

Education on the Effect of Feminine Care Products Using on the Incidence of Vaginal Discharge in Women of Reproductive Age Among Students of KH Sahlan Rosjidi Islamic Boarding School

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ABSTRACT

Vaginal discharge is one of the most common reproductive health problems among women of reproductive age and may be influenced by the inappropriate use of feminine hygiene products. This educational program aimed to improve female Islamic boarding school students' knowledge regarding the effects of feminine hygiene product use on the occurrence of vaginal discharge and to promote healthier reproductive hygiene practices. The program was conducted at KH Sahlan Rosjidi Islamic Boarding School, Semarang, involving 66 women of reproductive age through a community-based participatory service approach. The intervention consisted of clinical education, vaginal discharge symptom screening, private counseling via WhatsApp, and an independent hygiene campaign using visual educational media. A preliminary study involving 10 participants revealed that 60% experienced pathological vaginal discharge, while 70% frequently used feminine hygiene products, with feminine cleansing soap being the most commonly used product (60%). The results demonstrated an improvement in participants' understanding of the differences between physiological and pathological vaginal discharge, the risk factors associated with the use of feminine hygiene products, and appropriate personal hygiene practices. The private counseling service also successfully reached participants who had previously been reluctant to seek consultation due to cultural taboos. In addition, the boarding school management committed to improving communal sanitation facilities and establishing student health ambassadors to ensure the sustainability of the program. This integrated educational model, combining health education, screening, counseling, and visual health promotion, proved effective in enhancing reproductive health literacy and has the potential to be replicated in other Islamic boarding schools with similar characteristics.

Keywords: vaginal discharge, female Islamic boarding school students, reproductive health education.

INTRODUCTION

Reproductive health is a crucial indicator of women's well-being, encompassing the ability to safely, comfortably, and undisturbedly carry out reproductive functions throughout the lifespan. Women are often positioned as primarily responsible for their own reproductive health and function, a role that, in turn, fuels a growing interest in using various feminine care products. The variety of products on the market today is extensive, ranging from foaming cleansers, liquid emulsions, toners, lightly scented sprays, to oral preparations such as powdered herbal medicines, which claim to "tighten" or maintain intimate hygiene (Putri, 2023). Ironically, despite the abundance of these products, most women use them without understanding their physiological impacts, and purchasing decisions are often influenced more by social media advertising than by medical considerations (Andini Hilda Aprillia, 2024; Zota et al., 2023).

Physiologically, the female reproductive organs have an optimal self-cleaning mechanism thanks to the presence of normal vaginal flora, particularly *Lactobacillus* sp.,

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which maintains the vaginal pH at 3.5–4.5 as a natural defense against pathogenic microorganisms. Excessive use of cleaning products containing harsh antiseptics, synthetic fragrances, or other chemicals actually risks killing the *Lactobacillus* population, shifting the vaginal pH toward alkaline. This alkaline and moist condition creates an ideal environment for the growth of pathogenic fungi and bacteria, one of the clinical manifestations of which is vaginal discharge or *fluor albus* (Tyas, 2021; Widyatama et al., 2024). Graziottin (2024) emphasized that the balance of the vulvovaginal microbiota is a major determinant of long-term reproductive health, and inappropriate chemical interventions in this area can trigger dysbiosis that is difficult to reverse without education and behavioral changes.

Vaginal discharge itself is divided into two categories: physiological and pathological. Physiological vaginal discharge is characterized by a clear, odorless, non-itchy fluid, and generally appears around ovulation or postmenstruation. In contrast, pathological vaginal discharge is characterized by a more abundant, yellowish-white to greenish discharge, an unpleasant odor, and itching, pain during urination, or pain during intercourse. If left untreated, chronic pathological conditions risk disrupting fallopian tube function, leading to decreased fertility. In pregnant women, it can even increase the risk of abortion, intrauterine fetal death, congenital anomalies, and premature birth (Munaaya Fitriyya & Nur Hidayah, 2021; Marbun et al., 2024).

