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Relationship Between Knowledge And Personal Hygiene And Stress With The Incidence Of Vaginal Discharge on Teenage Female Students In Islamic Boarding Schoolal-Mujtahiddin Of Bogor Regency

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Abstract

Vaginal discharge is a fluid from the vagina other than blood, which can be physiological or pathological. Pathological vaginal discharge is a sign of infection and carries the risk of complications such as pelvic inflammatory disease, infertility, and long-term reproductive health problems. The prevalence of vaginal discharge in Indonesia is around 75%, in adolescents aged 15–24 years, 31.8%, in West Java, 27.6%, and in Bogor Regency, reported to reach 58.4%. The purpose of this study was to analyze the relationship between knowledge, personal hygiene, and stress levels with the occurrence of vaginal discharge in female students at the Al-Mujtahiddin Islamic Boarding School in Bogor Regency. The research method was quantitative analytical with a cross-sectional design. The sample consisted of 72 female students who met the inclusion criteria. Data were collected using a questionnaire and analyzed univariately and bivariately using the Chi-Square test. The results obtained were As many as 54.2% of female students experienced physiological vaginal discharge and 45.8% pathological, good knowledge was possessed by 51.4% of female students, good personal hygiene practices were 41.7% and 55.6% had low stress levels. There was a significant relationship between knowledge and the incidence of vaginal discharge (p = 0.005; OR = 4.0), personal hygiene (p = 0.001), and stress levels (p = 0.000) with the incidence of vaginal discharge. Knowledge, personal hygiene, and stress levels were significantly related to the incidence of vaginal discharge in adolescent female students. Promotive and preventive efforts are needed through increasing reproductive health education, fostering proper personal hygiene behavior, and managing stress in female adolescent students to prevent vaginal discharge.

Keywords: Knowledge, Personal Hygiene, Stress, Vaginal Discharge, and Adolescent Girls

Introduction

Adolescence is a transitional period between childhood and adulthood, during which growth spurts occur, secondary sexual characteristics emerge, reproductive maturity is achieved, and psychological and cognitive changes occur [1]. Vaginal discharge is a discharge from the vagina other than blood that can be physiological or pathological. Pathological vaginal discharge is generally caused by bacterial, fungal, or parasitic infections and can lead to complications such as pelvic inflammatory disease, infertility, and long-term reproductive health problems if not properly managed [2].

According to data from the World Health Organization (WHO) in 2018, the percentage of vaginal discharge in the world is estimated at 75% of women, of which 45% have experienced it more than once [3] . In Indonesia, the problem of vaginal discharge is also still high according to data from the Indonesian Ministry of Health in 2023, it was also reported that around 75% of Indonesian women have experienced vaginal discharge at least once in their lives and 38.2% of them are women of childbearing age [4]. Based on the Indonesian Adolescent Reproductive Health Survey (SKRRI), it was noted that 31.8% of women aged 15–24 years had experienced vaginal discharge, then the percentage in West Java reached around 27.6% [5]. Research in Bogor Regency showed a higher incidence rate, namely 58.4% [6]. These data indicate that vaginal discharge is still a significant reproductive health problem in adolescents.

A preliminary study using the interview method was conducted on October 11, 2025 at the Al-Mujtahiddin Islamic boarding school in Bogor Regency on 10 teenage female students. The results of the interview showed that 9 out of 10 female students experienced vaginal discharge, and 8 of them experienced vaginal discharge with itching and odor in their feminine area, 8 out of 10 female students did not know how to properly care for their feminine area, the technique and direction of hand movements when cleaning the genitals, not washing hands before touching the vagina, and wearing tight underwear, 6 out of 10 female students admitted that they rarely changed their underwear, and did not always dry their feminine area after urinating which could cause the feminine area to become damp, 8 out of 10 female students admitted that they often experienced fatigue and stress due to limited time, dense learning activities, poor sleep quality, lazy to exercise, limited privacy, as many as 3 out of 10 female students did not have high social adaptation resulting in stress in adjusting to the dormitory environment.

Based on the preliminary interviews, it appears that most female students lack good personal hygiene habits and do not yet understand that psychological pressures, such as stress, can be a contributing factor to vaginal discharge. Based on this explanation, further

research is needed to analyze the relationship between knowledge, personal hygiene, and stress and the incidence of vaginal discharge among adolescent female students at the Al-Mujtahiddin Islamic Boarding School in Bogor Regency.

Method

Method should be structured as follows:

1. *Research design*

This research is a quantitative analytical study using a cross-sectional approach. This method is used to analyze the relationship between independent and dependent variables. A cross-sectional approach is a research design that observes and measures research variables simultaneously at a specific point in time across a predetermined sample.

The population in this study was all female students registered as active students in the 2025 academic year at the Al-Mujtahiddin Islamic Boarding School in Bogor Regency. After screening according to inclusion criteria, including students within a certain age range, currently residing at the Islamic boarding school during the study period, and willing to be respondents, 72 female students met the requirements. The sample was taken using the total sampling method, namely those who had met the inclusion and exclusion criteria of the study were made respondents.

