ORIGINAL RESEARCH

A questionnaire-based study on genital hygiene practices in women with and without chronic vulvar dermatosis

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ABSTRACT
Background: Vulvar dermatosis are chronic skin disorders that affect vulva, appearing variably in the patients. Perceptions about reproductive healthcare differ significantly across the globe. Feminine hygiene practices vary among women with high prevalence of inaccurate behaviors that predispose them to vulvar dermatosis. **Aims and objectives:** To assess the level of public awareness about the subject and subsequent need for educational interventions to optimize female genital hygiene practices. **Material and methods:** A cross-sectional observational study was conducted at Outpatient department of Department of Dermatology in Amaltas institute of medical sciences and associated hospital, Dewas (M.P.) between January 2020 to December 2021 including female patients of 16 to 65 years of age group who attended outpatient department and given consent, excluding Illiterate and follow up patients. **Result:** Cleansing of the external intimate area is more common in Group B patients with once daily frequency with clean water, whereas Group A washes twice weekly. Vaginal douching was common for 23.1% of Group A and 4.6% of Group B. The use of wet wipes for intimate cleaning was reported 11.85 % and 32.6 % in Group A patients and group B patients respectively. The awareness and habituation of both groups regarding genital hygiene practices is different. **Discussion:** Vulva is first line of defense against genital tract infections, so, intimate hygiene is desirable for overall good health in women. However, in Indian scenario, it is not practiced widely due to various sociocultural reasons. Thus, it is very important to educate women about intimate hygiene.
Keywords: vulvar dermatosis, genital hygiene practices, feminine hygiene.
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INTRODUCTION

Vulvar dermatoses are skin disorders that affect the vulva, manifests as erythema, epithelial disruption, erosions, and lichenification causing itching, burning and discomfort to the patients.[1] Factors such as anatomical position, occlusion, body secretions, estrogen deficiency, friction, and heat make this area prone for barrier disruption leading to vulvar dermatosis.[2] It is categorized into inflammatory, infectious, and neoplastic.[3] Common inflammatory vulvar dermatoses includes atopic dermatitis, contact dermatitis, lichen planus, lichen simplex chronicus, psoriasis and lichen sclerosus atrophicus.[4] Less commonly, it may also be caused by seborrheic dermatitis, plasma cell vulvitis, and Fox-Fordyce disease.[5] Infectious causes reported so far, vary with age. In prepubertal females, *Group A beta-hemolytic streptococcus* (GABHS) and in adult women, vulvovaginal candidiasis is a frequent cause of vulvar pruritus.[6,7] An estimated 75% of women have been affected by vulvovaginal candidiasis at some point in their lifetime.[8,9] In adults, the common parasitic vulvar infestations are pediculosis pubis (pubic lice) and scabies while Enterobius vermicularis (pinworm) can cause vulvar and anogenital pruritus.[10] Nowadays, Tinea cruris is an emerging superficial

fungal infection that can cause vulvar pruritus in women, involving inguinal creases and the labia majora.[11] Benign or malignant neoplasms such as SCC, melanoma, extramammary Paget's disease (EMPD) or vulvar intraepithelial neoplasia (VIN) are uncommon causes of vulvar pruritus.[12]

Perceptions and habits about reproductive healthcare differ significantly among countries, societies, and individuals. Socioeconomic status, religion, caste and level of education influence women's perceptions and behaviors regarding their reproductive healthcare. In particular, feminine hygiene practices vary among women with a high prevalence of inaccurate behaviors that predispose them to vulvar dermatosis. Eventually it may lead to severe impairment of quality of life, impacting sexual function, relationships, sleep and self-esteem.

There is lack of study regarding intimate hygiene practices among women, hence, we conducted a cross-sectional study to determine the prevalence of several intimate hygiene habits and their level of knowledge in a female population attending tertiary care hospital.

