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The Effectiveness of Green Betel Leaf Decoction on Vaginal Discharge in Adolescent Girls at Al-Muhajirin Islamic Boarding School, Purwakarta Regency

Devita Zakirman, Rissa Irianti
Politeknik Bhakti Asih Purwakarta, Indonesia
Email: devitazakirman@polbap.ac.id

ABSTRACT
Reproductive health issues throughout a woman's life cycle are diverse and complex. One common problem faced by women always is vaginal discharge. Vaginal discharge can cause itching, unpleasant odor, pain, and discomfort. This issue must be carefully monitored if it recurs, as it can lead to infertility and cancer. The research aims to determine the effectiveness of green betel leaf decoction on vaginal discharge in adolescent girls at Al-Muhajirin Islamic Boarding School, Purwakarta Regency in 2024. The research design is a plan arranged so the researcher can obtain answers to the research questions. This study uses a quantitative approach with a pre-experimental design, employing a one-group pretest-posttest format and a paired t-test. The paired t-test is appropriate because there is a single group measured twice, before and after treatment. The average vaginal discharge score in adolescents before administering green betel leaf decoction was 16.86, which decreased to 4.00 after treatment. The Wilcoxon test was used for statistical analysis, resulting in a p-value of 0.000. There was a significant effect before and after administration of green betel leaf decoction in reducing vaginal discharge among adolescent girls at Ma Miftahul Ulum Cikupa-Purwakarta in 2024. Out of 32 respondents, 21 experienced a decrease in vaginal discharge scores.

Keywords: vaginal discharge, betel leaf decoction, adolescents, women.

Corresponding Author: Devita Zakirman
E-mail: devitazakirman@polbap.ac.id

INTRODUCTION

Reproductive health is a physical, mental, and social state, and not merely the absence of diseases or disorders related to the reproductive system, its function, and the reproductive process itself (WHO, 2020). Women's intimate organs, such as the vagina, are very sensitive to environmental conditions. Because this area is hidden and closed, the vagina requires a dry atmosphere. Humid conditions promote the proliferation of fungi and pathogens, which is one of the causes of vaginal discharge (Bakht et al., 2023; Berg et al., 2022; Finlay, 2021; Jokela-Pansini, 2022; Kane et al., 2016; Phelan et al., 2021).

Entering puberty, a woman experiences hormonal changes, including menstruation. Different menstrual cycles tend to secrete more fluid, leading to vaginal discharge. During ovulation, the fertile period when the egg is ready to be fertilized, the cervix at the upper part of the vagina produces more fluid, called vaginal discharge (Chen et al., 2022; Findlay et al., 2020; Gimunová et al., 2022; Melo et al., 2016).

Vaginal discharge is a reproductive health disorder, especially in women. It is the discharge of fluid other than blood from the vaginal pores, whether smelly or not, and often accompanied by local itching. The fluid is white, and laboratory tests may show no abnormalities. Vaginal discharge can be normally affected by certain hormones and can occur in adolescent girls. Many women who have reached puberty often experience vaginal discharge. The World Health Organization (WHO) defines adolescents as individuals transitioning from childhood to adulthood, generally from age 10 to 19 years (Hay, 2018;

Khaskheli et al., 2021; Rao & Mahmood, 2020; Richardson & Robinson, 2022; Torres-Deas et al., 2023).

The incidence of vaginal discharge affects women of childbearing age and adolescent girls. In Indonesia, the rate of vaginal discharge is higher than in some other countries. Approximately 75% of women have experienced vaginal discharge at least once in their lives, and 45% of them experience it two or more times (BKKBN, 2012). Contributing factors include lack of health knowledge, limited access to information, and poor awareness of reproductive organ hygiene (personal hygiene).

Vaginal discharge is the most common complaint among women. It can occur under normal (physiological) conditions but can also indicate a disorder requiring treatment. Vaginal discharge is a longstanding issue affecting women of all ages. Adolescents are particularly at risk, as adolescence is a transitional period marked by sexual organ maturity. If untreated, vaginal discharge can lead to serious complications such as infertility and ectopic pregnancy. Early symptoms of uterine cancer also often begin with vaginal discharge.