2. *Measurement and data collection*

Instruments used namely questionnaire variables incident vaginal discharge , personal hygiene knowledge , personal hygiene practices , and level of stress in female students teenagers . All variables measured based on scale ordinal measurement , with system scoring that has been determined in accordance with The characteristics of each instrument . Measurement of vaginal discharge incidence was carried out using a questionnaire consisting of 10 questions with a Guttman scale (dichotomy). Each "Yes" answer was given a score of 1 and a "No" answer was given a score of 0. The total score was then classified into physiological vaginal discharge (score 0–5) and pathological vaginal discharge (score 6–10).

Personal hygiene knowledge was measured using a 12-question questionnaire with a Guttman scale . Correct answers were scored 1 and incorrect answers 0. The results were categorized as poor knowledge (scores 0–9) and good knowledge (scores 10–12).

Personal hygiene practices were measured using a 20-item questionnaire with a four-point Likert scale : never (score 1), sometimes (score 2), often (score 3), and always (score 4). Scores were adjusted based on the direction of positive and negative statements. The total score was classified into poor (scores 20–48), adequate (scores 49–60), and good (scores 61–80).

Measurement of stress levels was carried out using the Perceived Stress Scale instrument. Stress The PSS-10 consists of 10 questions with a five-point Likert scale . Four positive items are reverse-scored before calculating the total score. The total score ranges from 0–40 and is classified as low stress (scores 0–13), moderate stress (scores 14–26), and high stress (scores 15–26). high (score 27–40).

3. *Trustworthiness/rigor (applies to qualitative studies)*

Instruments used in study This is adapted questionnaire from study previous and instruments standard . Therefore that , validity and reliability test No done back to research this . Instrument incident vaginal discharge and personal hygiene adapted from Pratika (2021), instrument personal hygiene knowledge from Meilandha (2025), as well as instrument level stress using the Perceived Stress Scale (PSS) developed by Cohen et al. (1983) and has adapted to in Indonesian (Hakim, 2024). With Thus , all instrument assessed has own adequate validity and reliability so that worthy used as tool data collection on respondents study .

Data analysis in This research was conducted in stages using the Statistical Package for the Social Sciences (SPSS). Univariate analysis was conducted to describe the frequency distribution of each research variable, including the incidence of vaginal discharge, personal hygiene knowledge, personal hygiene, and stress levels and this analysis produced a distribution in the form of frequencies and percentages in each variable. and bivariate analysis was conducted using the Chi-Square test to assess whether there was a statistically significant relationship between two variables, with a significance level (α) of 0.05. If the p-value <0.05 then Ha is accepted and H0 is rejected, which means there is a significant relationship between the variables studied.

Results

Table 4.5
The Relationship between Personal Hygiene Knowledge and the Incidence of Vaginal Discharge in Female Adolescent Students at the Al-Mujtahiddin Islamic Boarding School Bogor Regency

Knowledge	Vaginal Discharge Incident						OR	P-value
	Physiological		Pathological		Total			
	N	%	*N*	%	*N*	%		
Good	26	70.3%	11	29.7%	37	100%	4.00	0.005
Not good	13	37.1%	22	62.9%	35	100%		
Total	39	100%	33	100%	72	100%		

Information. N= 72. The questionnaire consists of 12 questions. The scoring system uses the Guttman scale (dichotomy), resulting in score interpretation with a value of 10-12 = good knowledge, and a value of 0-9 = poor knowledge.

Based on Table 4.5, it can be seen that respondents who had good personal hygiene

knowledge and experienced physiological vaginal discharge were 26 female adolescent students (70.3%), while respondents with poor personal hygiene knowledge who experienced physiological vaginal discharge were 13 female adolescent students (37.1%). Meanwhile, respondents with good personal hygiene knowledge who experienced pathological vaginal discharge were 11 female adolescent students (29.7%), and respondents with poor personal hygiene knowledge who experienced pathological vaginal discharge were 22 female adolescent students (62.9%). The results of the Chi-Square test showed a significant relationship between personal hygiene knowledge and the incidence of vaginal discharge (P = 0.005). Respondents with poor personal hygiene knowledge had a 4 times greater chance of experiencing pathological vaginal discharge compared to respondents with good personal hygiene knowledge (OR = 4.00).

Table 4.6
The Relationship between Personal Hygiene and the Occurrence of Vaginal Discharge in Female Adolescent Students at the Al-Mujtahiddin Islamic Boarding School, Bogor Regency

Personal Hygiene	Vaginal Discharge Incident						OR	*P-value*
	Physiological		Pathological		Total			
	N	%	*N*	%	*N*	%		
Good	23	76.7%	7	20.3%	30	100%	-	0.001
Enough	11	50.0%	11	50%	22	100%		
Not good	5	25.0%	15	75%	20	100%		
Total	39	100%	33	100%	72	100%		

Description. N= 72 The questionnaire consists of 20 questions using a Likert scale. The results of the score interpretation are 0 = Score 0-48: less, 1 = Score 49-60: sufficient, 2 = Score 60-80: good.