AIMS & OBJECTIVES

1. To assess the level of public awareness about this subject and the subsequent need for educational interventions to optimize female genital hygiene practices.
2. To improve reproductive healthcare by safe and secure female genital hygiene practices.

MATERIAL AND METHODS

A cross-sectional observational study was conducted at Outpatient department (OPD) of Department of Dermatology in Amaltas institute of medical sciences and associated hospital, Dewas (M.P.) between January 2021 to December 2022.

Inclusion criteria

1. All the female patients who attended the outpatient department and give consent for the study.
2. 16-65 year of age group

Exclusion Criteria

1. Illiteracy,
2. Follow up cases.

Study was started after approval from ethical committee. Investigators provided information about the study to all participants in their local language. Oral informed consent is mandatory for all participants before answering the questionnaire that includes a three page questionnaire, available in both Hindi and English languages. Participants were given privacy and time to complete the questionnaire without any disturbance.

Sections of Questionnaire

The questionnaire included three sections. The first section collected socio-demographic data as well as medical history and reproductive history. The second section inquired about intimate hygiene habits, contraception and vulvar dermatoses symptoms, while the third one evaluated women's awareness about adequate practices by means of yes or no questions. We assessed mainly the frequency of intimate wash, vaginal douching, use of wipes and deodorants, pubic hair removal and vulvar dermatosis. Based on the clinical findings, patients categorize in two subgroups group A & B. Group A is with vulvar dermatosis and group B is without vulvar dermatosis.

Data analysis

The collected data was analyzed using Statistical Package for Social Science software (SPSS, version 17).

RESULT

Total 2792 patients who attended the OPD of Department of Dermatology at Amaltas Institute of Medical Sciences (AIMS) & associated Hospital Dewas (M.P.) were asked to complete the questionnaire between March and June 2023. Among them, 837 patients (516 patients (61.64%) with vulvar dermatosis {called as group A}and 321 patients (38.39%) without vulvar dermatosis {called as group B}) agreed to participate in the study and given their consent. The mean age of group A was 38.2 years and 29.7 years for group B. In Group A, nearly half of the patients were housewives, predominantly belongs to Hindu community (87.9%), reside in urban area (65.3%), educated unto only 8th standard (67%) with two-third of them (66.4%) being married. In another group, patients are majority of patients were students (39.25%) of urban areas (58.7%), unmarried (47.8%), mostly Hindus (75.7%) with majority of patients educated unto 12th standard (44.8%). Socio-demographic characteristics of the studied population are listed in Table 1.

Table 1: Socio-demographic profile of the studied population

CATEGORY	SUB CATEGORY	PATIENTS WITH VULVAR DERMATOSIS (n=516)	PATIENTS WITHOUT VULVAR DERMATOSIS (n=321)
Educational status	• Upto 8th standard • Upto 12th standard • Graduate	346 (67.05%) 107 (20.73%) 63 (12.22%)	85 (26.47%) 144 (44.85%) 92 (28.68%)
Profession	• Housewives	262 (50.77%)	89 (27.72%)

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	• Student • Employee • Laborers/ daily wage workers	71 (13.75%) 141 (27.33%) 42 (8.15%)	126 (39.25%) 87 (27.12%) 19 (5.91%)
Religion	• Hindu • Muslim • Sikh • Christian • Jain	454 (87.98%) 49 (9.49%) 02 (0.39%) 00 (0.00%) 11 (2.14%)	243 (75.70%) 21 (6.54%) 19 (5.91%) 7 (2.19%) 31 (9.66)
Marital status	• Single • Married • Divorced/ widowed	151 (29.26%) 343 (66.47%) 22 (4.27%)	147 (45.79%) 136 (42.36%) 38 (11.85%)
Residence	• Rural • Urban	179 (34.68%) 337 (65.32%)	132 (41.13%) 189 (58.87%)

Five hundred sixteen patients (61.64%) had history of chronic vulvar dermatosis. Among them 49 patients (9.5%) were treated in one visit while majority of them (90.5%) had multiple visits. The most commonly reported symptom was pruritus (87.4%) followed by burning sensation (29.6%). The majority of patients took an intimate bath at least once daily (94.5% for Group A and 98.1% for Group B). Table 2 details various reasons for intimate bathing among Group A and Group B.

