health Sciences*, 16(3), 190-198.
- Örsal, Ö., & Kubilay, G. (2007). Developing family planning attitude scale. *Florence Nightingale Journal of Nursing*, 15(60), 155-164.
- Özlem, A., & Gökler, M. E. (2021). Reproductive health in immigrant women. *Medical Research Reports*, 4(3), 57-64.
- Samami, E., Seyedi-Andi, S. J., Bayat, B., Shojaeizadeh, D., & Tori, N. A. (2021). The effect of educational intervention based on the health belief model on knowledge, attitude, and function of women about Pap smear test at Iranian health centers: A randomized controlled clinical trial. *Journal of Education and Health Promotion*, 10(1), 22. doi: 10.4103/jehp.jehp_33_20
- Shobeiri, F., Javad, M., Parsa, P., & Roshanaei, G. (2016). Effects of group training based on the health belief model on knowledge and behavior regarding the pap smear test in Iranian women: a quasi-experimental study. *Asian Pacific Journal of Cancer Prevention*, 17(6), 2871-2876. doi: APJCP.2016.17.6.2871
- Şahan, Ö., & Akbulut, Ş. (2020). Gender inequality in Turkey and the World of women's health and fitness reflection. *Mediterranean Journal of Sports Sciences*, 3(1), 229-235. doi: 10.18039/ajesi.1264709
- Şenol, D. K., Aydın Özkan, S., & Ağralı, C. (2024). The effect of the training provided to primiparous pregnant women based on the model on pregnancy risk perception and health literacy. *Women & Health*, 64(3), 283-293. doi: 0.1080/03630242.2024.2322130
- Tehrani, F. J., Nikpour, S., Kazemi, E. A. H., Sanaie, N., & Panahi, S. A. S. (2014). The effect of education based on health belief model on health beliefs of women with urinary tract infection. *International Journal of Community Based Nursing and Midwifery*, 2(1), 2-11.
- Topatan, S., & Demirci, N. (2015). The efficiency of reproduction health education given to adolescents during the postpartum period. *Journal of Pediatric and Adolescent Gynecology*, 28(5), 297-303. doi: 10.1016/j.jpag.2014.06.006
- Uskun, E., Çelik, A., Ersoy, P., Sönmez, Y., & Kişiođlu, A. N. (2019). The status of women in Isparta: education, work, health parameters. *Süleyman Demirel University Faculty of Medicine Journal*, 26(4), 370-381. doi: 10.17343/sdufd.317833
- Üstündağ, A. (2017). An evaluation of the impact of sexual and reproductive health education on adolescents. *Başkent University Journal of Education*, 4(1), 1-10.
- Yari, A., Kabiri, B., Afzali Harsini, P., & Khani Jeihooni, A. (2024). Improving menstrual health knowledge among girls from Iran: The effectiveness of educational health belief model. *Women & Health*, 64(1), 65-74. doi: 10.1080/03630242.2023.229497