

Causes of Pathological Vaginal Discharge and Impacts on Adolescent Reproductive Health

Salina ^{1*} Andi Arlina ² Dian Purnamasari ³

¹ Institut Ilmu Kesehatan Pelamonia, Makassar, Indonesia. Email: salinainha897@gmail.com

² Institut Ilmu Kesehatan Pelamonia, Makassar, Indonesia. Email: arlinaandi66@gmail.com

³ Institut Ilmu Kesehatan Pelamonia, Makassar, Indonesia. Email: dianpurnamasari1903@gmail.com

ARTICLE HISTORY

Received: June 13, 2025

Revised: June 19, 2025

Accepted: June 20, 2025

DOI :

<https://doi.org/10.60079/ahr.v3i2.535>



ABSTRACT

Purpose: This study aims to identify and analyze in depth various factors causing pathological vaginal discharge in adolescent girls and evaluate its implications for reproductive health. The primary focus is on the interaction between biological aspects, personal hygiene behavior, social and cultural constructs, and access to health information and services.

Research Method: This study employs a qualitative approach, utilizing a systematic literature review of national and international scientific articles published between 2020 and 2025. The analysis is conducted thematically to group the causal factors and analyze their interrelationships based on reliable academic references.

Results and Discussion: Findings indicate that pathological vaginal discharge in adolescents is caused by a combination of hormonal changes, vaginal microflora imbalance, and poor hygiene practices, such as wearing tight pants and improper cleaning of the genital area. Cultural norms that taboo discussions about reproductive health further exacerbate delays in treatment. The lack of formal sexual education and access to youth-friendly health services are significant barriers to the prevention and management of vaginal discharge.

Implications: This study emphasizes the importance of a holistic, intersectoral, and sustainable educational approach. Single interventions are insufficient to address this issue. Recommendations are directed toward integrating reproductive education into school curricula and providing inclusive and accessible adolescent health services.

Keywords: pathological vaginal discharge; adolescent girls; personal hygiene; reproductive health; sexual education.

Introduction

Vaginal discharge or leukorrhea is a natural condition experienced by most women as part of a healthy reproductive system. However, in some cases, vaginal discharge can become pathological, characterized by changes in color, an unpleasant odor, and accompanied by itching or pain. Pathological vaginal discharge often occurs in adolescents, who are undergoing significant hormonal changes and are still in the stage of seeking information and knowledge about reproductive health (Anastasya, 2024). In Indonesia, the high incidence of pathological vaginal discharge in adolescent girls indicates a lack of understanding and proper hygiene practices for reproductive organs. According to a report by the National Population and Family Planning Agency (BKKBN), over 80% of adolescents lack a thorough



understanding of reproductive health, including issues related to vaginal discharge. This situation is exacerbated by limited access to holistic reproductive health education in both school and family environments, leading to inadequate hygiene practices. This phenomenon highlights practical issues that require immediate scientific intervention, especially since untreated pathological vaginal discharge can lead to more serious infections such as bacterial vaginosis or upper reproductive tract infections, which have long-term implications for fertility and reproductive health among adolescents.

Recent studies have attempted to explain the factors causing pathological vaginal discharge in adolescents and its relationship with reproductive health. Pathological vaginal discharge is a common reproductive health issue among adolescent girls, with approximately 90% of women in Indonesia at risk of experiencing it (Rahmanindar *et al.*, 2022). Factors associated with the occurrence of vaginal discharge in adolescent girls include knowledge, exposure to information, and personal hygiene (Prasasti *et al.*, 2024). To prevent the severity of pathological vaginal discharge, reproductive health education is crucial for adolescent girls (Tamar, 2023). Health education has been proven to improve adolescents' behavior in preventing pathological vaginal discharge, whether using leaflets or PowerPoint slides (Yulfitria *et al.*, 2021). Prevention efforts include increasing knowledge about vaginal discharge, its symptoms, causes, hygiene practices, and management (Rahmanindar *et al.*, 2022). This discussion emphasizes that reproductive health education plays a crucial role in enhancing awareness and behavior among adolescent girls regarding the prevention of pathological vaginal discharge. Recent research highlights the importance of reproductive health education for adolescents in Indonesia. Research indicates that providing reproductive health information through interactive methods can significantly improve adolescents' knowledge (Utami *et al.*, 2025; Wahjuni *et al.*, 2025). One study found that using LCD media for counseling increased knowledge about vaginal discharge among high school students (Utami *et al.*, 2025). Another study revealed a significant association between reproductive health knowledge and sexual behavior among high school students (Nirwana & Widarini, 2025). Educational interventions using video media (EMIVO) have also proven effective in improving reproductive health knowledge among young adolescents aged 10–12 years (Al Zahra *et al.*, 2025). These findings underscore the importance of ongoing reproductive health education programs in schools, potentially through collaboration between educational institutions and local health centers, to foster a healthy learning environment and enhance adolescents' understanding of reproductive health issues (Utami *et al.*, 2025; Wahjuni *et al.*, 2025).

Although recent studies have demonstrated the effectiveness of reproductive health education in improving adolescents' knowledge about pathological vaginal discharge, significant gaps remain that have not been extensively addressed in the literature. Most studies have focused on the short-term outcomes of educational interventions and knowledge gains following the provision of specific educational materials, such as leaflets, videos, or LCD presentations (Al Zahra *et al.*, 2025; Utami *et al.*, 2025; Yulfitria *et al.*, 2021). However, these studies have not comprehensively examined how the factors causing pathological vaginal discharge work simultaneously and interact in the daily lives of adolescents. From an empirical perspective, limited studies are exploring the relationship between personal hygiene behavior, social constructions of the female body and sexuality, and access to adolescent health services in preventing pathological vaginal discharge. Theoretically, studies on pathological vaginal discharge among adolescents often stand alone without being linked to a strong conceptual framework, such as health behavior theory, social cognitive theory, or a social ecology approach. This makes it challenging to comprehend the intricate relationships between knowledge, attitudes, social norms, and daily practices that contribute to maintaining reproductive health. Additionally, previous research has not

sufficiently explored adolescents' perspectives in depth, particularly regarding their perceptions, experiences, and barriers in maintaining genital hygiene.