In society, many people ignore abnormal vaginal discharge, whether married or teenagers. Teenagers are often influenced by the use of feminine cleansing liquids without understanding their effects, and advertisements for various brands contribute to this behavior. Many Indonesian women are unaware of the implications of vaginal discharge and consider it trivial. Moreover, embarrassment often prevents women from consulting a doctor, despite the potentially fatal consequences of untreated vaginal discharge, including cervical cancer, miscarriage, and ectopic pregnancy.

Communities employ various methods to reduce vaginal discharge, including pharmacological treatments prescribed by doctors, and non-pharmacological approaches such as behavior changes, personal hygiene, psychological interventions, and the use of herbal products believed to be effective. Natural ingredients in herbal medicines are considered safer due to fewer harmful side effects than modern medicine. One plant frequently used as an alternative treatment for vaginal discharge is betel leaf. Green betel leaves are commonly used due to their availability and minimal side effects. Betel leaves contain active compounds such as polyphenols, alkaloids, steroids, saponins, and tannins. Various species of betel plants exist, including ivory, black, yellow, green, and red betel. Green betel leaves (Piper betle L.) and red betel leaves (Piper crocatum) are typically used for feminine or vaginal discharge issues.

Administration of green betel leaf decoction can reduce vaginal discharge. Betel leaves contain essential oils such as bethlenol, kavikol, sesquiterpenes, hydroxychavicol, cavibetol, estragole, eugenol, and carvacrol. Some literature states that young betel leaves also contain diastase enzymes, sugars, and tannins. Young betel leaves generally have higher levels of diastase, sugar, and essential oils compared to darker green betel leaves, while tannin levels remain relatively constant. The compound eugenol in betel leaves has been proven to kill the fungus Candida albicans, and tannins act as astringents that reduce fluid secretion from vaginal pores. The benefits of betel leaf as a treatment for vaginal discharge have been clinically tested

in various health fields (Oktriani & Wulandari, 2018; Suyenah & Dewi, 2022; Ummah, 2019; Zahid Fikri, 2015).

The research problem identified in this study is the high prevalence of vaginal discharge among adolescent girls in Islamic boarding schools, particularly at Al-Muhajirin Islamic Boarding School in Purwakarta Regency, where limited access to conventional medical treatment and cultural sensitivities around reproductive health issues create challenges for managing this condition. The urgency of this research lies in the potential complications of untreated vaginal discharge, such as increased risks of reproductive tract infections, infertility, and adverse effects on adolescents' quality of life and educational activities. Previous research by Sari (2011) demonstrated the effectiveness of betel leaf decoction in reducing vaginal discharge through external application, while Putri et al. (2015) showed the antimicrobial properties of betel leaf extract against Candida albicans in vitro. However, gaps remain regarding the oral administration of betel leaf decoction specifically among adolescent populations in boarding school settings, where cultural and practical considerations may favor oral over topical treatments. The novelty of this research lies in its focus on oral consumption of green betel leaf decoction among adolescent girls in an Islamic boarding school environment, providing a culturally appropriate and accessible treatment option. The objective of this study is to evaluate the effectiveness of green betel leaf decoction in reducing vaginal discharge symptoms among adolescent girls at Al-Muhajirin Islamic Boarding School, Purwakarta Regency. The benefits of this research include providing evidence-based alternative treatment for vaginal discharge that is culturally acceptable, easily accessible, and cost-effective for adolescent populations, particularly in resource-limited settings such as boarding schools.

METHOD

This research is quantitative with a pre-experimental design, using one group pretest posttest with a paired t test. The paired t test was used because in this study there was 1 group that was measured 2 times before and after being given treatment. The population in this study is all MA Miftahul Ulum Cikupa students. Purwakarta. The sample in this study is a MA Miftahul Ulum Cikupa student aged 15-20 years who experiences vaginal discharge. The sampling technique in this study uses purposive sampling based on a certain consideration made by the researcher himself.

RESULTS AND DISCUSSION

In this chapter, the researcher will discuss the research results obtained based on univariate and bivariate analyses that have been described in the previous chapter. The method used in this study is experimental with one group pretest posttest design research design and the population taken is adolescents who experience vaginal discharge at MA Miftahul Ulum Cikupa Purwakarta Regency in 2024. The sample size was 32 students as respondents. The

sampling technique used is purposive sampling, the materials used in this study are in the form of informed consent sheets and research instruments, namely questionnaires.

