



(REVIEW ARTICLE)



The relationship of personal hygiene to the incidence of vaginal discharge in adolescents: A literature review

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Abstract

Introduction: Reproductive health is crucial for overall well-being, particularly in women, as it affects their reproductive organs and future generations. Poor reproductive health can lead to issues like vaginal discharge, which affects over 50% of women globally. In Indonesia, 45% of women aged 15-24 experience vaginal discharge, exacerbated by the tropical climate. Vaginal discharge can be normal (clear or milky white) or abnormal (colored, foul-smelling, and accompanied by itching) due to infections. Adolescents are prone to vaginal discharge, often caused by fungi, parasites, or poor hygiene. Proper genital hygiene is vital to prevent such health issues.

Method: This study is a literature review, drawing from sources in Google Scholar, focusing on research published between 2019 and 2024. The study included only original research articles in English or Indonesian with all the required components.

Result and Discussion: From the literature search, 10 studies met the inclusion criteria. Among them, 10 studies found a relationship between personal hygiene behavior and the incidence of vaginal discharge in adolescents.

Conclusion: According to reviews, personal hygiene behavior is associated with the incidence of vaginal discharge in adolescents.

Keywords: Personal hygiene; Vaginal Discharge; Adolescents; Reproductive health; fluor albus

1. Introduction

Reproductive health is a healthy condition as a whole physically, socially, and mentally intact related to the functions, roles, and reproductive processes of an adolescent. Reproductive health in a woman is inseparable from the health of the genital organs (9). Reproductive health can be used as a determinant of the generation of the nation that will be born by a woman as an adult. A woman who does not pay attention to her reproductive health can experience reproductive health problems such as sexually transmitted diseases, diseases that attack the reproductive organs, such as vaginal discharge (7). Based on data, an average of more than 50% of women worldwide are estimated to have experienced vaginal discharge. Statistics from the Ministry of Health of the Republic of Indonesia reveal that around 45% of women aged 15-24 years, who fall into the category of Women of Fertile Age (WUS), experience vaginal discharge (3). Women in Indonesia have the potential to experience vaginal discharge as high as 90% because Indonesia has a tropical climate, which is always hot all the time, causing the body to become more prone to sweating and moisture (2).

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Flour albus or commonly called vaginal discharge is a state of vaginal discharge or mucus other than white, yellowish, gray, or greenish blood. Vaginal discharge is not a disease but a symptom of reproductive health problems in a woman (1). Vaginal discharge can be fatal if not treated properly, such as infertility, pelvic inflammation, and cervical cancer (3). Vaginal discharge can be divided into two types, namely normal (physiological) and abnormal (pathological) vaginal discharge. Pathological vaginal discharge is a dangerous vaginal discharge characterized by colored discharge, foul smelling, large amounts and accompanied by itching, it is caused by bacterial, fungal, and viral infections ((Meristika, Hendriyanti and Rosidah, 2024). Physiological vaginal discharge itself is a fluid that comes out of the vagina but is clear or milky white, not accompanied by foul odor and itching. Physiological discharge can be caused by several factors such as, the increase in estrogen that occurs during menarche in adolescent girls and increased production of glands in the mouth of the uterus during ovulation (10).

Adolescence is a transition period from childhood to adulthood, characterized by various biological developments, including anatomical and functional changes, as well as psychological, cognitive, social, and emotional developments, in preparation for entering adult life (8). According to the World Health Organization (WHO, 2013) the adolescent period ranges from 10 - 24 years of age. Adolescent girls in Indonesia face various reproductive health problems. One problem that is often experienced is vaginal discharge. Adolescents are a vulnerable group to experience vaginal discharge (11). Most vaginal discharge is caused by fungi and parasites or protozoa (*Trichomonas vaginalis*, and *Candida albicans* fungal infection). Improper behavior in maintaining genital hygiene can trigger vaginal discharge infections. Maintaining personal hygiene is an effort to achieve psychological health and physical well-being. Maintaining personal hygiene behavior of genital organs is an important factor in preventing leucorrhoea (11). Based on the description of the problem, a literature review was conducted to analyze the relationship between genital care and the incidence of vaginal discharge in adolescents.

