Original Article

Vaginal Douching Cessation in Rural Turkish Women with Vaginitis

Filiz Okumus, BSc, MSc, PhD, RM
Assistant Professor, Department of Midwifery, Istanbul Medipol University, School of Health Sciences, Istanbul, Turkey

Nurdan Demirci, BSc, MSc, PhD, RN
Associate Professor, Department of Nursing, Marmara University, Faculty of Health Sciences, Istanbul, Turkey

Correspondence: Filiz Okumus, Istanbul Medipol University, School of Health Sciences, Department of Midwifery, Istanbul, Turkey E-mail:fokumus@medipol.edu.tr, filizokumush@gmail.com

Abstract

Background: Vaginal douching is a common practice among married women in rural areas of Turkey. The vaginal douching rate is 40-81% among women living in Turkey. Vaginal douching is prevalent practice in Turkey as traditional and religious
Aim: This study was conducted to evaluate the improvement for vaginitis symptoms in a vaginal douching cessation education.
Methods: This is an intervention study conducted in southern Turkey at a Faculty of Medicine's Gynaecology Outpatient Clinic between July and December 2010. It focused on women diagnosed with vaginitis. The participants were divided into two groups as douching and non-douching. A subgroup of the douching women were educated regarding unhealthy effects of vaginal douching. The women that had ceased vaginal douching by education were considered as the experimental group of this study, the vaginal doucher women as the 1st control group and non-doucher as the 2nd control group.
Results: The participants presented to the outpatients' clinic with symptoms of vaginal discharge, dyspareunia, itching, lower abdominal pain, bad vaginal odour, dysuria and irritation; 62.2% of the women had greayish-white discharge and 14.2% had curd-like discharge on pelvic examination. The improvement rate for vaginitis was 46.5% in the douching ceasing group and 23.4% in the douching observation group. The recovery status in the non-douching women was 53.4%. The difference between the experimental and control groups in terms of improvement was found to be statistically significant.
Conclusions: The results indicate that vaginal douching cessation education proved douching ceasing and douche ceasing reduces the risk of vaginal inflammation.

Keywords: Vaginal Discharge, Vaginitis, Vaginal Inflammation, Vaginal Douching.

Introduction

The vagina is the lower part of the birth canal from which menstrual blood is emptied and where coitus occurs. The vagina is the passage between the female internal and external genital organs. A healthy vagina implies sexual and reproductive health, and, as a consequence, it has a special importance in terms of women's health. The vaginal ecosystem flora provides protection against pathogenic microorganisms. However, women feel an inherent pressure to perform vaginal cleaning. "Vaginal Douching (VD)" is the practice of washing the vaginal canal

with a fluid by using a finger, hose or cloth. It is widely practiced by women all over the world that consider it an important practice of self-hygiene. Nonetheless, it should be noted that VD is more commonly practiced by women living in African and Asian countries than it is by women in the US. (Funkhouser et al., 2002; Martino & Vermund 2002).

Vaginal douching is a common practice among married women in rural areas of Turkey. The vaginal douching rate is 40-81% among women living in Turkey. Vaginal douching is prevalent practice in Turkey as traditional and religious (Okumuş & Demirci, 2013). Various studies point out that vaginal douching has many negative effects, such as increasing the risk of pelvic inflammatory disease, infertility, ectopic pregnancies, premature birth, STI, squamous intraepithelial lesions.
These negative effects are complications of vaginal infections (Bruce, Fiscella &Kendrick 2010; Fiscella et al., 2002; Rothman et al., 2003; Short et al., 2010; Cottrell, 2010; Luong et al., 2010; Chu et al., 2011). Controversial as it may seem, vaginal douching women because they think it reduces the risk of vaginal infection (Markham et al., 2007; Short, Black & Flynn, 2009). Studies also report that women perform VD to get rid of abnormal discharge, itching and bad odour that are caused by the vaginal infections (Lichtenstein & Nansel 2000; Crosby, Yarber &Meyerson 2000; Foch, McDaniel & Chacko 2001; Funkhouser et al., 2002; Oh, Merchant &Brown 2002).

The negative health consequences caused by VD are said to be basically due to the change in vaginal microflora, but a small number of studies also mention other effects depending on the VD product used and the frequency of douching (Zhang et al., 2004; Martino 2004; Annang, Grimley &HookIII, 2006). There is a need for evidence-based studies on VD. Literature in the field recommends non-douching. The recommendation for VD cessation is also common among nursing and midwifery experts. However, there are limited data on what will happen to women diagnosed with vaginitis when they stop or continue performing VD.

Methods

Study aim

This study was conducted to evaluate the improvement for vaginitis symptoms in a vaginal douching cessation education.

Study Design

This study is an intervention study conducted in a rural area of southern Turkey at the Faculty of Medicine's Gynaecology Outpatient Clinic between July and December 2010. Data were obtained from women between the ages of 18 and 49 who presented at the clinic between these dates. The study focused on women diagnosed with vaginitis. These women were divided into two groups: the douching group and non-douching group. A subgroup of the douching women were educated regarding unhealthy effects of vaginal douching. Women were asked to undergo a vaginal examination three months later. The women that had ceased vaginal douching by education were considered as the experimental group of this study, the vaginal doucher women as the 1st control group and non-doucher as the 2nd control group.