Table 2: Scenarios for intimate bathing and assessment among Group A and Group B

REASONS FOR INTIMATE BATHING	GROUP A (n=516)	GROUP B (n=321)	P value
Before worshipping the God	329 (63.75%)	216 (67.28%)	0.1487
Relief from itching	167 (32.36%)	229 (71.33%)	0
To get rid of vaginal discharge	112 (21.70%)	263 (81.93%)	0
To get rid of vaginal odor	132 (25.58%)	248 (77.25%)	0
To prevent infection	73 (14.14%)	238 (74.19%)	0
To treat infection	91 (17.63%)	259 (80.68%)	0
Before menstruation	321 (62.20%)	267 (83.17%)	0
After menstruation	488 (94.57%)	291 (90.65%)	0.0149
After micturition	318 (61.62%)	208 (64.79%).	0.1780
After defecation	417 (80.81%)	278 (86.60%)	0.01499
Before intercourse	271 (52.51%)	218 (67.91%)	0.000006
After intercourse	427 (82.75%)	243 (75.70%)	0.0065
To feel fresh	448 (87.00%)	286 (89.00%)	0.1649

Cleansing of the external intimate area is more common in Group B patients with once daily frequency with clean water, whereas Group A washes twice weekly. They do it more frequently before sexual intercourse, after defecation, before menstruation and in the case of infections and discharge. While, washing after sexual intercourse and after menstruation is more common in Group A patients. Washing to feel fresh, after urination and before praying to God is commonly followed by both the groups

Vaginal douching was common for 23.1% of Group A and 4.6% of Group B. Commonly used agent for douching were soap and water (45%), betadine solution (34%) and plain water (21%). Forty-five percent patients of Group A reported once a fortnight douching while in group B it was 61.3% with once in ten days frequency.

The use of wet wipes for intimate cleaning was reported 11.85 % and 32.6 % in Group A patients and group B patients respectively. No significant difference was found between the two groups (p value >0.05) regarding the use of vaginal sprays, its application over genitalia and follow up in cases of irritant or allergic reactions, vaginal douching after each sexual intercourse and after menstruation. As far as other hygiene practices are concerned, both the groups seem to be aware of avoiding tight-fitting undergarments to prevent sweat trapping, bacterial and fungal growth and subsequent dermatosis (p =0.3658). Moreover, 37.1% of Group A patients and 18.7% of Group B patients (p = 0.0032) do not know that tampons should be changed at least twice a day to decrease vaginal discharge and to prevent odors, as well as bacterial and fungal growth. Both the Groups are aware that vaginal discharge can be normal in scanty amount (p =0.2400).