2. Material and methods

This article is a literature review that examines 10 selected articles based on specific inclusion criteria. The selected articles present original research findings on the relationship between personal hygiene of genital organs and the incidence of vaginal discharge in adolescents. The articles were published between 2019 and 2024 (within the last five years) and are in either English or Indonesian. Exclusion criteria applied to any articles discussing age and parity in relation to prolonged labor using methods other than original research. The articles were sourced from several databases, including Google Scholar. Each selected article will be analyzed descriptively, covering author and publication year, research location, study methods, study subjects, and a summary of research findings.

3. Results

Ten articles—Eight in Indonesian and two in English—have been reviewed and analyzed as follows.

Table 1 Results of Review of 10 Articles

No	Author	Research Title	Location	Method	Subject	Result
1	Meristika, Sylvia R Hendriyanti, Sri L Rosidah (2024).	Hubungan Perilaku Vulva Hygiene dengan Kejadian Keputihan Pada Remaja Putri di MA KHAS Kempek Kabupaten Cirabon Tahun 2024	Madrasah Aliyah KHAS Kempek Cirabon Regency, Indonesia	Analytical survey with cross-sectional design	89 adolescent girls at MA KHAS Kempek Cirabon Regency in 2024.	Most of the respondents (66.3%) exhibited adequate vulva hygiene behavior and experienced vaginal discharge (79.8%). A significant relationship was found between vulva hygiene behavior and the occurrence of vaginal discharge.
2	Komala, I., Ardana, E.B. and Eti, S. (2020).	Hubungan Personal Hygiene dengan Kejadian Keputihan pada Remaja Putri kelas X & XI di SMAN 1 Lembar Lombok Barat NTB.	Senior High School 1 Lembar Lombok NTB, Indonesia.	Analytical survey with cross-sectional design.	121 adolescent girls in class X & XI in 2019.	Most of the respondents (55.4%) had poor personal hygiene and experienced vaginal discharge (86.8%). There was a significant association between personal hygiene and vaginal discharge.

3	Prastyo, Y., Dwiningtias, D. and Khotimah, A.H. (2023).	Perilaku Personal Hygiene dengan Kecemasan Terhadap Kejadian Keputihan pada Remaja	University of Borneo Tarakan, Indonesia	Analytic correlation with cross-sectional design	1st semester student of Borneo University Tarakan	Most of the respondents (56.5%) had adequate personal hygiene behavior and did not experience vaginal discharge (55.9%). There was an association between personal hygiene behavior and the incidence of vaginal discharge.
4	Irnawati, Y. (2019).	Hubungan Personal Hygiene dan Penggunaan Cairan Pembersih vagina dengan Kejadian Pada Remaja Putri di Desa Winong Kecamatan Pati Kabupaten Pati	Adolescent Girls in Winong Village, Indonesia.	Analytic correlation with cross-sectional design	82 adolescent girls in winong village	Most of the respondents (57.3%) had poor personal hygiene behavior and experienced vaginal discharge (53.7%). There was an association between vaginal hygiene behavior and the incidence of vaginal discharge.
5	Yohana, B. and Oktanasari, W. (2021).	Hubungan Personal Hygiene dengan Kejadian Keputihan pada Remaja Putri di SMK YPE Cilacap	YPE Cilacap Vocational High School, Indonesia	Quantitative analytics with cross-sectional design.	47 adolescent girls in grade XI.	Most of the respondents (68.1%) had moderate personal hygiene behavior and experienced vaginal discharge (83%). From this data, it was found that there was a relationship between hygiene attitude behavior and the incidence of vaginal discharge.
6	Nurhaliza. (2023).	Hubungan Pemakaian Pantyliner, Obesitas Dan Perilaku Personal Hygiene Dengan Kejadian Keputihan Pada Remaja Di SMPN 1 Sandai Kabupaten Ketapang	Sandai Junior High School 1, Ketapang, Indonesia.	Quantitative analytics with cross-sectional design.	99 adolescent girls at SMPN 1 Sandai Ketapang Regency in 2021.	Most of the respondents (60.6%) had good personal hygiene behavior and did not experience vaginal discharge (62.6%). However, this study found an association between personal hygiene behavior and the incidence of vaginal discharge.
7	Safitri, U.N., Roza, N. and Philip, R.L. (2024).	Hubungan Perilaku Personal Hygiene dengan Kejadian Keputihan pada Remaja Putri di SMA 12 Kelurahan Tanjung Uma Wilayah Kerja Puskesmas Lubuk Baja Kota Batam Tahun 2023	Senior High School 12, Tanjung Uma village, Indonesia.	Observational analytic with cross-sectional design.	58 adolescent girls in SMA 12 Batam in 2023.	Most of the respondents (63.8%) had good personal hygiene behavior and experienced physiological vaginal discharge (62.1%). This study found an association between personal hygiene behavior and the incidence of vaginal discharge.
8	Navalia, Nuryani and J.Idu, C. (2024).	Hubungan Perilaku Personal Hygiene dengan Kejadian Keputihan pada Remaja Putri Kelas VIII SMPN 1 Mauk.	Junior High School 1 Mauk, Indonesia.	Deskriptif analytic with cross-sectional design	149 adolescent girls in class VIII SMPN 1 Mauk	Almost half of the respondents (47.7%) had poor personal hygiene behavior and most experienced vaginal discharge (56.4%). This study found an association between personal hygiene behavior and the incidence of vaginal discharge.