Population and Sample Group

The sample size was calculated using the Epi Info 6.0 program. While calculating the sample size, the minimum 28% infection rate difference between the experimental and control groups according to Brotman et al. (2008) study was taken into account. Accordingly, the sample size was calculated as consisting of groups of 45 subjects at a 5% significance level.

The inclusion criteria were women who were sexually active, with regular menstrual cycles, who had not used antibacterial, antifungal or antiparasitic drugs in the previous week, and who did not have cervical erosion, tubal-ovarian abscess or a chronic disease. Women who were diagnosed with trichomonas vaginalis infection and those who had atypical endocervical cells (evidence of sexually transmitted diseases) were excluded from the research. Of the 290 women who satisfied the study criteria, 213 agreed to participate in the study. Vaginal douching was performed by 58.6% of the participants. Fifty douching

women were selected randomly and were instructed regarding "the unhealthy effects of vaginal douching". Detailed information in relation to the creation of the study groups is provided in Figure 1.

Instruments

The Patient Monitoring Form (PMF) and Inventory of Genital Hygiene Behaviors (IGHB) were used to collect data. PMF was developed by taking into account WHO's (2003) syndromic management of STI directives and the Bethesda 2001 system (who 2003; Young et al., 2004). This form consists of three parts to record the women vaginal complaints, pelvic examination results and laboratory findings.

The IGHB was developed by Ege and Eryilmaz (2006) specifically for cultural analysis of Turkish society's; it was used to determine women genital hygiene related behavior. IGHB is a one-dimensional 27-item inventory consisting of questions on menstruation as well as toilet and sexual hygiene practices. The highest IGHB score is 108 and the lowest is 27. The total inventory score provides the genital hygiene behaviour score. As this score increases, genital hygiene behaviours are thought to approach the desired level.

The Cronbach-alpha coefficient of the IGHB in Ege and Eryilmaz's study was 0.86. The Cronbach-alpha coefficient of IGHB in this study was 0.72. The Hotelling T^2 test was used to test the suitability of the model.

The p value was 0.000 according to the Hotelling T^2 test, which tests the equality of the question mean scores. Accordingly, the difference between the question means was statistically significant. This result indicates that each participant answered the IGHB questions meticulously and in the same format.

Study Procedures

Phase I: The vaginal complaints of the women fulfilling the sample selection criteria were queried and recorded on the PMF. Then, these women were placed on the pelvic examination table. The vagina and cervix were examined through a speculum and a smear was taken for a Pap-test. The type of vaginal discharge observed was recorded on the PMF. Smear preparations were examined under a microscope under the pathologist's care. The presence of inflammation was graded as mild, moderate or severe under microscopic examination.

Nursing and Midwifery Intervention:

Fifty douching women were selected randomly and were conducted education regarding "the unhealthy effects of vaginal douching". Education was provided by the researchers in groups of five. Before the education session, women were given an information booklet prepared after screening the literature in the field. Two educational sessions of 50 minutes were planned. The first session was theoretical and purely conducted in an instructional mode.

On the other hand, the second session was planned in the form of a discussion and focused on the causes and motivational factors of VD, and it aimed to answer the participants' questions. Both sessions were conducted on the same day with a ten-minute interval in between.

Objective: To elucidate the reason for VD and create awareness of its negative effects.

Expected Outcomes: At the end of this session douching women;

- Will be able to identify all female reproductive organs and demonstrate them on the schema.
- Will be able to explain the structural and functional characteristics of the vagina.
- Will be able to explain abnormal vaginal discharge and the principles of vaginal health.
- Will be able to explain the impact of vaginal douching on the vaginal ecosystem.
- Will be aware of the fact that vaginal douching is not appropriate health behavior for vaginal hygiene.

Content of educational section:

1. Anatomy and physiology of the female reproductive organs

2. Physiology of the vagina

3. Abnormal vaginal discharge

4.Vaginal douching and its effect on vaginal ecosystem

Session Plan:

1. The sharing of educational objectives (5 min.)

2. Explanation of the female reproductive organs and their functions, demonstrating them on the scheme (10 min.)

3.Identification of the vaginal anatomy and physiology (10 min.)

4.The vaginal ecosystem and source of vaginal secretions (5 min.)

5.Normal and abnormal vaginal discharge: vaginal health protective principles (10 min.)

6.The causes and motivational factors triggering the practice of vaginal douching (10 min.)

7. Discussion with participants on the beliefs and motivational factors triggering the practice of vaginal douching (20 min.)

8. Discussion on personal responses to vaginal douching (30 min.)

Method: Presentations, demonstrations, questions and answers, brainstorming

Tools and equipment:

1. Slide

2. Projector and computer

3. The schema of female internal and external reproductive organs.

4. Posters of abnormal vaginal discharge types

5. Booklet

Time: 50 + 50 minutes.