Prior to this study, it showed that before the intervention of betel leaf boiled water, most adolescents experienced vaginal discharge in the moderate category, namely as many as 28 female students or 87.5% and after the intervention, most of them were in the light category, namely as many as 23 female students or 71.875%, the results of bivariate analysis showed that there was a reduction in the level of whiteness by 12.86 after the administration of betel leaf boiling water. The results of the statistical test showed that there was an effect before and after the administration of betel leaf boiled water in reducing vaginal discharge in young women of MA Miftahul Ulum Cikupa-Purwakarta in 2024 with a p value (0.000) < α (0.05).

The confounding variable of age has no effect on vaginal discharge in MA Miftahul Ulum Cikupa Purwakarta Regency in 2024 because the value of p = 0.427. > α (0.05). For personal hygiene, the type of vaginal discharge also did not affect in this study because the p values were 0.350 > α (0.05), 0.441 > α (0.05) respectively while those who used vaginal discharge products had an effect on vaginal discharge because the p value = 0.017 < α (0.05) was used.

This research has similarities with the research that has been conducted by Nora Hesvita Sari (2011) in the Working Area of the Umban Sari Health Center, Pekanbaru, with a quasi-experimental research design with a "non-equivalent control group" design. The number of samples in the study was 30 people, namely 15 people in the experimental group and 15 people in the control group who used the Wilcoxon test, the results of a significant difference in the change in the value of vaginal discharge in the experimental group after being given betel leaf decoction by washing it on the female area three times a day for a week, the difference is that the research that the researcher has conducted at the campus of the Ministry of Health Riau does not Using a control group and giving betel leaf boiling water is by drinking. The dosage and method of processing betel leaf boiled water also have differences, characteristics and the place of respondents in the study, as well as the time of giving betel leaf boiling water which is given twice a day for a period of a week.

This research is also supported by a study that has been conducted previously by Septriana Putri, Aziz Djamal, Rahmatini and Cimi Ilmiwati (2015) in Padang, to determine the comparison of the inhibition of Povidone iodine Antiseptic Solution with betel leaf extract against Candida albicans causing vaginal discharge problems in Vitro. The study was conducted on five isolates of Candida albicans fungi with an aqueduct control solution. The results were obtained that Povidone iodine Antiseptic Solution has an inhibition against the fungus Candida albicans. Betel leaf extract with a concentration of 20% also has an inhibition against the fungus Candida albicans. Statistical analysis with the Anova test followed by the Post-hoc test showed a significant difference between the inhibition of povidone iodine solution and betel leaf extract 20% against control (p < 0.05). From this study, it can be concluded that povidone iodine solution and 20% betel leaf extract can inhibit the growth of C. Albicans fungus that causes vaginal discharge problems in vitro.

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The findings of this study demonstrate that green betel leaf decoction administered orally twice daily for one week significantly reduces vaginal discharge symptoms among adolescent girls. The reduction from an average score of 16.86 to 4.00 represents a substantial clinical improvement that aligns with the antimicrobial and anti-inflammatory properties of betel leaf compounds, particularly eugenol and tannins. The high statistical significance ($p = 0.000$) provides strong evidence for the therapeutic efficacy of this traditional remedy when applied in a controlled research setting.

CONCLUSION

The study conducted at MA Miftahul Ulum Cikupa-Purwakarta in 2024 demonstrated that green betel leaf decoction significantly reduces vaginal discharge among adolescent girls, with 65.6% of the 32 participants showing noticeable symptom improvement ($p = 0.000 < \alpha = 0.05$). The treatment's effectiveness was consistent regardless of age, personal hygiene, or type of discharge, though the concurrent use of commercial vaginal discharge products significantly influenced responses ($p = 0.017 < \alpha = 0.05$), suggesting interaction effects. Future research should involve larger randomized controlled trials to validate these findings, determine optimal dosage and treatment duration, assess side effects or contraindications, and compare oral versus topical betel leaf formulations. In clinical practice, green betel leaf decoction can be considered a safe, culturally suitable complementary treatment for adolescent vaginal discharge in boarding schools, supported by proper medical supervision and reproductive health counseling. Additionally, educational initiatives should promote awareness of hygiene and responsible use of both traditional and modern treatments among adolescents.

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