9	Saadah, N. <i>et al.</i> (2024).	The Relationship Between Personal Hygiene Behavior and Incidence of Vaginal Discharge Among Seventh and Eight Grade Students.	Junior High School 1 Ngariboyo, Indonesia.	Observational analytic with cross-sectional design.	The sampel of seventh and eighth grade students of SMPN 1 Ngariboyo was 124 students	Most of the respondents (66.1%) had personal hygiene behavior that was not good enough and experienced pathological vaginal discharge (75.8%). This study found an association between personal hygiene behavior and the incidence of vaginal discharge.
10	Kirana, T.A., Purwanto, B. and Anis, W. (2022).	Vaginal Hygiene, but not Physical Activity Level Associate to the Event of Pathological Leukorrhea among Female Students of Sport Program.	Faculty of Sports Science, Surabaya State University, Indonesia.	cross-sectional design.	70 mahasiswa Fakultas Ilmu Keolahragaan, Universitas Negeri Surabaya, angkatan 2018 dan 2019, berusia 19-22 tahun.	The resulted a significant relationship between urinary hygiene behavior with the event of pathological leukorrhea.

4. Discussion

4.1. The Relationship between Personal Hygiene Behavior and the Incidence of Vaginal Discharge in Adolescents

Based on the review of 10 articles, 10 articles showed a significant relationship between personal hygiene behavior and the incidence of vaginal discharge in adolescents. The study confirmed that the better an individual's personal hygiene behavior, the less risk of getting vaginal discharge. After the selection of articles, 10 articles were taken to be selected and reviewed. The research articles that have been determined, then read carefully starting from the title, content and research results to be collected as input on personal hygiene behavior with the incidence of vaginal discharge in adolescents.

A study conducted at Senior High School 1 Lembar, West Lombok, NTB, using cluster sampling, revealed that most adolescents (55.4%) had poor personal hygiene behavior and experienced vaginal discharge (86.8%). This indicates that poor personal hygiene behavior is associated with the occurrence of vaginal discharge in adolescents ($P = 0.000 < \alpha$). This is due to the lack of personal hygiene practices among adolescent girls, such as incorrect cleaning methods, failure to wash hands before and after touching genital areas, insufficient social practices, and some respondents having never received information about personal hygiene health (6). This study is in line with the research by irnawati, Y. (2019), which found that most adolescents exhibited poor personal hygiene behavior (57.3%) and experienced vaginal discharge (53.7%). The bivariate analysis of the study showed a value of ($P = 0.06$), suggesting a significant relationship between personal hygiene behavior and the occurrence of vaginal discharge (3). Additionally, a study by Navalía, Nuryani and J.Idu, C. (2024) found that nearly half of the respondents had poor personal hygiene behavior (47.7%), and the majority experienced vaginal discharge (56.4%). The results indicated a relationship between personal hygiene behavior and the occurrence of vaginal discharge ($P = 0.026 < \alpha 0.05$). This is consistent with the findings of Saadah, N. *et al.* (2024) which showed that most respondents had poor personal hygiene behavior (66.1%) and experienced pathological vaginal discharge (75.8%), with the results indicating a relationship between personal hygiene behavior and the occurrence of vaginal discharge ($P = 0.030$).