Phase II: Nelson (2006) reported medical treatment only provides short-term recovery for vaginal infections with recurrence occurring within three months. Therefore, the second phase of this research was carried out three months after the first pelvic examination. IGHB was used to determine the genital behaviours of the participants during those three months. As in the first phase, pelvic examination, the vaginal symptoms and the observed vaginal discharge if present were recorded on the PMF. Smear samples were taken from 148 women who came to the second pelvic examination and were evaluated by the same pathologist. Women with no inflammation signs on the microscopic examination were concluded to have recovered.

Data Analysis

The data obtained from the study were evaluated using the Statistical Package for Social Sciences (SPSS) for Windows 15.0.Frequency, percentage, and the chi-square test were used to evaluate the general characteristics of the participants, univariate variance analysis for the IGHB scores and the chi-square and McNemar tests to compare the pelvic and microscopic examination findings. Results were evaluated using a 95% confidence interval and a 0.05 significance level.

Ethical Considerations

Consent from the Faculty of Medicine's Ethical Commission was given for this study. The study started only after oral and written correspondence with the officials of the institution where the study would be performed and after obtaining the necessary permissions. The purpose and method of the study were explained to the participants and their oral and written consents were obtained. They were told they could withdraw at any time; that is participation in the study was on a voluntary basis.

Results

Descriptive Characteristics of the Participants

The descriptive characteristics of the participants are shown in Tables 1 and 2.

The average age of the participants was 35.5±6.7 (20-49) years; 78.3% had a low income level and 15.5% had no health insurance. 29% used intrauterine device (IUD), 19.6% had a partner who used condoms; and 36.5% suffered from urinary incontinence.

The average IGHB score was 69.8±9.6 in the douching cessation group, 67.0±10.3in the douching observation group and 70.4±10.4 in the non-douching group. There was no statistically significant difference between the groups in terms of descriptive characteristics of the participants and IGHB scores ($p>0.05$).(see Tables 1 and 2)

Phase I

The participants presented to the outpatients' clinic with symptoms of vaginal discharge, dyspareunia, itching, lower abdominal pain, bad vaginal odour, dysuria and irritation; 62.2% of the women had greayish-white discharge and 14.2% had curd-like discharge on pelvic examination. The Pap-smear slides showed mild inflammation in 33.8%, moderate inflammation in 48% and severe inflammation in 18.2% of the women. There was no statistically significant difference between the experimental and control groups in terms of the participants' vaginal symptoms, or pelvic examination and microscopic examination results in phase 1 ($p>0.05$).

Individualized treatment was prescribed by the gynaecologist after taking into account the women's symptoms and pelvic and microscopic examination findings. When the participants were interviewed three months later, 64.9% claimed to have used the recommended treatment fully, while 35.1% had not used it or had used part of it. There was no statistically significant difference between the experimental and control groups in terms of the prescribed medication use ($p>0.05$).

Phase II

In phase II, 86% of the women who were educated (43 subjects) ceased vaginal douching. The participants were asked about their vaginal complaints and underwent, pelvic and microscopic examination findings again in phase II. A statistically significant decrease was found in all groups regarding the itching, irritation, and dyspareunia symptoms ($p<0.05$). Although there was a statistically significant decrease regarding bad vaginal odour and lower abdominal pain symptoms in the douching observation and douching cessation groups ($p <0.05$), no change was present in the non-douching group when compared to phase I ($p>0.05$). Dysuria decreased statistically significantly only in the douching cessation group and vaginal discharge only in the non-douching group ($p<0.05$).Although there was a significant decrease in thin greayish-white discharge in all groups ($p <0.05$) no statistically significant difference occurred in the appearance of curd-like discharge ($p>0.05$) (Table 3).

Inflammation degrees were compared in phase I and phase II. A significant decrease was present regarding mild inflammation in the non-douching group ($p=0.000$), and moderate inflammation in the douching ceasing group ($p=0.041$). There was no statistically significant decrease in inflammation degrees in douching observation group ($p>0.05$). There was no statistically significant decrease in severe inflammation in any group ($p>0.05$) (Table 4).

The improvement rate for vaginitis was 46.5% in the douching ceasing group and 23.4% in the douching observation group. The recovery status in the non-douching women was 53.4%. The difference between the experimental and control groups in terms of improvement was found to be statistically significant. Douching group have lower improvement rate than those in other groups ($p=0.006$). A statistically significant difference was found between the ceased douching group and the douching group in improvement in the vaginal inflammation ($p=0.018$). The douching cessation provided women with vaginitis improvement the vaginal inflammation. The improvement was higher in the douching ceasing women than in the douching women (23.4% and, 46.5% respectively). A statistically significant difference was not found between the ceased douching group and the non-douching group in improvement in the vaginal inflammation ($p=0.313$).A statistically significant difference was found between the non-douching and douching groups in improvement in the vaginal inflammation ($p=0.002$). To non-douche provided women with vaginitis improvement the vaginal inflammation. The rate of improvement was higher in the non-douching group than it was in the douching group (23.4%, and respectively 53.4%) (Table 5).