Epidemiological data convincingly illustrates the scale of this problem. The World Health Organization reported in 2023 that approximately 75% of adolescent girls worldwide have experienced vaginal discharge at least once in their lives, and 45% of these experience it repeatedly, significantly higher than the figure for adolescents in Europe, which is around 25% (WHO, 2024). In Indonesia, the Ministry of Family Development (Kemendukbangga, 2023) recorded that approximately 90% of women of childbearing age experience vaginal discharge, with 60% of these being adolescents. Data from the Central Java Provincial Statistics Agency (2024) also shows that approximately 50% of the female population in the province has experienced vaginal discharge. In Semarang City specifically, of approximately 856,360 women, most of whom are of reproductive age (15–49 years), the prevalence of vaginal discharge was recorded at approximately 60% in adolescent girls aged 15–22 years and 45% in adult women aged 23–45 years. Indonesia's tropical climate with high humidity also exacerbates this condition because it supports the growth of the fungus that causes leukorrhea (Health & Acid, 2021).

Several empirical studies have confirmed the link between the use of feminine hygiene products and the incidence of vaginal discharge. Tyas (2021) found a positive correlation with moderate closeness ($r = 0.421$) among reproductive-age adolescents at SMAN 1 Sukomoro between the habit of using vaginal cleansing soap and the incidence of vaginal discharge. Hidayah et al. (2021) among 70 reproductive-age women found a significant association ($p = 0.002$) between the use of feminine hygiene products and vaginal discharge, in line with the findings of Sari et al. (2022) who confirmed a significant association between the use of panty liners, vaginal cleansing fluids, and personal hygiene with the incidence of vaginal discharge ($p = 0.001$ for all three variables). Nengsih et al. (2022) and Prianti et al. (2021) also reported that knowledge and attitudes toward personal hygiene play a major predisposing factor for the incidence of *fluor albus*. A recent study by Widyatama et al. (2024) even documented cases of pathological vaginal discharge directly caused by the use of commercial vaginal cleansing soaps, while Mariza et al. (2026) found a significant association between the use of pantyliners and feminine hygiene soaps and the incidence of leukorrhea in women of childbearing age in Bandar Lampung. In Indonesia, it is estimated that nearly 75% of women use feminine care

products as a routine part of their personal hygiene, even though excessive use risks reducing vaginal acidity and triggering mild infections (Andini Hilda Aprillia, 2024; Aprisa et al., 2023).

The population of female students living in Islamic boarding schools (*pesantren*) is particularly vulnerable to this issue. Dense religious and academic routines, communal bathroom sanitation facilities, and a culture of "following the crowd" in consuming trending products on social media are additional risk factors rarely highlighted in general vaginal discharge research, which has focused more on adolescents in public schools or obstetric clinics (Krisdayanti & Hasyim, 2021; Aini et al., 2025). A preliminary study conducted by a community service team on 10 female students at the KH Sahlan Rosjidi Islamic Boarding School for Girls provided a relevant initial picture: six respondents experienced pathological vaginal discharge characterized by color, texture resembling stale cheese, and a strong odor, while four respondents experienced physiological vaginal discharge. In terms of product usage patterns, six respondents were recorded as using feminine hygiene soap, three used pantyliners, and one used antiseptic liquid, with the majority (seven out of ten) reporting "frequent" use of these products. This phenomenon is consistent with the total target population, namely 66 students of the KH Sahlan Rosjidi Islamic Boarding School located in Kedungmundu Village, Tembalang District, Semarang City, who have been using various feminine hygiene products routinely without adequate understanding of their clinical impact on the balance of normal vaginal flora.

Based on the problem mapping, the identified gap is not only the low reproductive health literacy of female Islamic boarding school students, but also the absence of an educational model that specifically integrates three things at once: (1) mapping the pattern of use of feminine care products based on their type (antiseptic soap, pantyliners, antiseptic liquids, and herbal medicine), (2) screening services and private consultations that accommodate psychological barriers in the form of taboos in Islamic boarding school environments, and (3) a digital media-based continuous education channel (WhatsApp group) that is integrated with the institutional structure of the Islamic boarding school itself. Most previous literature on vaginal discharge in women of childbearing age and adolescent girls was conducted in general school populations, university students, or clinic visitors, with a conventional one-way counseling approach (Pratiwi et al., 2023; Javali et al., 2025). Research that specifically targets female Islamic boarding school students in Islamic boarding school environments with a participatory clinical-counseling-visual campaign approach integrated with dormitory management is still very limited, especially in the Semarang area.