Based on 4.6, it can be seen that respondents with good personal hygiene mostly experienced physiological vaginal discharge, namely 23 female students (76.7%), while those who experienced pathological vaginal discharge were 7 female students (20.3%). In respondents with sufficient personal hygiene, the proportion of physiological and pathological vaginal discharge was the same, each amounting to 11 female students (50.0%). Meanwhile, in respondents with inadequate personal hygiene, most experienced pathological vaginal discharge, namely 15 female students (75.0%), and those who experienced physiological vaginal discharge were 5 female students (25.0%). The results of the Chi-Square test showed that there was a significant relationship between personal hygiene and the incidence of vaginal discharge (P = 0.001).

Table 4.7
The Relationship Between Stress Levels and the Incidence of Vaginal Discharge in Female Adolescent Students at the Al-Mujtahiddin Islamic Boarding School, Bogor Regency

Stress Level	Vaginal Discharge Incident						OR	*P-value*
	Physiological		Pathological		Total			
	N	%	*N*	%	*N*	%		
Low	39	97.5%	1	2.5%	40	100%	-	0,000
Currently	0	0%	21	100%	21	100%		
Tall	0	0%	11	100%	11	100%		
Total	39	100%	33	100%	72	100%		

Description. Stress levels were measured using the Perceived Stress Scale (PSS) questionnaire consisting of 10 questions. The answer scale used a 5-point Likert scale. The total score ranged from 0–40. Score interpretation: 0-13 = low, 14-26 = moderate, 27-40 = high.

Based on table 4.7, it can be seen that respondents with low stress levels mostly experienced physiological vaginal discharge, namely 39 female students (97.5%), while those who experienced pathological vaginal discharge were 1 female student (2.5%). In respondents with moderate stress levels, all respondents experienced pathological vaginal discharge, namely 21 female students (100%). Meanwhile, in respondents with high stress levels, all respondents also experienced pathological vaginal discharge, namely 11 female students (100%). The results of the Chi-Square test showed that there was a significant relationship between stress levels and the incidence of vaginal discharge. vaginal discharge (P= 0.000).

Discussion

The results of the Chi-Square test showed a significant relationship between the level of personal hygiene knowledge and the occurrence of vaginal discharge. Knowledge is a major factor because low levels of knowledge cause individuals to not understand the importance of personal hygiene, increasing the risk of various health problems, including reproductive health disorders such as pathological vaginal discharge [7]. Study previously showed that knowledge and personal hygiene behavior had a significant relationship with the incidence of vaginal discharge in female adolescents at SMAN 1 Dadahup in 2025 [8] and at SMA Negeri 03 Kota Bengkulu in 2025 [9]. This situation explains the high risk of pathological vaginal discharge in female students with low levels of personal hygiene knowledge, as shown by the results of statistical analysis. Therefore, increasing personal hygiene knowledge is an important and strategic effort in preventing vaginal discharge in female adolescents.

The analysis also showed a significant relationship between personal hygiene and vaginal

discharge. Personal genital hygiene practices are an important factor in maintaining the balance of normal vaginal flora and preventing infection, thereby reducing the risk of pathological vaginal discharge [10]. Other researchers found that adolescent girls with consistently poor personal genital hygiene practices had a higher risk of experiencing pathological vaginal discharge [11]. This condition is exacerbated by limited sanitation facilities that do not optimally support vulvar hygiene practices.

Furthermore, the results of the Chi-Square test showed a highly significant relationship between stress levels and the occurrence of vaginal discharge. Stress triggers activation of the Hypothalamic– Pituitary–Adrenal (HPA) axis , which increases cortisol secretion, thus affecting the balance of vaginal microbiota and immune responses, leading to dysbiosis and vaginal discharge [12]. Other studies also show that higher stress levels increase the risk of pathological vaginal discharge [13]. Thus, stress levels, knowledge, and personal hygiene are interacting factors that play an important role in the occurrence of vaginal discharge in adolescent girls.

Limitation

The limitation of this study is that not all female students met the inclusion criteria because most of them had not yet reached menarche, so the number of samples analyzed was limited, which could potentially affect the representativeness of the research results.

Conclusion

There was a significant relationship between knowledge, personal hygiene, and stress and the occurrence of vaginal discharge. Female students with poor knowledge had a fourfold greater risk of experiencing pathological vaginal discharge.

Ethical Considerations

The research has been reviewed and approved by an ethics committee of non-medical health research at National University. The number of ethical approval No: 0.30/e-KEPK/FIKES/1/2026.

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Conflict of Interest

The authors declare no conflict of interest

Author contribution

The research concept and design were formulated jointly by RS, DK, and RK. RS collected and analyzed the data and drafted the manuscript. DK and RK contributed to data interpretation and critical revision of the manuscript.

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