Discussion

The result of this study, which was conducted to evaluation the effect of the improvement for vaginitis symptoms in a vaginal douching cessation education, have been discussed in the relevant literature.

Discussions have limitations due to inadequate of similar studies in the current literature. This study results can make a useful contribution to the field.

Women who present to the gynaecology clinic with vaginal symptoms mostly suffer from vaginal discharge. Studies have reported vaginal discharge in women to be more common than other symptoms (Prasad et al., 2003; Garcia et al., 2004). Most of the women in this study presented to the gynaecology clinic due to intense vaginal discharge. VD cessation did not provide a significant improvement in women's discharge complaints. Improvement of vaginal discharge complaints only in the non-douching women indicates that douching women are probably more prone to having vaginal discharge in the first place. These women may have started VD to get rid of the vaginal discharge. Brotman et al (2008) stated that some women performed VD because of a fishy smell from the vagina.

Bacterial infections most commonly seen in women of reproductive age can be related to reproductive problems such as endometriosis, spontaneous preterm birth, low birth weight, and premature membrane rupture (Martino & Vermund 2002; Martino, 2004). A thin greayish- white discharge, a sign of bacterial infection, was commonly observed in participants in this study. There was a significant decrease in the rate of thin greayish-white discharge in the Phase II in all groups, not only the douching ceasing group. No relationship was found between VD and the bacterial infections. Some studies show no relationship between bacterial infections and VD (Zhang et al., 2004; Amaral et al. 2007; Heng et al., 2010).

Candida infections usually cause curd-like discharge. In this study, this type of infection was less common than bacterial infections. Similarly, curd-like discharge was rare in the Aytaç and Yıldız (2009) study. Vaginal douching has been reported to cause Candida infections (Lan et al., 2008; Heng et al., 2010).

VD cessation did not provide a significant improvement in the rate of curd-like discharge in this study. There was no relationship between curd-like discharge and VD. The results indicate that vaginal douching cessation education proved douching ceasing. In our study, 86% of women who were educated ceased vaginal douching.

Ness et al. reported that; more than 85% of women stated "I would have stopped if I had been told that it caused diseases such as STI, infertility and cancer" (Ness et al., 2003). Health care staff are effective in ensuring women stop performing VD.

Women in Africa stopped performing VD after being trained by health care staff (Mark et al., 2010). A study reported that 40% of women stopped performing VD with the help of health care professionals (Cottrell 2010). Raising the awareness of women by informing them about the negative effects of vaginal douching will decrease the performing of this practice. Women tend to stop vaginal applications when they learn they are harmful to their health.

Considering the comparison of improvement rates for vaginitis in the experimental and control groups, the difference was statistically significant. The douching ceasing and non-douching groups similarly improved at a higher rate than those in the douching group. The douching cessation education provided women with vaginitis improvement the vaginal inflammation. Douching cessation provided only improved recovery in moderate inflammations while no significant change occurred in severe and mild inflammations.

Conclusions

The results of this study suggest that vaginal douching cessation education proved douching ceasing and douche ceasing reduces the risk of vaginal inflammation. Douching cessation would enable women with vaginitis to have a higher chance of recovery. However, the lack of a significant decrease in cases of severe inflammation indicates that VD cessation is not a sufficient intervention by itself.

Additional advanced treatment and follow-up treatments are necessary. Making sure that women are compliant with the treatment regime and maintain genital hygiene with nursing interventions are required treatment co-methods in these cases.

Table 1. Sociodemographic Characteristics of the Participants (N=148)

	Ceased Douching n=43		Douching n=47		Non-douching n=58		Total n=148		χ^2 ve p value
	n	%	n	%	n	%	n	%	
Years									
$\bar{X}$±SD	37.0±6.4		35.1±7.2		34.7±6.3		35.5±6.7		
20-29 years	6	14.0	11	23.4	11	19.0	28	18.9	
30-39 years	19	44.2	24	51.1	35	60.3	78	52.7	χ^2=6.41
40-49 years	18	41.9	12	25.5	12	20.7	42	28.4	p=0.170
Education									
Literate	8	18.6	11	23.4	8	13.8	27	13.8	
Elementary	31	72.1	35	74.5	46	79.3	112	75.7	χ^2=3.50
Secondary	4	9.3	1	2.1	4	6.9	9	6.1	p=0.477
Persons in the household									
$\bar{X}$±SD	4.7±1.6		5.1±1.1		5.3±1.4		5.0±1.4		
2-4 persons	22	51.2	20	42.6	27	46.6	69	46.6	
5 persons	11	25.6	15	31.9	18	31.0	44	29.7	χ^2=0.82
≥ 6 persons	10	23.3	12	25.5	13	22.4	35	23.6	p=0.935
Type of family									
Nuclear	38	88.4	40	85.1	47	81.0	125	84.5	χ^2= 1.03
Extended	5	11.6	7	14.9	11	19.0	23	15.5	p= 0.596
Monthly family income									
≤Minimum wage	21	48.8	17	36.2	18	31.0	56	37.8	
Minimum wage	12	27.9	21	44.7	27	46.6	60	40.5	
≥Minimum wage	10	23.3	9	19.1	13	22.4	32	21.6	χ^2=4.73 p=0.316
Health Insurance									
Yes	33	76.7	39	83.0	53	91.4	125	84.5	χ^2=4.14
No	10	23.3	8	17.0	5	8.6	23	15.5	p=0.126