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Table 3a: genitals hygiene practices among the patients with or without vulvar dermatosis					
		Yes	**No**	**Do not know**	**P value**
Spray deodorant gets rid of vaginal odor if used	Group A	34.3 %	33.1 %	32.6 %	0.015
regularly	Group B	30.7 %	51.4 %	17.9 %	
Spray deodorant can replace the use of soap and	Group A	24.2 %	54.1 %	21.7 %	0.08
water	Group B	20.7 %	67.4 %	11.9 %	
deodorant should be applied over genitalia	Group A	6.7 %	61.8 %	31.5 %	0.2392
	Group B	3.4 %	69.9 %	26.7 %	
Vaginal douching is a recommended hygiene	Group A	23.5 %	41.2 %	35.3 %	0
Practice	Group B	4.6 %	67.1 %	28.3 %	
Vaginal douching is recommended whenever there	Group A	42.8 %	31.5 %	25.7 %	0.0097
is a change in vaginal discharge	Group B	21.4 %	57.4 %	21.2 %	
Vaginal douching should not be done unless	Group A	21.9 %	64.2 %	13.9 %	0.0045
recommended by a doctor	Group B	54.3 %	23.9 %	21.8 %	
Tampons should be changed twice daily.	Group A	21.8 %	41.1 %	37.1 %	0.0032
	Group B	56.4 %	24.9 %	18.7 %	
A genital infection in the partner is not considered	Group A	41.8 %	23.4 %	34.8 %	0.0283
a source of vulvar dermatosis	Group B	32.3 %	45.8 %	21.9 %	
Vaginal douching is recommended after	Group A	24 %	48.2 %	27.8 %	0.2153
menstruation	Group B	16.3 %	61.3 %	22.4 %	
Persistent discharge in small quantities is	Group A	41.7 %	26.2 %	32.1 %	0.0169
normal	Group B	17.8 %	64.6 %	17.6 %	
Allergic or irritant reactions to deodorants do	Group A	10.8 %	51.2 %	38 %	0.1709
not require follow-up	Group B	14 %	54.3 %	31.7 %	
Sprays are harmless for use	Group A	43.4 %	27.2 %	29.4 %	0.3243
	Group B	12.3 %	61.4 %	26.3 %	

Regular pubic hair removal was more in Group B patients (48.7% in Group A versus 74.7 % in Group B). Out of the total, 33.2 % of Group A patients and 37.7 % of the Group B patients reported irritation with the majority of the reactions resulting from the use of hair removal cream (11.1% for Group A and 14.1%% for Group B patients) and wax (10.6 % for Group A patients and 13.5 % for Group B patients).

The awareness and habituation of both the groups regarding reproductive health, particularly genital hygiene practices is different regarding vaginal douche and deodorant usage, and how to wipe after micturition/defecation and is fully mentioned in Table 3.

Table 3b: genitals hygiene practices among the patients with or without vulvar dermatosis					
		Yes	**No**	**Do not Know**	**P value**
Vaginal douching causes a cystocele	Group A	0 %	18.3 %	81.7 %	0.2944
	Group B	3.2 %	16.6 %	80.2 %	
Allergic or irritative reactions to deodorants may occur	Group A	13.6 %	58.3 %	28.1 %	0.0361
even if their previous use did not cause any problem	Group B	46.8 %	37.5 %	15.7 %	
Vaginal discharge can be normal in scanty amount	Group A	21.8 %	3.6 %	74.6 %	0.2400
	Group B	23.9 %	14.6 %	61.5 %	
Wiping after micturition/defecation should be	Group A	34.1 %	9.8 %	56.1 %	0.0075
Done	Group B	17.6 %	42.2 %	40.2 %	
Use cotton menstrual pads and tampons and do	Group A	17.1 %	58.3 %	24.6 %	
not leave your tampon in overnight	Group B	47.6 %	31.7 %	20.7 %	
Not using contraceptive creams or spermicides	Group A	42.6 %	29.3 %	28.1 %	
during sexual intercourse	Group B	24.8 %	51.7 %	23.5 %	
Use of talcum powder as a routine care	Group A	19.6 %	43.7 %	36.7 %	
	Group B	16.4 %	52.5 %	31.1 %	
Tight-fitting clothes prevent vulvar dermatosis	Group A	26.5 %	56.7 %	16.8 %	0.3658
	Group B	21.7 %	63.9 %	14.4 %	

DISCUSSION

The vulvar skin differs from other skin sites of body due to its increased hydration, occlusion, and frictional properties. The normal vaginal microflora, acidic vaginal pH, and vaginal discharge maintains the health of the vulvovaginal region. Estrogen

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hormone promotes the growth of normal vaginal flora i.e. lactobacilli, which maintains a slightly acidic environment in the vagina, reducing the likelihood of infections. During menopause, as estrogen levels decreases, a women's vaginal pH increases which is associated with increased colonization with pathogenic microbes, resulting in an increase in vulvar dermatosis. Additionally, there are several external factors that can affect the vaginal microflora and microbial growth, such as feminine hygiene practices, sexual intercourse, use of antibiotics, increased moisture, sweating, menses, and hormone replacement therapy. [13,14] The main finding of this study includes describing several common feminine hygiene habits among the patients attending at tertiary care centre and assessing the level of awareness about adequate hygiene practices.