This study offers a novel approach by integrating a multidimensional perspective in examining the causes of pathological vaginal discharge among adolescents, encompassing biological, hygiene behavior, socio-cultural, and access to reproductive health information and services. Unlike previous studies that tend to focus on short-term knowledge improvement through specific educational interventions, this study systematically reviews scientific literature to identify the main determinants of pathological vaginal discharge from a more holistic and theory-based perspective. Another novelty lies in the effort to link the phenomenon of pathological vaginal discharge to the daily context of adolescents, including social norms, personal experiences, and structural barriers in accessing reproductive health education and services. The objective of this study is to develop a comprehensive mapping of the factors contributing to pathological vaginal discharge among adolescents and to examine its implications for reproductive health through a systematic literature review approach, thereby providing a strong scientific foundation for the formulation of more effective, contextual, and sustainable intervention strategies in educational and adolescent health care settings.

Literature Review and Hypothesis Development

Pathological vaginal discharge

Pathological vaginal discharge is a condition characterized by the abnormal discharge of fluid from the vagina, which may be yellow, greenish, or accompanied by an unpleasant odor, itching, or pain. This condition is often an indication of infection, inflammation, or hormonal imbalances in the female reproductive organs (Xiaoming *et al.*, 2021). This condition differs from physiological vaginal discharge, which is normal, transparent, odorless, and generally occurs due to hormonal influences during ovulation or before menstruation. In adolescent girls, pathological vaginal discharge is a significant problem because they are in the early stages of sexual development, during which the hormonal system and vaginal microbiome are not yet fully stable. Adolescents also tend to lack adequate information about reproductive health, particularly regarding genital hygiene and proper care. A study conducted by Baka *et al.*, (2022) revealed that most cases of vaginal discharge in adolescents stem from non-sexual factors, such as wearing tight underwear, using soap with pH levels unsuitable for the vagina, and improper rinsing techniques. These factors are exacerbated by low awareness among adolescents about the importance of personal hygiene and limited health communication within family and school environments. Thus, pathological vaginal discharge cannot be viewed solely as an individual medical issue but also as a problem involving educational, social, and cultural norms that limit adolescents' access to accurate and open health information.

Recent studies have extensively explored the causes and educational approaches to addressing pathological vaginal discharge in adolescents. One systematic review by Salina *et al.*, (2025) revealed that low reproductive health literacy is the root cause of adolescents' lack of awareness of the early symptoms of pathological vaginal discharge. Adolescents often do not understand that foul-smelling, dark-colored discharge accompanied by pain is a warning sign requiring immediate medical attention. This occurs due to social taboos that suppress discussions about reproductive health, even within family settings. Educational modules on genital hygiene have been shown to have a positive impact on adolescents' attitudes and behaviors, as demonstrated in a study by Gweda *et al.*, (2021), which found that an instructional learning approach improved adolescents' understanding and motivation in self-

care. Meanwhile, Xiaoming *et al.*, (2021) stated that an imbalance in the microbiome of the adolescent vagina causes susceptibility to opportunistic infections, making hygiene a crucial aspect. Itriyeve, (2020) also emphasizes the importance of a comprehensive approach in addressing cases of abnormal vaginal discharge in adolescents, taking into account factors such as age, sexual status, and psychological condition. These studies indicate that successful interventions not only involve providing information but also require an emotionally and socially supportive environment to ensure that adolescents feel safe asking questions and seeking medical help.

A comprehensive approach to the prevention and management of pathological vaginal discharge in adolescents requires synergy between education, clinical care, and community support. A study by Romano (2020) suggests the need for active collaboration between schools and adolescent health centers to create educational programs that are not only theoretical but also applicable to the daily lives of adolescents. The implementation of a reproductive health curriculum that is age-appropriate and culturally sensitive can enhance the effectiveness of information delivery. This is supported by the findings of Al Zahra *et al.*, (2025), which demonstrated that the use of educational media based on animated videos (EMIVO) is efficacious in improving children's understanding of reproductive topics, including vaginal discharge and its prevention, among children aged 10–12 years. In the medical context, microbiological identification is crucial to determine the cause of infection (Sisodia, 2025). This examination enables doctors to provide appropriate treatment, such as prescribing antibiotics or antifungals. Therefore, the management of pathological vaginal discharge in adolescents should be understood as a multidimensional process requiring interdisciplinary understanding—from education and culture to evidence-based clinical services.

Reproductive Health

Reproductive health is defined as a state of physical, mental, and social well-being in all matters related to the reproductive system, its functions, and processes, and not merely the absence of disease or infirmity (Başar *et al.*, 2021). In the context of adolescents, reproductive health involves not only biological aspects but also includes understanding sexual rights, social responsibilities, and the ability to make safe and healthy decisions about their bodies. Adolescence is a pivotal stage in human development, characterized by substantial hormonal, physical, and psychological transformations. Therefore, a good understanding of reproductive health is crucial in supporting the optimal growth and development of adolescents. Roth *et al.*, (2024) emphasize that low sexual and reproductive health literacy among adolescents is correlated with high rates of risky behaviors, such as unprotected premarital sex, unwanted pregnancies, and sexually transmitted infections. Mancone *et al.* (2024) also indicate that traditional approaches to reproductive health education, which are one-way and normative, tend to be ineffective in addressing the needs of today's adolescents living in a digital ecosystem. Therefore, interactive, technology-based approaches that are tailored to the cultural and psychosocial context of adolescents are considered more effective in improving their understanding of reproductive issues. The biggest challenge in adolescent reproductive health education lies in conveying information openly while remaining consistent with local values.