A global perspective also enriches understanding of the complexity of this issue. Almuhayya et al. (2025) found in a cross-sectional study in Saudi Arabia that knowledge of the vaginal microbiome remained low among the majority of women despite formal hygiene practices, suggesting that education based on understanding biological mechanisms, rather than simply technical instruction, is key to sustainable behavior change. Yoshikata et al. (2022) conducted a randomized controlled clinical trial on *Lactobacillus*-based feminine hygiene products, finding that restoring the vaginal microbiome requires a selective, evidence-based approach, rather than avoidance or indiscriminate use of the products. These findings reinforce the urgency of comprehensive education so that female students do not simply stop using feminine care products but also understand the basic principles of maintaining reproductive health independently and based on scientific evidence.

The novelty of this study lies in three aspects. First, the study subjects were female students in an Islamic boarding school environment with unique socio-cultural characteristics (values of politeness, taboos, and limited access to open reproductive

health information), which have rarely been the focus of previous vaginal discharge research compared to adolescent populations in public schools or obstetric clinics. Second, this study presents an integrated reproductive health education model that combines clinical education, self-questionnaire-based symptom screening, private counseling via digital channels (WhatsApp), and a visual media-based self-hygiene campaign as a complementary intervention package, rather than simply one-way counseling. Third, this article presents a mapping of the types of feminine care products (antiseptic soap, pantyliners, antiseptic liquids, and herbal medicines) along with the specific clinical mechanisms of each product's impact on normal vaginal flora disruption, resulting in more precise recommendations than general vaginal discharge education. Thus, the results of this educational activity are expected to provide evidence-based scientific contributions regarding the urgency of maintaining reproductive health in Islamic boarding schools, as well as becoming a model of good practice that can be replicated in other Islamic boarding schools with similar characteristics.

RESEARCH METHODS

This activity uses a descriptive design with a community-based participatory approach implemented at the KH Sahlan Rosjidi Islamic Boarding School, Kedungmundu Village, Tembalang District, Semarang City, in December 2025. The subjects of the activity were 66 female students of childbearing age (WUS) selected using a total sampling technique from the student population residing in the dormitory. Initial data were collected through in-depth interviews and preliminary observations of 10 students to map patterns of complaints and use of feminine care products before the intervention was implemented comprehensively.

The implementation procedure consisted of four stages. The first stage involved obtaining permission and coordinating with the caretakers and administrators of the Islamic boarding school, followed by initial interviews regarding the students' hygiene habits. The second stage involved clinical education through lectures and interactive discussions on the meaning of reproductive health, the definition and classification of vaginal discharge (physiological and pathological), and the mechanisms of the impact of four types of feminine care products (cleansing soap, pantyliners, antiseptic liquid, and herbal medicine) on the balance of normal vaginal flora. This was complemented by the distribution of leaflets and posters. The third stage involved screening and private counseling using a self-administered vaginal discharge symptom questionnaire, complemented by face-to-face consultations and WhatsApp groups to reduce psychological barriers such as taboos. The fourth stage involved a self-administered hygiene campaign through the distribution of visual educational media (brochures, posters in the dormitory sanitation area, and digital infographic content) on proper personal hygiene techniques, including how to wash intimate organs from front to back and the importance of keeping the intimate area dry by changing underwear regularly. Evaluation instruments, including a knowledge questionnaire and a simulation of understanding self-administered hygiene practices, were used to assess changes in students' understanding after the entire series of activities. Data collected from the preliminary study and the results of the activity evaluation were analyzed descriptively using frequency distributions and percentages, then interpreted narratively with reference to the clinical framework regarding the balance of normal vaginal flora and the latest empirical literature on the relationship between the use of feminine care products and the occurrence of vaginal discharge. The ethical aspects of the activity were maintained through verbal consent from the Islamic boarding school supervisor and guaranteed confidentiality of the identity and screening results of each student who

consulted, considering the sensitive nature of the topics discussed and the potential to cause discomfort if not managed with adequate privacy principles

RESULTS AND DISCUSSION

A preliminary study of 10 female students revealed an initial picture of the problem, as presented in Table 1. Six of the ten respondents (60%) experienced pathological vaginal discharge, while four respondents (40%) experienced physiological vaginal discharge. In terms of product consumption patterns, feminine hygiene products were the most commonly used product (60%), followed by panty liners (30%) and antiseptic liquids (10%). The majority of respondents (70%) reported using these products frequently, while 20% used them occasionally and 10% rarely.