Cleansing of the external intimate area with clean water is ideal cleansing practice. Soaps, Liquid soaps, cleansing solutions and non-soap cleansers are other alternatives. Frequency of washing differs from once-twice per day to per week. In our study Cleansing of the external intimate area is more common in Group B patients with once daily frequency with clean water, whereas Group A washes twice weekly. This finding is almost similar to study done by Gandhi AB et al. [15] Group B patients do it more frequently before sexual intercourse, after defecation, before menstruation and in the case of infections and discharge. While, washing after sexual intercourse and after menstruation is more common in Group A patients. Washing to feel fresh, after urination and before praying to God is commonly followed by both the groups.

Vaginal douching is a process to clean the vagina or odor control or relief of vaginal itching or irritation by inserting a liquid solution. Regular douching may vary between women in different countries. It is a common practice worldwide especially among African American and Muslim women.[16] The use of douching is different between our two groups (14 % of Group A and 4.6 % of Group B patients) and is considerably less than the prevalence reported by Shaaban et al. in Egypt (73 %), Erbil et al. (38.6 %) and Ege et al. (61.5 %) in Turkey. [17,18,19] Low socioeconomic status and lack of education are also associated with increased douching.[20] As seen in our study, group A more likely encourages douching (p value < 0.05).

In Group A, 41.2 % patients are aware that douching may injure the vaginal mucosa while 21.9% state that douching should be performed as per doctor's advice, 23.1% still mention douching as a routine and 35.3% do not know about douching. On the other hand, Group B patients responded more positively to the questions about the indications for douching (67.1% are aware of vaginal injury secondary to douching, 54.3 % support doctor's advice for douching, 4.6% encouraged the use of douching and 28.3% do not know anything about it). Rigorous cleansing with the wash clothes/ loofahs has a potential to cause localized trauma and should be avoided. Also it disturbs the vaginal flora and predisposes women to bacterial vaginosis, pelvic inflammatory disease and endometritis. [21, 22]

Use of wipes for cleaning may irritate the vulvar skin and predispose to vulvar dermatosis. Our study showed that 34.1% Group A patients and 17.6% Group B patients are wipe users which is less than 19.4% reported by Jazmin Newton et al [23], while 6.7% of Group A and 3.4% of Group B are deodorant users which is also very less than the study reported by Gowdy JM et al [24] and Ott MA et al [25]. In addition, there is an obvious lack of information in group A patients regarding the harmful effects following their use (vulvar dermatosis, allergic reactions, irritant outcomes) [$p<0.05$].

Women usually believe that their personal hygiene practices as safe since they used to do it. Marin et al. reported that over 60 % of 530 women attending a specialty clinic for vulvar diseases, reported adverse intimate hygiene practices which is somehow similar to the results we obtained.[26]

In menstrual care cotton sanitary napkins are better options than soft cotton clothes. Cotton sanitary napkins produces less skin irritation and it should be changed frequently depending on the amount of bleeding. Sanitary pads are worn externally and tampoons internally. Our study revealed an increased use of overnight tampons in Group A patients (58.3%) when compared to Group B patients (31.7%). (p value<0.05). Awareness regarding use of cotton pads and frequency of change, and usage of tampons is similar to study done by Anne E. Hochwalt et al. [27]