The implementation of well-designed reproductive health education programs has been shown to contribute significantly to increasing adolescents' awareness and positive behavior towards reproductive issues. Yuniarti *et al.*, (2024) state that school-based education programs with a participatory approach can create a comfortable space for adolescents to express their questions and

experiences without fear or shame. This type of education model not only instills knowledge but also shapes attitudes and social skills, enabling individuals to make responsible decisions about their health. Yadav & Kumar, (2023) found that multimedia methods used in reproductive education help improve students' understanding, especially in explaining sensitive topics such as menstrual cycles, puberty, and safe sex. Adolescents' perceptions of sex education are also an important factor in the success of programs. Corcoran *et al.*, (2020) found that education delivered through a communicative approach that respects adolescents' perspectives has a stronger and more sustainable impact. Meanwhile, Nisman *et al.*, (2020) showed that integrating gender equality principles into the reproductive health curriculum encourages adolescents to respect the rights and boundaries of others and increases their self-efficacy in rejecting sexual pressure or violence. By involving parents in the education process, as studied by Aventin *et al.*, (2020), communication about sexuality within families can also be strengthened, thereby creating a supportive ecosystem that promotes healthy and resilient behavior among adolescents.

The development of digital technology has opened up new opportunities to expand the scope of reproductive health education more effectively and reach adolescents in ways that are appropriate to their learning styles. Roth *et al.* (2024) *demonstrated that the use of virtual educational media, such as interactive apps and animated videos, can enhance students' understanding of sensitive topics, including safe sexual relationships, menstrual management, and the risks of sexually transmitted infections.* Digital interventions also enable personalized information, tailored to each individual's age, experience, and literacy level. This is reinforced by Aguilar-Quesada *et al.*, (2025), who concluded in their study that mobile app-based digital interventions significantly reduced the risk of unhealthy sexual behavior among adolescent girls. However, the effectiveness of educational content depends heavily on the quality of the content and its presentation. Castleton *et al.*, (2024) found in their literature review that available reproductive education toolkits often fail to meet the needs of adolescents, particularly in terms of language used, depth of material, and relevance to the current social reality of adolescents. Educational materials should be developed with adolescents as active participants, not merely as recipients of information. Such an approach not only enhances information retention but also fosters a sense of ownership over the knowledge gained. Adaptive, inclusive, and evidence-based reproductive health education is a crucial foundation for shaping a healthy, empowered, and responsible generation capable of addressing the challenges of sexual and reproductive life.

Personal Hygiene

Personal hygiene refers to an individual's efforts to maintain overall cleanliness and health, including specific practices to keep the genital area clean and free from infection or irritation (Abiç *et al.*, 2024). During adolescence, personal hygiene practices become very important due to significant biological changes, such as the onset of estrogen and progesterone hormones, which affect mucus production in the vagina. When adolescent girls lack proper understanding and hygienic habits, the risk of pathological vaginal discharge, fungal infections, and bacterial infections increases dramatically. Kuruc & Avci, (2024) indicate that low knowledge about genital hygiene among adolescents leads to complaints such as itching, unpleasant odor, and abnormal vaginal discharge. Additionally, many of them still make common mistakes such as rinsing the genital area from back to front or using harsh soaps that can disrupt the natural pH balance of the vagina. A study by Suniarti *et al.* (2024) *found that education provided through media and direct training can enhance awareness of the importance of personal hygiene, particularly in the use of sanitary pads, selecting appropriate underwear, and proper*

cleaning behavior after urinating or defecating. Schools and families need to create an open and needs-based educational environment for adolescents, allowing them to understand the importance of maintaining personal hygiene as part of their reproductive health.

Education on personal hygiene has been shown to have a significant impact on the prevention of various reproductive health disorders in adolescents. Aini *et al.*, (2025) found that poor hygiene practices, such as rarely changing sanitary pads or using damp underwear, are the leading causes of an increase in cases of pathological vaginal discharge among junior high school girls. Lack of knowledge about the importance of changing sanitary pads every 4 hours and using clean water to wash intimate areas remains a common issue encountered in the field. In an experimental study conducted by Abiç *et al.*, (2024), a systematically designed and age-appropriate educational program was shown to improve proper hygiene practices, including the habit of washing hands before and after touching the genital area and avoiding the use of alcohol-containing wet wipes. Kuruc & Avci, (2024) emphasize the importance of teacher and healthcare worker involvement in delivering the material repeatedly and interactively, making it easier for adolescents to understand and remember. Meanwhile, structural barriers such as lack of access to clean water, adequate sanitation, and availability of sanitary pads remain significant challenges, particularly in rural areas and low-income communities. Deniz & Acikgoz, (2025) highlight that menstrual poverty can prevent adolescent girls from practicing good personal hygiene, so educational programs must be accompanied by policies that support the provision of adequate infrastructure and logistical assistance in schools.