Table 2. Health and Fertility Characteristics of the Participants (N=148)

	Ceased Douching n=43		Douching n=47		Non-douching n=58		Total		χ^2 ve p value
	n	**%**	**N**	**%**	**n**	**%**	**n**	**%**	
Body mass index									
Normal weight	13	30.2	5	10.6	17	29.3	35	23.6	
Overweight	19	44.2	25	53.2	28	48.3	72	48.6	χ^2=7.18
Obesity	11	25.6	17	36.2	13	22.4	41	27.7	p=0.126
Urinary incontinence									
Yes	18	41.9	16	34.0	20	34.5	54	36.5	χ^2=0.75
No	25	58.1	31	66.0	38	65.5	94	63.5	p=0.685
Number of birth(s)*									
$\bar{X}$±SS	3.4±1.4		3.4±1.4		3.1±1.2		3.3±1.3		
1-2	10	25.6	11	23.4	19	33.3	40	28.0	χ^2=1.69
3-4	23	59.0	29	61.7	32	56.1	84	58.7	p= 0.792
5-↑	6	15.4	7	14.9	6	10.5	19	13.3	
Abortion									
Yes	17	39.5	22	46.8	19	32.8	58	39.2	χ^2=2.15
No	26	60.5	25	53.2	39	67.2	90	60.8	p= 0.341
Mode of delivery*									
Vaginal	31	79.5	36	76.6	40	70.2	107	74.8	χ^2=1.18
C.section	8	20.5	11	23.4	17	29.8	36	25.2	p=0.554
Contraceptive method									
No	8	18.6	3	6.4	3	5.2	14	9.5	
IUD	15	34.9	14	29.8	14	24.1	43	29.1	
Condom	6	14.0	8	17.0	15	25.9	29	19.6	
Hormonal	1	2.3	3	6.4	5	8.6	9	6.1	
Tuballigation	7	16.3	6	12.8	6	10.3	19	12.8	
Coitus interruptus	6	14.0	13	27.7	15	25.9	34	23.0	

*** Only those with a birth history**
****IUD (Intrauterin device)**

Table 3. Comparison of Vaginal Symptoms in Phase I and II (N=148)

	Phase I		Phase II		p*
	n (%)	n (%)	n (%)	n (%)	value
Ceased Douching Group	**Yes**	**No**	**Yes**	**No**	
Vaginal discharge	36 (83.7)	7(16.3)	36(83.7)	7(16.3)	1.000
Itching	20(46.5)	23(53.5)	3(7.0)	40(93.0)	**0.000**
Bad vaginal odor	16(37.2)	27(62.8)	1(2.3)	42(97.7)	**0.000**
Irritation	14 (32.6)	29 (67.4)	1(2.3)	42(97.7)	**0.000**
Lower abdominal pain	19 (44.2)	24 (55.8)	4 (9.3)	39(90.7)	**0.000**
Dysuria	12 (27.9)	31 (72.1)	3 (7.0)	40(93.0)	**0.012**
Dyspareunia	25 (58.1)	18 (41.9)	11(25.6)	32(74.4)	**0.001**
Grayish-white discharge	31 (72.1)	12(27.9)	17 (39.5)	26 (60.5)	**0.007**
Curd-like discharge	6(14.0)	37(86.0)	6(14.0)	37(86.0)	1.000
Douching Group					
Vaginal discharge	38(80.9)	9(19.1)	32(68.1)	15(31.9)	0.180
Itching	21(44.7)	26(55.3)	7(14.9)	40(85.1)	**0.001**
Bad vaginal odor	19(40.4)	28(59.6)	8(17.0)	39(83.0)	**0.001**
Irritation	13(27.7)	34(72.3)	6(12.8)	41(87.2)	**0.039**
Lower abdominal pain	26(55.3)	21(44.7)	10(21.3)	37(78.7)	**0.000**
Dysuria	15(31.9)	32(68.1)	8(17.0)	39(83.0)	0.065
Dyspareunia	29(61.7)	18(38.3)	15(31.9)	32(68.1)	**0.001**
Grayish-white discharge	25(53.2)	22(46.8)	16(34.0)	31(66.0)	**0.022**
Curd-like discharge	5(10.6)	42(89.4)	5(10.6)	42(89.4)	1.000
Non-douching Group					
Vaginal discharge	52(89.7)	6(10.3)	41(70.7)	17(29.3)	**0.003**
Itching	30(51.7)	28(48.3)	11(19.0)	47(81.0)	**0.000**
Bad vaginal odor	19(32.8)	39(67.2)	12(20.7)	46(79.3)	0.143
Irritation	16(27.6)	42(72.4)	6(10.3)	52(89.7)	**0.021**
Lower abdominal pain	23(39.7)	35(60.3)	17(29.3)	41(70.7)	0.345
Dysuria	17(29.3)	41(70.7)	9(15.5)	49(84.5)	0.096
Dyspareunia	35(60.3)	23(39.7)	19(32.8)	39(67.2)	**0.001**
Grayish-white discharge	36(62.1)	22(37.9)	23(39.7)	35(60.3)	**0.026**
Curd-like discharge	10(17.2)	48(82.8)	8(13.8)	50(86.2)	0.774