Spermicides cream contain sensitizing agent like Benzocaine, monophenoxypolyethoxy derivatives, hexylresorcinol, chloramine, quinine and Nonoxynol-9. It may also cause genital soreness and irritation. In our study we find that the use of contraceptive creams and spermicides during sexual intercourse is more common in Group A patients (42.6%) than Group B patients (24.8%). (p value <0.05). This is in accordance with the study done by Ridley CM et al. [28]

Nylon underwear and tight-fitting garments can increase local friction heat and moisture. Hence, chances of infection and dermatosis is more with the usage of these. Therefore, cotton underwear and loose clothing are advised as a routine wear. In our study, awareness level is similar in both the groups regarding association of tight-fitting clothes and vulvar dermatosis, that is 56.7% for group A and 63.9% for group B patients. (p value > 0.05).

Some women apply talcum powder on genital area to absorb moisture. Nowadays, corn starch or baking soda are available commercially which is gaining preference over talcum powder. Some studies have suggested a slight increase in the ovarian cancer with the use of talcum powder, since it may contaminate with asbestos.[29] In our study we did not find any

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significant difference between these two groups regarding the use of talcum powder as a routine care (p value > 0.05).

CONCLUSION

It is emphasized that vulva is the first line of defense against genital tract infections, so, intimate hygiene is desirable for overall good health in women. However, in Indian scenario, it is not practiced widely due to Lack of awareness, low socioeconomic status, cultural and religious practices. This is also supported by our study, as, in Group A, patients were with vulvar dermatosis and level of education, awareness was low as compared to group B patients. It is very important to educate women about intimate hygiene and the use of safe and appropriate products that can cause no harm and would not affect the microbial microflora.