Recent studies also indicate that practical and direct educational approaches in the context of personal hygiene are more effective than one-way counseling methods. Suniarti *et al.* (2024) *emphasize that providing materials through simulations, small-group discussions, and the practical use of hygiene tools, such as sanitary pads and genital-specific soap, can improve information retention and foster healthier new habits.* Ihsanpuro, (2025) states that a positive correlation exists between improved personal hygiene practices and a decrease in the incidence of pathological vaginal discharge, based on an analysis of over 10 intervention studies. In addition to individual interventions, environmental involvement has also proven to be highly influential. A study by Abiç *et al.*, (2024) conducted in schools in Northern Cyprus found that students who received structured genital hygiene education exhibited significant improvements in their daily behaviors and demonstrated a more substantial understanding of distinguishing between normal and abnormal vaginal discharge. Efforts to improve personal hygiene among adolescents should include three main approaches: school-based education, family support that is open to discussions about reproductive health, and the provision of adequate hygiene facilities. When all these elements are integrated, personal hygiene practices will become part of healthy living habits that are not only beneficial in the short term but also support long-term reproductive well-being into adulthood.

Research Method

Research Design

This study employs a qualitative approach, utilizing a systematic literature review (SLR) method, to identify, classify, and analyze various scientific findings on personal hygiene, pathological vaginal discharge, and adolescent reproductive health. This design was chosen because it allows researchers to explore in depth the relationship between personal hygiene behavior and the occurrence of pathological vaginal discharge, as well as its impact on reproductive health. The systematic literature



review was conducted by formulating clear research questions, establishing inclusion and exclusion criteria, and searching for scientific publications from various accredited databases. This study is descriptive-analytical, where the data obtained are analyzed thematically to produce a structured and comprehensive theoretical synthesis.

Population and Research Subjects

The subjects of this study are not individuals or respondents, but somewhat relevant scientific articles that have been published in reputable journals from publishers such as Elsevier, Emerald, Springer, and Wiley. The inclusion criteria are as follows: (1) articles published after 2018, (2) discussing topics related to personal hygiene, pathological vaginal discharge, and adolescent reproductive health, (3) written in English or Indonesian, and (4) based on empirical research or literature reviews that are accessible in full-text format. Meanwhile, articles that are not relevant to the study focus or do not meet the minimum academic quality standards are excluded from the selection process. Thus, the population of articles used in this study was selected purposively to ensure that only high-quality and relevant sources were used as analysis materials.

Data Collection Techniques and Instrument Development

Data collection techniques were conducted through systematic scientific literature searches across several reliable academic databases, including Scopus, ScienceDirect, SpringerLink, Emerald Insight, and Wiley Online Library. Keywords used in the search included: **“personal hygiene,” “vaginal discharge,” “pathological leucorrhea,” “adolescent reproductive health,”** and **“genital hygiene education”**. The search process was conducted using filters for publication year (2018–2025), document type (journal articles), and full-text access. The search results were then evaluated using criteria for eligibility and content relevance. No instruments, such as questionnaires or interviews, were used because the data sources were secondary documents. However, the researcher developed a data extraction form to map important information from each article, including research objectives, methodology, main findings, and conclusions, thereby facilitating the thematic analysis process.

Data Analysis Techniques

The data were analyzed using a thematic approach by grouping the research results into main themes in line with the focus of the study, namely: (1) the definition and urgency of personal hygiene, (2) the relationship between personal hygiene and pathological vaginal discharge, and (3) its impact on adolescent reproductive health. The analysis process was conducted inductively, beginning with data coding and pattern identification, and culminating in the synthesis of findings into conceptual conclusions. This analysis enables researchers to identify research gaps, uncover patterns of relationships between variables, and formulate recommendations for future reproductive health education practices. Data validity was ensured by comparing findings across sources and conducting cross-validation of emerging themes, resulting in conclusions that are reliable, accurate, and scientifically accountable.

Results and Discussion

Analysis Result

Identification of Factors Causing Pathological Vaginal Discharge in Adolescents

Pathological vaginal discharge in adolescents is a reproductive health problem that arises from the simultaneous interaction between biological factors, hygiene behavior, and environmental and social conditions that shape daily behavior. Biologically, puberty is marked by hormonal changes in estrogen, which trigger increased vaginal fluid production and disrupt the balance of the vaginal microbiota, leading to a decrease in the dominance of lactobacilli—the natural protective flora—and creating opportunities for the growth of pathogens such as bacteria and fungi (Baka *et al.*, 2022; Xiaoming *et al.*, 2021). However, these physiological changes do not act alone as causes but are influenced by improper hygiene practices. Practices such as washing the genital area from back to front, wearing damp or tight underwear, and infrequent changing of sanitary pads during menstruation have been shown to correlate with an increase in cases of pathological vaginal discharge among adolescent girls (Aini *et al.*, 2025; Anastasya, 2024). Environmental factors also play a significant role. Limited access to clean water, inadequate personal sanitation facilities in schools, and low family involvement in guiding adolescents' hygiene practices are indirect triggers that increase the risk of infection (Kuruc & Avci, 2024; Deniz & Acikgoz, 2025). In a social context, stigma surrounding discussions about reproductive health leads to low awareness of abnormal vaginal discharge symptoms at an early stage.

The Role of Personal Hygiene and Daily Habits

Personal hygiene, particularly in maintaining genital hygiene, plays a central role in preventing abnormal vaginal discharge in adolescent girls. Findings from various studies indicate that proper personal hygiene practices are directly correlated with a decrease in the prevalence of abnormal vaginal discharge. Adolescents who regularly change their underwear, wash their genital area with clean water in the correct direction, and change sanitary pads regularly during menstruation tend to have better reproductive health (Aini *et al.*, 2025; Anastasya, 2024). Unfortunately, adolescents' daily habits do not always reflect an accurate understanding of genital hygiene. Several studies have revealed that many adolescents continue to use scented soap or harsh antiseptics, which disrupt the vaginal flora balance and cause irritation (Suniarti *et al.*, 2024). In many cases, adolescents' lack of knowledge about healthy hygiene practices is not due to a refusal of information, but rather to limited access to consistent and comprehensive education. Abiç *et al.*, (2024) state that planned educational interventions on genital hygiene in secondary schools can significantly improve knowledge and change the daily behaviors of adolescent girls. Meanwhile, the study by Kuruc & Avci, (2024) highlights the important role of teachers and school health workers in shaping adolescents' hygiene patterns through an educational and non-judgmental approach. Therefore, strengthening personal hygiene education in both formal and informal settings is essential and should be conducted on a continuous basis. Hygiene practices are not merely habits but are influenced by knowledge, social values, and access to adequate sanitation facilities. Strategies to prevent pathological vaginal discharge in adolescents should view personal hygiene as a behavior shaped by multiple factors, not merely an individual activity.