McNemar test

Table 4. Comparison of Microscopic Examination Results in Phase I and II (N=148)

Inflammation degree	Phase I		Phase II		p* value
	n (%)	n (%)	n (%)	n (%)	
Ceased Douching Group	**Yes**	**No**	**Yes**	**No**	
Mild inflammation	17(39.5)	26(60.5)	8(18.6)	35(81.4)	0.078
Moderate inflammation	19(44.2)	24(55.8)	9(20.9)	34(79.1)	**0.041**
Severe inflammation	7(16.3)	36(83.7)	8(18.6)	35(81.4)	1.000
Douching Group					
Mild inflammation	15(31.9)	32(68.1)	6(12.8)	41(87.2)	0.064
Moderate inflammation	24(51.1)	23(48.9)	17(36.2)	30(63.8)	0.248
Severe inflammation	8(17.0)	39(83.0)	13(27.7)	34(72.3)	0.332
Non-douching Group					
Mild inflammation	18(31.0)	40(69.0)	1(1.7)	57(98.3)	**0.000**
Moderate inflammation	28(48.3)	30(51.7)	19(32.8)	39(67.2)	0.137
Severe inflammation	12(20.7)	46(79.3)	7(12.1)	51(87.9)	0.332

McNemar test

Table 5. Comparison of Improvement in Phase II in the Experimental and Control Groups (N=148)

	Improvement			
	Yes n (%)	**No** n (%)	**Total** n (%)	**χ^2 and pvalue**
All groups				
Ceased douching group	20 (46.5)	23 (53.5)	43(100.0)	
Douching group	11 (23.4)	36 (76.6)	47(100.0)	χ^2=10.15
Non-douching group	31(53.4)	27(46.6)	58(100.0)	**p=0.006**
Experimental and I.Control Groups				
Ceased douching group	20 (46.5)	23 (53.5)	43(100.0)	χ^2=5.31
Douching group	11 (23.4)	36 (76.6)	47(100.0)	**p=0.018**
Experimental and II.Control Groups				
Ceased douching group	20 (46.5)	23 (53.5)	43(100.0)	χ^2=0.047
Non-douching group	31(53.4)	27(46.6)	58(100.0)	p=0.313
Control Groups				
Douching group	11 (23.4)	36 (76.6)	47(100.0)	χ^2=0.976
Non-douching group	31(53.4)	27(46.6)	58(100.0)	**p=0.002**