REFERENCES

1. Hammock LA, Barrett TL. Inflammatory dermatoses of the vulva. J Cutan Pathol 2005; 32:604-11.
2. Kellogg Spadt S, Kusturiss E. Vulvar dermatoses: A primer for the sexual medicine clinician. Sex Med Rev 2015; 3:126-36.
3. Savas JA, Pichardo RO. Female genital itch. *Dermatol Clin*. (2018) 36:225– 43. doi: 10.1016/j.det.2018.02.006
4. Fischer GO. The commonest causes of symptomatic vulvar disease: a dermatologist's perspective. *Australas J Dermatol*. (1996) 37:12–8. doi: 10.1111/j.1440-0960. 1996.tb00988.x
5. Bohl TG. Overview of vulvar pruritus through the life cycle. *Clin Obstet Gynecol*. (2005) 48:786–807. doi: 10.1097/01.grf.0000179636. 64663.e6
6. Mogielnicki NP, Schwartzman JD, Elliott JA. Perineal group A streptococcal disease in a pediatric practice. *Pediatrics*. (2000) 106:276–81. doi: 10.1542/peds.106.2.276
7. Woelber L, Prieske K, Mendling W, Schmalfeldt B, Tietz H-J, Jaeger A. Vulvar pruritus-causes, diagnosis and therapeutic approach. *Dtsch Arztebl Int*. (2020) 116:126–33. doi: 10.3238/arztebl.2020.0126
8. Lambert J. Pruritus in female patients. *Biomed Res Int*. (2014) 2014:541867. doi: 10.1155/2014/541867
9. Rimoin LP, Kwatra SG, Yosipovitch G. Female-specific pruritus from childhood to postmenopause: clinical features, hormonal factors, and treatment considerations. *Dermatol Ther*. (2013) 26:157–67. doi: 10.1111/dth.12034
10. Siegfried EC, Frasier LD. Anogenital skin diseases of childhood. *Pediatr Ann*. (1997) 26:321–31. doi: 10.3928/0090-4481-19970501-11
11. Bohl TG. Overview of vulvar pruritus through the life cycle. *Clin Obstet Gynecol*. (2005) 48:786–807. doi: 10.1097/01.grf.0000179636. 64663.e6
12. Kehila M, Harabi S, Mhiri R, Touhami O, Abouda HS, Khlifi A, et al. Vulvar cancer in Tunisia: epidemiological and clinicopathological features multicentric study. *J Egypt Natl Canc Inst*. (2017) 29:95– 8. doi: 10.1016/j.jnci.2017.02.001
13. The American College of Obstetricians and Gynecologists. Vulvovaginal Health. Available from: https://www.acog.org/Patients/FAQs/Vulvovaginal-Health
14. Chen Y, Bruning E, Rubino J, Eder SE. Role of female intimate hygiene in vulvovaginal health: Global hygiene practices and product usage. Women's Health. 2017 Dec;13(3):58-67.
15. Gandhi AB, Madnani N, Thobbi V, Vora P, Seth S, Shah P. Intimate hygiene for women: expert practice points. Int J Reprod Contracept Obstet Gynecol 2022; 11:2315-9.
16. Brotman RM, Klebanoff MA, Nansel TR, Andrews WW, Schwebke JR, Zhang J, et al. A longitudinal study of vaginal douching and bacterial vaginosis--a marginal structural modeling analysis. Am J Epidemiol. 2008;168(2):188–96.
17. Shaaban OM, Youssef AEA, Khodry MM, Mostafa SA. Vaginal douching by women with vulvovaginitis and relation to reproductive health hazards. BMC Womens Health. 2013; 13:23.
18. Erbil N, Alışarlı A, Terzi HÇ, Özdemir K, Kuş Y. Vaginal douching practices among Turkish married women. Gynecol Obstet Invest. 2012;73(2):152–7.
19. Ege E, Timur S, Zincir H, Egri M, Sunar Reeder B. Women's douching practices and related attitudes in eastern Turkey. J Obstet Gynaecol Res. 2007;33(3):353–9.
20. Ekpenyong CE, Etukumana EA. Ethnicity, family socioeconomic inequalities, and prevalence of vaginal douching among college students: the implication for health. J Am Coll Health. 2013;61(4):222–30.
21. Cottrell BH. An updated review of of evidence to discourage douching: MCN. Am J Matern Nurs. 2010;35(2):102–7.
22. Zhang J, Hatch M, Zhang D, Shulman J, Harville E, Thomas AG. Frequency of douching and risk of bacterial vaginosis in African-American women. Obstet Gynecol. 2004;104(4):756–60.
23. Newton J, Richardson S, van Oosbre AM, Yu J, Silence C. A cross-sectional study of contact allergens in feminine hygiene wipes: a possible cause of vulvar contact dermatitis. Int J Womens Dermatol. 2022 Nov 28;8(4): e060. doi: 10.1097/JW9.0000000000000060. PMID: 36448019; PMCID: PMC9699505.
24. Gowdy JM. Feminine deodorant sprays. N Engl J Med. 1972;287(4):203.
25. Ott MA, Ofner S, Fortenberry JD. Beyond douching: use of feminine hygiene products and STI risk among young women. J Sex Med. 2009;6(5):1335–40.
26. Marin MG, King R, Sfameni S, Dennerstein GJ. Adverse behavioral and sexual factors in chronic vulvar disease. Am J Obstet Gynecol. 2000;183(1):34–8.
27. Hochwalt AE, Abbinante-Nissen JM, Bohman LC, Hattersley AM, Hu P, Streicher-Scott JL, Teufel AG, Woeller KE. The safety assessment of tampons: illustration of a comprehensive approach for four different products. Front Reprod Health. 2023 Jun 20; 5:1167868. doi: 10.3389/frph.2023.1167868. PMID: 37408999; PMCID: PMC10319135.
28. Ridley CM. Contraception and the skin. *Br J Fam Plann*. 1981; 7:67–70.
29. Chang S, Risch HA. Perineal talc exposure and risk of ovarian carcinoma. Cancer. 1997; 79:2396-401.

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