The Influence of Social and Cultural Constructions on Body Perception and Sexuality

In many societies, social and cultural norms remain a significant barrier to developing a healthy understanding of women's bodies and sexuality. The collective silence surrounding issues such as menstruation, vaginal discharge, and genital infections means that adolescent girls do not have a safe space to ask questions, discuss, or express their concerns. These findings are consistent with a study by Corcoran et al., (2020), which showed that adolescents often feel ashamed to talk about their bodily conditions, including vaginal discharge, for fear of being judged negatively or considered rude. In specific cultural contexts, vaginal discharge is even considered a "curse" or the result of deviant behavior, so adolescents who experience it tend to delay seeking medical help or are unaware that the condition can be prevented and treated. Social constructs that limit discussions about reproductive health also reinforce gender stereotypes that women must maintain modesty by concealing their bodily experiences (Tamar, 2023). As a result, education provided in schools or households is often limited and tends to be normative, lacking scientific explanations and often filled with prohibitions. The study by Wahjuni et al. (2025) highlights that an education approach based on local values, combined with accurate medical knowledge, can be an effective strategy in bridging this information gap. Therefore, dismantling the social constructs that silence reproductive health issues is an essential component of strategies to prevent pathological vaginal discharge. This effort requires collaborative work between schools, families, community leaders, and health institutions to create inclusive, dialogic, and stigma-free educational spaces.

Access to Reproductive Health Information and Services for Adolescents

The availability of adolescent-friendly reproductive health information and services remains a significant challenge in many areas, particularly in communities with limited resources. While digital technology has expanded access to information, not all adolescents can utilize it effectively, due to barriers such as digital literacy, access to devices, or content that is not always relevant to their lives. A study by Aguilar-Quesada et al. (2025) found that digital interventions in sexual health education can be effective, provided they are tailored to the specific needs and capabilities of the target audience. On the other hand, school curricula often fail to address practical aspects of reproductive health, and health services in communities are frequently not designed to reach adolescents in an inclusive and stigma-free manner (Aventin et al., 2020; Castleton et al., 2024). These findings reflect a gap between adolescents' information needs and the systems that should provide them. Nirwana & Widarini (2025) emphasize that low knowledge about reproductive organ functions and disease risks is closely linked to limited access to personal and non-discriminatory consultation services. Therefore, strategies to improve adolescent reproductive health must prioritize the provision of credible, safe, and easily accessible information channels. Health facilities such as community health centers (Puskesmas) and school health units (UKS) need to enhance their capacity to deliver educational and youth-friendly services. This underscores the importance of a systemic approach: integrating education, health services, and information technology into an ecosystem that supports adolescents in accessing their right to information and quality health services.

Limitations and Patterns of Short-Term Educational Intervention

Most reproductive health education programs for adolescents are still dominated by short-term approaches that focus on increasing knowledge in a brief period, such as one-time counseling using

leaflets, LCDs, or short videos. Although these methods are effective in improving initial understanding, many studies indicate that this approach is insufficient to create sustainable behavioral change (Utami *et al.*, 2025; Al Zahra *et al.*, 2025). One reason is the lack of follow-up or reinforcement systems after the intervention. When education is not contextualized within the daily lives of adolescents, the material received tends to be forgotten or even considered irrelevant. Research by Başar *et al.*, (2021) shows that comprehensive, sustainable, and two-way interactive educational programs are more effective in shaping adolescents' understanding and attitudes toward reproductive health. Yulfitria *et al.* (2021) also emphasize that active adolescent participation in the learning process, including through small-group discussions and simulations, is far more effective than one-way models. Therefore, educational approaches need to shift from an "information transfer" model to a more in-depth and personalized "learning experience formation" model. In this context, education should not only convey knowledge but also instill values, foster critical awareness, and build adolescents' confidence in self-care. Educational programs that do not account for the depth of the internalization process risk becoming short-lived campaigns that fail to bring about meaningful behavioral change.

Adolescents' Perspectives on Pathological Vaginal Discharge and Reproductive Health

One important finding from this literature review is the lack of involvement of adolescents as active subjects in the planning, implementation, and evaluation of reproductive health programs. Most interventions are designed by adults with certain assumptions about what adolescents need, without directly exploring their experiences and perspectives. This results in a mismatch between educational content and the social-emotional reality of adolescents, ultimately reducing the effectiveness of programs. Qualitative studies such as those conducted by (Gweda *et al.*, 2021; Roth *et al.*, 2024) indicate that adolescents actually have a desire to understand their bodies, but they often lack safe and trustworthy spaces to ask questions or share their experiences. Adolescents report a need for a more dialogic, non-judgmental approach that uses language and media that are close to their daily lives (Corcoran *et al.*, 2020; Mancone *et al.*, 2024). They also want peer counselors or mentors who can provide information in a more relaxed and relevant way. From this perspective, successful reproductive health programs do not only focus on information transfer, but also on building emotional connections and trust between adolescents and message deliverers. Involving adolescents as active partners in the educational process is a crucial step in designing inclusive and sustainable interventions. By listening to their voices directly, we not only gain a more accurate understanding of their needs but also empower them to become agents of change for themselves and their communities.