Table 1. Initial Characteristics of Female Students Based on Type of Vaginal Discharge and Pattern of Feminine Care Product Use (Preliminary Study, n = 10)

Characteristics	Category	n	%
Types of Vaginal Discharge	Pathological	6	60
	Physiological	4	40
Types of Products Used	Feminine cleansing soap	6	60
	Pantyliner	3	30
	Antiseptic liquid	1	10
Frequency of Product Use	Often	7	70
	Sometimes	2	20
	Seldom	1	10

Source: Data from interviews and preliminary observations of the community service team, 2025.

Table 2 summarizes the types of feminine care products identified as circulating in the student environment along with the clinical mechanisms of their risks to the normal vaginal flora, which are the core material for clinical education in this activity.

Table 2. Types of Feminine Care Products and Their Risk Mechanisms to Normal Vaginal Flora

Types of products	Claimed Functions	Clinical Risk Mechanisms
Feminine hygiene soap (antiseptic/scented)	Clean intimate areas, eliminate odors	Destroys Lactobacillus sp., increases vaginal pH from acidic (3.5–4.5) to alkaline, thus facilitating the growth of pathogenic fungi/bacteria.
Pantyliner	Keep your underwear dry	Inhibits air circulation, increases humidity, becomes an ideal medium for the growth of Candida albicans if rarely changed.
Antiseptic liquid for women	Kills germs that cause odor/infection	Kills both good and pathogenic flora, triggers dysbiosis and fishy/rotten smelling vaginal discharge.
Women's herbal medicine (oral)	It is believed to "tighten" and reduce vaginal discharge.	The effects are only temporary symptomatic; the risk of chemical drug content (BKO) without BPOM distribution permit if consumed long term

Following a series of clinical education sessions, screenings, private counseling, and self-hygiene campaigns, evaluations using questionnaires and comprehension simulations demonstrated that all participating students were able to differentiate between physiological and pathological vaginal discharge and explain how to prevent it without relying on high-risk chemical products. The WhatsApp-based private counseling service proved effective in reaching students who were previously reluctant to consult openly due to perceived taboos, resulting in the successful recording and referral of several cases of vaginal discharge requiring medical follow-up. Furthermore, the program fostered an agreement with Islamic boarding school administrators to improve the hygiene management of communal sanitation facilities and established a healthy student cadre as the initial point of contact for other students.

Discussion

The finding that 60% of female students in the preliminary study experienced pathological vaginal discharge aligns with the national pattern reported by the Ministry of Education and Culture (2023) that approximately 90% of women of childbearing age in Indonesia have experienced vaginal discharge, with a significant proportion classified as pathological due to disturbances in the balance of vaginal flora. The dominant use of feminine hygiene soap (60%) as the most commonly used product strengthens the findings of Tyas (2021) and Sari et al. (2022) who statistically demonstrated a significant association between the use of vaginal hygiene soap and the occurrence of vaginal discharge. This is consistent with the mechanistic explanation that the antiseptic and synthetic fragrance content in feminine hygiene soap can suppress the population of *Lactobacillus* sp., disrupt the natural acidic pH of the vagina, and ultimately create conditions favorable for pathogen growth (Graziottin, 2024; Widyatama et al., 2024).

The use of pantyliners by 30% of respondents with a frequency of "frequent" is also relevant to the findings of Mariza et al. (2026) who confirmed the relationship between pantyliner use and the incidence of leukorrhea in women of childbearing age. The busy conditions of Islamic boarding school dormitories and communal sanitation facilities increase the tendency for female students to use pantyliners for extended periods without routinely changing them every three to four hours, increasing the humidity in the intimate area and becoming a medium for fungal growth (Krisdayanti & Hasyim, 2021). Meanwhile, although only one respondent reported using antiseptic fluid, its risk mechanism is considered the most aggressive because it can kill both beneficial and pathogenic flora, in line with the results of a systematic review by Pratiwi et al. (2023) which concluded that feminine antiseptic products contribute significantly to vaginal microbiota imbalance compared to other care products.

The effectiveness of the clinical education approach combined with self-screening and private counseling in this activity aligns with the findings of Wahyu et al. (2022) who demonstrated the effectiveness of the Health Belief Model approach in changing vulvar hygiene behavior, and Nasution et al. (2024) who reported an increase in adolescents' knowledge and preventive attitudes towards *fluor albus* after a participatory educational intervention. The success of the WhatsApp channel as a medium for private counseling among Islamic boarding school (*pesantren*) populations reinforces the argument of Trisetiyaningsih and Nursanti (2021) that digital and audiovisual media play a crucial role in overcoming adolescents' psychological barriers to openly discussing reproductive health issues, a factor typically more pronounced in Islamic boarding school populations than in public school populations due to stronger norms of politeness and taboos.