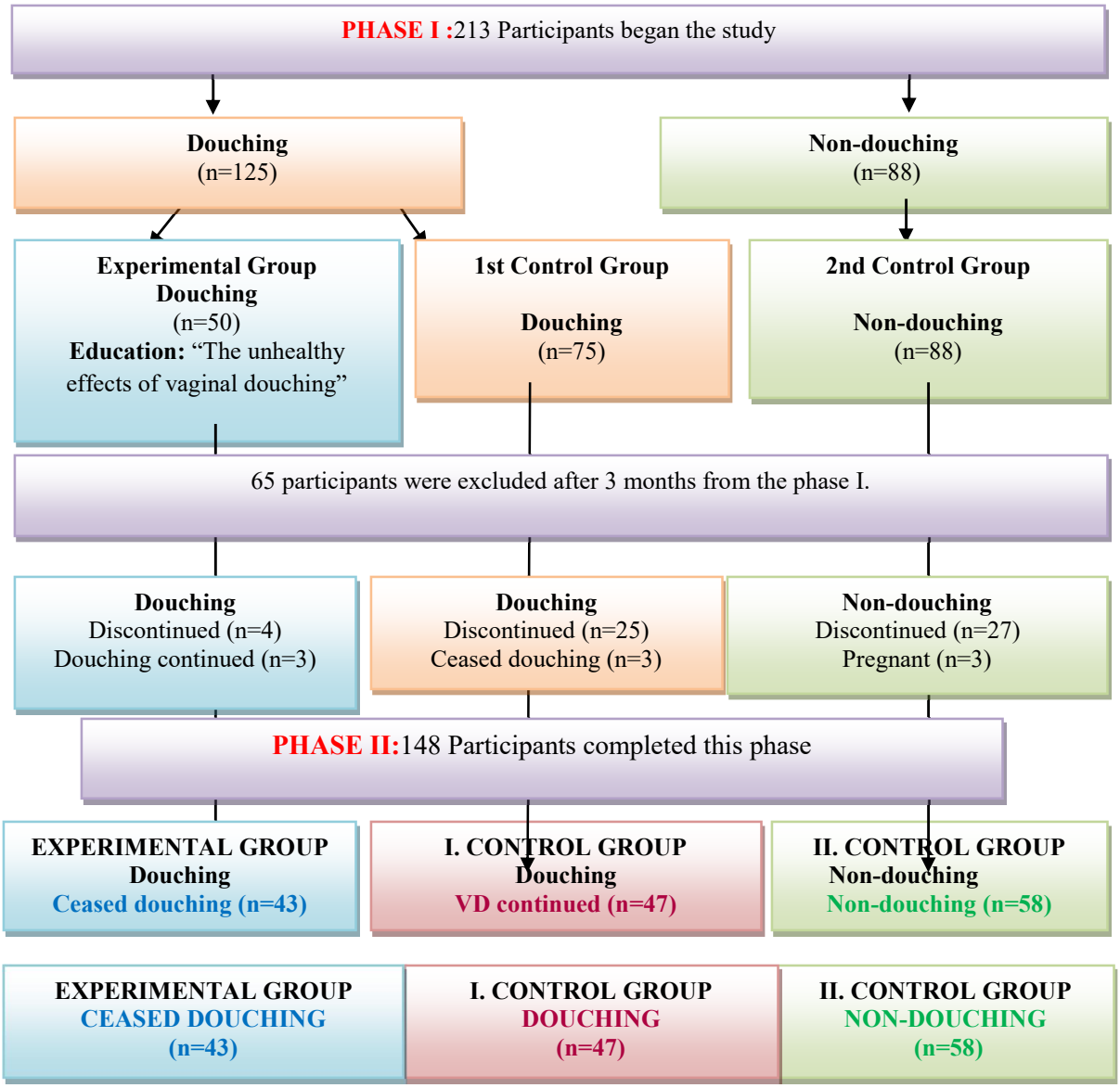

Figure 1. The Creation of Research Groups

Vaginal habits are the most important determinants of vaginal health in women. VD is only one of these habits. Considering VD as the only cause of vaginal complaints in women practicing VD can certainly be misleading. However, considering that VD is widely practiced by women living in communities with low socio-economic and educational levels and that hygiene practices are inadequate in these societies can provide a broader perspective on vaginal health. Correction of women genital hygiene practices is considered to be the most important factor in achieving vaginal health and preventing vaginal infections.

Nurses working in the field of women's health and midwives should support women in developing healthy genital hygiene habits, and plan individualized education programmes taking personal hygiene practices into account. Examining and revealing the reasons and motivational factors for women's habits and providing specific instruction may be more beneficial. In such educational sessions the characteristics of the vaginal ecosystem should be explained and the participants should be provided with comprehensive information about the menstrual cycle and urged to be aware of periodic normal vaginal secretions and, when they encounter any

abnormality, to attend a health care institution promptly. Education women how to detect abnormal conditions in their bodies will increase the rate of early diagnosis and the success of treatment.

Study Limitations

There are some significant limitations of the current study. First, no information was obtained about the behaviour of sexual partners regarding sexually transmitted infections. Secondly, no comparison was made with other studies because no similar study findings were found.

References

Amaral R, Giraldo PC, Gonçalves AK, Junior JE, Santos-Pereira S, Linhares I, Passos MR. (2007) Evaluation of hygienic douching on the vaginal microflora of female sex workers. *Int Journal STD AIDS.* 18 (11): 770-773.

Annang L, Grimley DM, HookIII EW. (2006) Vaginal douche practices among black women at risk: Exploring douching prevalence, reasons for douching and sexually transmitted disease infection. *Sex. Transm. Dis.* 33 (4): 215-219.

Aytaç A, Yıldız Eryilmaz H. (2009) Consistency analysis of diagnosis made using vajinal discharge assessment form (VDAF). *Journal of Maltepe University Nursing Science & Art* 2(1): 22-33.

Brotman RM, Ghanem KG, Klebanoff MA, Taha TE, Scharfstein DO, Zenilman JM. (2008) The effect of vaginal douching cessation on bacterial vaginosis: A pilot study. *Am J. Obstet Gynecol* 198 (6): 628 e1- 628 e7.

Bruce FC, Fiscella K, Kendrick JS. (2000) Vaginal douching and preterm birth: An intriguing hypothesis. *Med Hypotheses* 54 (3): 448-452.

Chu TY, Hsiung CA, Chen CA, Chou HH, Ho CM, Chien TY, Chang HJ, Chou CY, Liou JD, Kan YY, Hsieh CY. (2011) Post-coital vaginal douching is risky for non-regression of low-grade squamous intraepithelial lesion of the cervix. *Gynecol Oncol.* 120(3):449-53.

Cottrell BH. (2010) An updated review of evidence to discourage douching. *MCN Am J Matern. Child Nurs.* 35 (2): 102-107.

Crosby RA, Yarber WL, Meyerson B. (2000) Prevention strategies other than male condoms employed by low-income women to prevent HIV infection. *Public Health Nurs*. 1 (7): 53-60.

Ege E, Eryilmaz G. (2006) The effect of planned education given to the women on genital hygiene behaviours. *Jounal of Anatolia Nursing and Health Sciences* 9 (3): 8-16.