Discussion

The main findings of this study show that a single factor cannot explain pathological vaginal discharge in adolescents, but rather is the result of complex interactions between biological factors, hygiene behavior, socio-cultural norms, and access to reproductive health information and services. Adolescence is a crucial phase in biological development, marked by a surge in estrogen hormones that affect vaginal fluid production. These changes are natural, but become vulnerable when not balanced with adequate understanding of how to maintain proper genital hygiene. Microflora imbalance, as found in the study by Baka *et al.*, (2022), indicates that the dominance of opportunistic pathogens can occur due to low levels of lactobacillus, particularly among adolescents with poor hygiene habits. This is exacerbated by unhygienic practices such as washing in the wrong direction, using pH-inappropriate

cleansers, and infrequent changing of underwear or sanitary pads. Aini *et al.*, (2025) empirically demonstrated a significant association between improper personal hygiene practices and high prevalence of pathological vaginal discharge among junior high school students. In this context, hygiene practices are not merely individual responses to biological changes, but also reflect access to information, environmental support, and prevailing societal norms.

The findings of this study highlight that many adolescent girls do not have the freedom or courage to express complaints about their reproductive health, either because of shame, fear of judgment, or because they do not know where to seek help. In a socio-cultural context, women's bodies are often seen as objects that must be kept silent. Discussions about menstruation, vaginal discharge, and intimate organ health are still considered taboo in many communities, even in educational and family settings. This situation creates structural barriers to the prevention and early management of pathological vaginal discharge. Research findings from Corcoran *et al.*, (2020) indicate that when adolescents feel uncomfortable discussing reproductive health topics, they tend to delay seeking information and normalize symptoms that should be monitored. Here, it becomes evident that biological aspects and hygiene behaviors are closely intertwined with social constructs that silence adolescents' space for dialogue. In other words, even when adolescents experience symptoms, they are not automatically able to take preventive or treatment steps because their environment does not support openness or access to services.

Intervention approaches that focus solely on one aspect, such as increasing knowledge through educational media, will not be sufficient to prevent or comprehensively address pathological vaginal discharge. This study shows that single interventions, although they can increase knowledge, do not necessarily change behavior or increase health service utilization, as many adolescents remain trapped in social stigma or face structural barriers such as inadequate sanitation facilities. Therefore, the solutions offered must be multidimensional, encompassing sustained school-based education, access to clean water and adequate sanitation facilities, the involvement of parents and teachers in reproductive health education, and the development of youth-friendly health services. This principle of cross-sectoral integration is the foundation for sustainable and impactful interventions. In this context, efforts to prevent pathological vaginal discharge among adolescents can no longer be viewed solely as a private or medical issue, but rather as a systemic issue requiring collaboration among various parties to create an environment that supports comprehensive adolescent reproductive health.

When compared to previous studies, the findings of this study are closely related and provide a broader understanding of the determinants of pathological vaginal discharge in adolescents. For example, Baka *et al.*, (2022) emphasized the importance of understanding microbiological factors in cases of vulvovaginitis and vaginal discharge in girls and adolescent girls. These findings indicate that unstable biological conditions, particularly during puberty, make adolescents more susceptible to imbalances in vaginal flora. However, approaches that overly focus on medical aspects often overlook behavioral and social factors that contribute to daily risk. This is where this study expands the scope of analysis by showing that biological vulnerability becomes more dangerous when combined with insufficient education, low awareness of personal hygiene, and a social environment that does not support openness about reproductive issues. This study aligns with the findings of Abiç *et al.* (2024), who highlight that school-based educational interventions are not only effective in improving knowledge but can also shape behavior if designed systematically and tailored to the characteristics of adolescents.

A comparison with international studies, such as Corcoran *et al.*, (2020), shows that the phenomenon of social silence and cultural taboo in discussing reproductive health issues is not unique to Indonesia, but also occurs in various other countries with similar social contexts. However, what distinguishes this study is the effort to integrate biological, behavioral, social, and structural factors into a comprehensive analytical framework. Previous studies tended to separate clinical and educational aspects in their analysis, while this study emphasizes the interdependence between these factors. As a result, the findings of this study not only reinforce previous findings but also challenge intervention models that are too narrow and fail to account for the complexity of adolescents' life contexts. The emphasis on a holistic and integrative approach constitutes the main contribution of this study to the development of future reproductive health strategies for adolescents.

Conclusion

This study aims to explore the causes of pathological vaginal discharge in adolescents and describe how biological factors, hygiene behavior, social and cultural norms, and access to health information and services interact to shape the risk of vaginal discharge. This study not only maps out the causal factors but also comprehensively examines the interconnections between these factors, thereby providing a more holistic understanding of the complexity of pathological vaginal discharge among adolescents. In this context, the research provides evidence that an approach focusing solely on one aspect, such as education or treatment, will not be sufficiently compelling without comprehensive and cross-sectoral interventions.

This study holds significant value in advancing knowledge, particularly within the context of adolescent reproductive health, which remains underrepresented in public health policies and practices. The research proposes a holistic conceptual framework that can serve as a foundation for designing school-based, community-based, and primary healthcare intervention programs. Practically, these findings can be utilized by health workers, educators, and policymakers to design preventive approaches that are not only informative but also transformational in shaping healthy behaviors among adolescents. From a managerial perspective, this study encourages the integration of reproductive health programs into educational curricula and adolescent-friendly health care systems, taking into account existing social norms and structural barriers.