The study by Prastyo, Y., Dwiningtias, D. and Khotimah, A.H. (2023). showed a difference, where most individuals had adequate personal hygiene behavior (56.5%) and did not experience vaginal discharge (55.9%). However, it was found that there was a relationship between personal hygiene behavior and the occurrence of vaginal discharge among female students at the University of Borneo Tarakan ($P = 0.000 < 0.05$). A person's hygiene behavior is influenced by several factors, which result in variations in hygiene practices among individuals. Other factors, such as the use of antiseptics that can disrupt pH balance, the water used daily, the use of pads or pantyliners, and other personal hygiene behaviors, also play a role. Poor personal hygiene behavior can contribute to the occurrence of vaginal discharge in an individual (11). This study aligns with the research by Meristika, S.R., Hendriyanti, S.L. and Rosidah (2024., which showed that most adolescents exhibited adequate vulva hygiene behavior (66.3%) and experienced vaginal discharge (79.8%). The

results indicated a significant relationship between vulva hygiene behavior and the occurrence of vaginal discharge ($P = 0.000 < 0.05$). This is because preventing vaginal discharge involves not only maintaining cleanliness in the intimate area but also adopting a healthy lifestyle, including a balanced diet, regular exercise, adequate rest, and avoiding prolonged stress (7). A study conducted by Yohana, B. and Oktanasari, W. (2021), showed that most respondents had moderate personal hygiene behavior (68.1%) and experienced vaginal discharge (83%). The Chi-Square test results revealed a relationship between personal hygiene behavior and the occurrence of vaginal discharge ($P = 0.034$). If an individual's personal hygiene is not maintained, it can lead to the growth of fungi or bacteria, which can cause vaginal discharge (13).

A study conducted by Safitri, U.N., Roza, N. and Philip, R.L. (2024). Senoir Hight School 12 in Batam City found that the majority of respondents (63.8%) had good personal hygiene behavior and experienced physiological vaginal discharge (62.1%). The bivariate analysis using the chi-square test revealed a relationship between personal hygiene and the occurrence of vaginal discharge ($P = 0.002$; $PR = 0.32$), meaning that an individual with poor personal hygiene is 0.32 times more likely to experience vaginal discharge. This study aligns with the research conducted by Nurhaliza (2023), which found that out of 99 respondents, the majority (60.6%) had good personal hygiene behavior and did not experience vaginal discharge (62.6%). However, statistical tests indicated a relationship between personal hygiene and the occurrence of vaginal discharge ($P = 0.003$), and the odds ratio (OR) analysis showed a value of 3.882, meaning that adolescents with poor personal hygiene behavior were 3.7 times more likely to experience vaginal discharge compared to those who maintained good personal hygiene (9). The female intimate area is sensitive due to its concealed location, requiring a clean and dry condition. Poor hygiene conditions can increase the likelihood of vaginal discharge. However, other factors also influence the occurrence of vaginal discharge, such as physical fatigue, which can increase estrogen hormone secretion. In addition, psychological stress can trigger an increase in adrenaline hormones. The increase in these hormones leads to the narrowing of blood vessels and reduces their elasticity. This inhibits the flow of estrogen hormones to the organs, which may cause vaginal discharge (12).

A study conducted at the State University of Surabaya by Kirana, T.A., Purwanto, B. and Anis, W. (2022), showed that out of 70 respondents, the majority (67.1%) experienced pathological vaginal discharge, influenced by several factors. One of the significant factors was urinary hygiene behavior, with a P-value of 0.007, indicating a relationship between urinary personal hygiene behavior and the occurrence of pathological vaginal discharge. Urinary personal hygiene affects the growth of pathogenic microorganisms. These microorganisms, which cause vaginal discharge, are commonly found around the anus. When cleaning the vulva in the wrong direction, such as from back to front, it can transfer fungi and parasites from the anus to the vagina. Maintaining good personal hygiene will reduce the occurrence of vaginal discharge by minimizing vaginal moisture and preventing an improper pH balance, which can cause the rapid growth of pathogenic microorganisms (4).

5. Conclusion

The review of ten journal revealed that most showed an association between personal hygiene behavior and vaginal discharge. The better the personal hygiene behavior of an adolescent, the less risk of the adolescent experiencing vaginal discharge. It is important to realize that improving personal hygiene, especially in the genital area, one example is washing hands before touching the vagina, cleaning the vagina by washing from front to back, avoiding the continuous use of antiseptic lather and soap because it can damage the normal balance in the vagina, and using cotton pants. In addition, you can immediately seek medical attention if you experience vaginal discharge.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

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