Fiscella K, Franks P, Kendrick JS, Meldrum S, Kieke BA. (2002) Risk of preterm birth that is associated with vaginal douching. *Am J Obstet Gynecol.* 186 (6): 1345- 1350.

Foch BJ, McDaniel ND, Chacko MR. (2001) Racial differences in vaginal douching knowledge, attitude, and practices among sexually active adolescents. *J Pediatr Adolesc Gynecol* 14:29.

Funkhouser E, Pulley L, Lueschen G, Costello C, HookIII E, Vermund SH. (2002) Douching beliefs and practices among black and white women. *J. Women Health Gend. Based Med.* 11 (1): 29-37.

Garcia PJ, Chavez S, Feringa B, Chiappe M, Li W, Jansen KU., Carcamo C, Holmes KK. (2004) Reproductive tract infections in rural women from the highlands, jungle, and coastal regions of Peru. *Bull. World Health Org*. 82(7): 483-492.

Heng LS, Yatsuya H, Morita S, Sakamoto J. (2010) Vaginal douching in Cambodian women: Its prevalence and association with vaginal candidiasis. *Journal Epidemol* 20 (1): 70-76.

Lan PT, Lundborg CS, Phuc HD, Sihavong A, Unemo M, Chuc NT, Khang TH, Mogren I. (2008) Reproductive tract infections including sexually transmitted infections: A population-based study of women district of Vietnam, *Sex Transm. Infect.* 84 (2): 126-132.

Lichtenstein B, Nansel TR. (2000) Women's douching practices and related attitudes: Finding from four focus groups women and health. *Women Health* 31 (2-3): 117-131

Luong M, Libman M, Dahhou M, Chen MF, Kahn SR, Goulet L, Séguin L, Lydon J, McNamara H, Platt RW, Kramer MS, for the Montreal Prematurity Study Group. (2010) Vaginal douching, bacterial vaginosis, and spontaneous preterm birth. *J. Obstet Gynecol* 32 (4): 313- 320.

Mark H, Sherman SG, Nanda J, Chambers-Thomas T, Barnes M, Rompalo A. (2010) What has changed about vaginal douching among African American mothers and daughters*?*. *Public Health Nurs.* 27 (5): 418-424.

Markham CM, Tortolero SR, Addy RC, Baumler ER, McKirahan NK, Escobar-Chaves SL, Peskin M F. (2007) Brief report on factors associated with frequent vaginal douching among alternative school youth. *J. Adolesc Health* 41 (5): 509-512.

Martino JL, Vermund SH. (2002) Vaginal douching: Evidence for risks or benefits to women's health. *Epidemiol Rev.* 24: 109-124.

Ness RB, Hillier SL, Richter HE, Soper DE, Stam C, Bass DC, Sweet RL, Rice P, Downs J, Aral S. (2003) Why women douche and why they

may or may not stop. J. *Sex. Transm. Dis.* January: 71-74.

Martino MA. (2004) The vagina dialogues: Do you douche? *Am. J. Nurs.* 104(1): 40-45.

Oh MK, Merchant JS, Brown P. (2002) Douching behaviour in high-risk adolescents: What do they use, when and why do they douche? *J. Pediatr Adolesc Gynecol* 15: 83-88.

Nelson NB. (2006) Treatment and management of bacterial vaginosis in pregnancy: Current and future perspectives. *Womens Health (Lond Engl)* 2(2):267-277.

Okumuş F, Demirci N. (2014) The reality of vaginal douche in Turkey. *Journal of Istanbul University Florence Nightingale School of Nursing* 22(1): 53-62

Prasad J, Abraham S, Akila B, Joseph A, Jacob KS. (2003) Symptoms related to the reproductive tract and mental health among women in rural southern India. *Natl Med J India.* 16 (6): 303-308

Rothman KJ, Funch DP, Alfredson T, Brady J, Dreyer NA. (2003) Randomized field trial of vaginal douching, pelvic inflammatory disease and pregnancy. *Epidemiology* 14 (3):340-348.

Short MB, Black WR, Flynn K, BS. (2009) Discussions of vaginal douching with family members. *J. Pediatr Adolesc Gynecol* 23 (1):39-44.

Short VL, Totten PA, Ness RB, Astete SG, Kelsey SF, Murray P, Haggerty CL. (2010) The demographic sexual health and behavioural correlates of Mycoplasma genitalium infection among women with clinically suspected pelvic inflammatory disease. *Sex. Transm. Infec.* 86 (1): 29-31.

World Health Organization. Guidelines For The Management Of Sexually Transmitted Infections. http://applications.emro.who.int/aiecf/web79.pdf, 2003. (accessed: 9 January 2014)

Young NA, Bibbo M, Buckner SB, Colgan TJ, Prey MY. (2004) Non-neoplastic findings. In: Solomon D, Nayar R, eds. *The Bedhesda System for Reporting Cervical Cytology.* 2th ed., Springer Science Business Media Inc., China

Zhang J, Hatch M, Zhang D, Shulman J, Harville E, Thomas A G. (2004) Frequency of douching and risk of bacterial vaginosis in African American women. J. *Obstet Gynecol* 104 (4): 756-760

.