This study has limitations in terms of its scope, which is still based on literature and does not involve field data or direct observation of adolescent behavior in their social context. Additionally, factors such as family economic status, the influence of social media, and family dynamics have not been thoroughly studied. Therefore, further research is recommended to employ a mixed-methods approach involving surveys, in-depth interviews, and environmental context analysis to obtain a more realistic picture of the determinants of pathological vaginal discharge. Furthermore, it is also important to conduct intervention studies to test the effectiveness of holistic approaches in reducing the prevalence of vaginal discharge among adolescents. For researchers and readers, this study is expected to serve as a starting point for developing more targeted and relevant promotional and preventive strategies aligned with the current dynamics of adolescent life.

References

- Abiç, A., Yatmaz, G., Altınışik, M., & Can, A. A. (2024). Effects of planned education on genital hygiene behavior of adolescent females in a secondary school: A quasi-experimental study in northern Cyprus. *African Journal of Reproductive Health*, 28(2), 107–115. <https://doi.org/10.29063/ajrh2024/v28i2.10>



- Aguilar-Quesada, A., Sierra-Yagüe, A., González-Cano-Caballero, M., Zafra-Egea, J. A., & Lima-Serrano, M. (2025). Effectiveness of digital interventions to reduce school-age adolescent sexual risks: A systematic review. *Journal of Nursing Scholarship*, 57(2), 342–353. <https://doi.org/10.1111/jnu.13015>
- Aini, R., Kurniawati, E., & Utomo, B. (2025). The Impact of Personal Hygiene Practices on the Incidence of Vaginal Discharge Among Adolescent Girls at Junior High School 29 Surabaya, 2023. *Journal of Community Medicine and Public Health Research*, 6, 10–19. <https://doi.org/10.20473/jcmphr.v6i1.53824>
- Al Zahra, P., Akbar, M. I., & Elizabeth, B. (2025). Edukasi Kesehatan Reproduksi Dengan Menggunakan Media EMIVO. *Citra Delima Scientific Journal of Citra Internasional Institute*, 8(2), 88–92. <https://doi.org/10.33862/citradelima.v8i2.473>
- Anastasya, S. (2024). Understanding the Relationship Between Knowledge, Vaginal Hygiene Practices, and Vaginal Discharge in Adolescents. *International Journal on Health and Medical Sciences*, 2(2), 53–62. <https://doi.org/10.35335/healmed.v2i2.262>
- Aventin, Á., Gough, A., McShane, T., Gillespie, K., O'Hare, L., Young, H., Lewis, R., Warren, E., Buckley, K., & Lohan, M. (2020). Engaging parents in digital sexual and reproductive health education: evidence from the JACK trial. *Reproductive Health*, 17(1), 132. <https://doi.org/10.1186/s12978-020-00975-y>
- Baka, S., Demeridou, S., Kaparos, G., Tsoutsouras, K., Touloumakos, S., Dagre, M., Meretaki, S., Chasiakou, A., Koumaki, V., & Tsakris, A. (2022). Microbiological findings in prepubertal and pubertal girls with vulvovaginitis. *European Journal of Pediatrics*, 181(12), 4149–4155. <https://doi.org/10.1007/s00431-022-04631-4>
- Başar, F., Yavuz, B., & Sağlam, H. Y. (2021). Evaluation of the effectiveness of reproductive health education program given to adolescents. *Evaluation*, 8(4), 469–478. <https://doi.org/10.4274/jpr.galenos.2021.99266>
- Castleton, P., Meherali, S., Memon, Z., & Lassi, Z. S. (2024). Understanding the contents and gaps in sexual and reproductive health toolkits designed for adolescence and young adults: a scoping review. *Sexual Medicine Reviews*, 12(3), 387–400. <https://doi.org/10.1093/sxmrev/geae032>
- Corcoran, J. L., Davies, S. L., Knight, C. C., Lanzi, R. G., Li, P., & Ladores, S. L. (2020). Adolescents' perceptions of sexual health education programs: An integrative review. *Journal of Adolescence*, 84, 96–112. <https://doi.org/https://doi.org/10.1016/j.adolescence.2020.07.014>
- Deniz, A. O., & Acikgoz, S. (2025). Menstrual poverty and genital hygiene behaviors among adolescents: A cross-sectional study. *Journal of Pediatric Nursing*, 80, e1–e6. <https://doi.org/https://doi.org/10.1016/j.pedn.2024.10.028>
- Gweda, H. A., Ahmed, M. H., & El-agamy, M. A. E. (2021). Effect of Instructional Guidelines on Students' Self Care Practices Regarding Vaginal Discharge at Secondary Schools in Tanta City. *Tanta Scientific Nursing Journal*, 20(1), 8–46. <https://doi.org/10.21608/tsnj.2021.168848>
- Ihsanpuro, F. N. A. (2025). The relationship of personal hygiene to the incidence of vaginal discharge in adolescents: A literature review. <https://doi.org/10.30574/wjarr.2025.25.1.0026>
- Itriyeva, K. (2020). Evaluation of vulvovaginitis in the adolescent patient. *Current Problems in Pediatric and Adolescent Health Care*, 50(7), 100836. <https://doi.org/10.1016/j.cppeds.2020.100836>
- Kuruc, H. S., & Avci, N. (2024). Evaluation of Genital Hygiene Behaviors of Female Secondary School Students: in Turkiye. *Journal of Clinical Medicine of Kazakhstan*, 21(2), 80–88. <https://doi.org/10.23950/jcmk/14399>
- Mancone, S., Corrado, S., Tosti, B., Spica, G., & Diotaiuti, P. (2024). Integrating digital and interactive approaches in adolescent health literacy: a comprehensive review. *Frontiers in Public Health*, 12. <https://doi.org/10.3389/fpubh.2024.1387874>
- Nirwana, Y. T., & Widarini, N. P. (2025). Hubungan Pengetahuan Dan Sikap Tentang Kesehatan Reproduksi Dengan Perilaku Seksual Remaja Sma Di Sekolah Islam Terpadu Kota Denpasar. *Archive of Community Health*, 11 (3). <https://doi.org/10.24843/ACH.2024.v11.i03.p20>
- Nisman, W. A., Parmawati, I., Setyoharsih, T. W., Gita, R. V. F., & Annisa, R. (2020). How does health reproduction education based on gender equality influence knowledge, attitudes, and self-efficacy in adolescents? *Enfermería Clínica*, 30, 11–15. <https://doi.org/https://doi.org/10.1016/j.enfcli.2020.09.002>