From a program sustainability perspective, the agreement with Islamic boarding school administrators to improve communal sanitation management and establish healthy student cadres indicates that reproductive health interventions in Islamic boarding school environments need to involve local institutional structures so that behavioral changes can be maintained after the activity, as suggested by Aini et al. (2025) and Aprisa et al. (2023) that environmental factors and institutional support play a significant role in the success of preventing vaginal discharge in women of childbearing age.

The findings of this activity also provide additional context to the international literature. Zota et al. (2023) found that intimate care product use patterns differed significantly based on the educational and sociocultural background of the user group, a dynamic that appears relevant in a student population with modesty norms and limited exposure to open reproductive health information compared to the general urban adolescent population. Similarly, Bampoque et al. (2025) and Javali et al. (2025) in African populations of reproductive-age women confirmed that poor genital hygiene practices, including douching and excessive use of cleansers, were consistently associated with an increased risk of abnormal vaginal discharge across geographic and cultural contexts, strengthening the generalization that the biological mechanisms of vaginal flora disturbance are universal despite the differences in social determinants across populations.

This study also highlights the importance of differentiating interventions based on the most prevalent product types used in a population, rather than applying generic vaginal discharge education. In the Islamic boarding school population of students at KH Sahlan Rosjidi Islamic Boarding School, the predominance of feminine hygiene soaps and pantyliners suggests that educational materials should focus on these two primary risks, in contrast to other populations where douching or oral herbal medicine consumption may be more prevalent, as reported by Kamazima (2023) among adolescent girls in Tanzania. This approach, which considers the characteristics of product consumption patterns specific to each target population, aligns with the recommendation of Marbun et al. (2024) that the management of vaginal discharge should ideally be individualized and contextual, rather than a uniform approach applied without considering local behavioral patterns.

The limitations of this activity need to be frankly acknowledged. The evaluation of the program's success is still descriptive-qualitative, based on knowledge questionnaires and understanding simulations, without objective measurements such as vaginal pH testing or microbiological cultures before and after the intervention. The sample size in the preliminary study was also relatively small ($n = 10$), so generalizations of the proportions of vaginal discharge types and product use patterns to the entire population of 66 female students should be interpreted with caution as a preliminary picture, not a definitive prevalence estimate. Nevertheless, the consistency of the findings of this activity with patterns reported at the national and international levels (Kemendukbangga, 2023; Aini et al., 2025; Furwasyih et al., 2025) provides confidence that the intervention's direction is on target and can serve as a basis for further research with a more rigorous design.

Thus, the integrated clinical-screening-counseling-visual campaign education model applied to students of PP KH Sahlan Rosjidi has proven to be relevant to be adopted as a good practice to be replicated in other Islamic boarding schools with similar demographic and socio-cultural characteristics, especially in dormitory environments with communal sanitation facilities and norms of politeness that limit openness in direct discussions of reproductive health

CONCLUSIONS

An educational activity examining the impact of feminine hygiene product use on vaginal discharge among female students at the KH Sahlan Rosjidi Islamic Boarding School successfully increased the knowledge and awareness of 66 female students of childbearing age regarding the importance of maintaining a balance of normal vaginal flora. A preliminary study confirmed that the majority of students experiencing pathological vaginal discharge were closely related to the habit of routinely using feminine hygiene products and pantyliners without understanding the clinical risks. A clinical education approach combined with self-symptom screening, WhatsApp-based private counseling, and a self-hygiene campaign through visual media proved effective in changing students' understanding, enabling them to differentiate physiological and pathological vaginal discharge, and encouraging a shift to natural hygiene practices without reliance on risky chemical products. The program's success was also evident in the synergy established with the Islamic boarding school administrators through improved communal sanitation management and the formation of a healthy student cadre as the initial consultation point, making this intervention sustainable and potentially replicable in other Islamic boarding schools with similar characteristics. Further research with a quantitative pre-post test design and microbiological examination of vaginal pH is recommended to strengthen the evidence for the clinical effectiveness of this educational model..

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