- Prasasti, D. A., Afrika, E., & Aisyah, S. (2024). Faktor yang Berhubungan dengan Kejadian Keputihan pada Remaja Putri di Sekolah Menengah Pertama. *Lentera Perawat*, 5(1), 110–115. <https://doi.org/10.52235/lp.v5i1.271>
- Rahmanindar, N., Zulfiana, E., Harnawati, R. A., Hidayah, S. N., Izah, N., Chikmah, A. M., Baroroh, U., & Umriaty, U. (2022). Peningkatan Pengetahuan Kesehatan Reproduksi tentang Keputihan pada Remaja Putri. *E-Dimas: Jurnal Pengabdian Kepada Masyarakat*, 13(2), 228–232.
- Romano, M. E. (2020). Prepubertal vulvovaginitis. *Clinical Obstetrics and Gynecology*, 63(3), 479–485. <https://doi.org/10.1097/GRF.0000000000000536>
- Roth, D., Nellhaus, E., Ruley, M., Hess, A., Lamichhane, R., & Yoost, J. (2024). A virtual sex education tool improved reproductive health knowledge among adolescent girls. *Sex Education*, 24(3), 358–368. <https://doi.org/10.1080/14681811.2023.2203909>
- Salina, S., Arlina, A., & Khairat, N. U. (2025). Risk Factors for Vaginal Discharge in Adolescent Girls. *Advances in Healthcare Research*, 3(1), 31–44. <https://doi.org/10.60079/ahr.v3i1.388>
- Sisodia, A. (2025). Determining epidemiology and microbiological profile of patient with symptomatic vaginal discharge in tribal district of Ambikapur Chhattisgarh. *The New Indian Journal of OBGYN*, February, 1–6.
- Suniarti, N., Sunarsih, S., & Sari, A. (2024). The Influence Of Health Education On Feminine Hygiene With Knowledge And Attitudes Of Adolescents In Dealing With Vaginal Discharge. *JKM (Jurnal Kebidanan Malahayati)*, 10, 1002–1008. <https://doi.org/10.33024/jkm.v10i10.11538>
- Tamar, M. (2023). Edukasi Kesehatan Reproduksi Pada Remaja Putri Untuk Pencegahan Kegawatan Keputihan Patologis. *Khidmah*, 5(2), 185–194. <https://doi.org/10.52523/khidmah.v5i2.458>
- Utami, S., Mariza, A., Aryawati, W., & Ermasari, A. (2025). Pengaruh Penyuluhan dengan Media LCD terhadap Peningkatan Pengetahuan Remaja Putri tentang Keputihan di SMAN 1 Bandar Negeri Suoh (BNS). *Malahayati Nursing Journal*, 7(1), 177–186. <https://doi.org/10.33024/mnj.v7i1.11855>
- Wahjuni, E. S., Anjani, N. I. A., Fauzi, A., Nurseskasatmata, S. E., Nurvitriana, N. C., Putri, F. A., Ardyananda, S. A., & Kristilla, A. R. (2025). Upaya Peningkatan Status Kesehatan Bagi Siswa di Sekolah Indonesia Jeddah Melalui Pemeriksaan Kesehatan Gratis dan Penyuluhan Reproduksi Remaja. *JURPIKAT (Jurnal Pengabdian Kepada Masyarakat)*, 6(1), 406–419. <https://doi.org/10.37339/jurpikat.v6i1.2221>
- Xiaoming, W., Jing, L., Yuchen, P., Huili, L., Miao, Z., & Jing, S. (2021). Characteristics of the vaginal microbiomes in prepubertal girls with and without vulvovaginitis. *European Journal of Clinical Microbiology & Infectious Diseases*, 40(6), 1253–1261. <https://doi.org/10.1007/s10096-021-04152-2>
- Yadav, N., & Kumar, D. (2023). The impact of reproductive and sexual health education among school going adolescents in Andaman and Nicobar Islands. *Clinical Epidemiology and Global Health*, 24, 101416. <https://doi.org/https://doi.org/10.1016/j.cegh.2023.101416>
- Yulftria, F., Karningsih, K., Mardeyanti, M., Wahyuni, E. D., & EVK, T. (2021). Pendidikan Kesehatan Mempengaruhi Perilaku Remaja Terhadap Pencegahan Keputihan Patologis. *Muhammadiyah Journal of Midwifery*, 2(2), 47–57. <https://doi.org/10.24853/myjm.2.2.47-57>
- Yuniarti, S., Yustanta, B. F., Kowaas, I. N., Nurrachmawati, A., & Rahmawati, S. (2024). The Effect of Health Education Programs on Adolescents' Knowledge and Attitudes regarding Reproductive Health. *Journal of World Future Medicine, Health and Nursing*, 2(2), 325–338. <https://doi.org/10.70177/health.v2i2.820>

Corresponding author

Salina can be contacted at: salinainha897@gmail.com

