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Predisposing Factors of Leukorrhea and Its Impact on Students in the Health Vocational Studies Program at Bengkulu University

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ABSTRACT

Leukorrhea, a common health concern among women, has been the subject of this research, which sought to identify the underlying predisposing factors contributing to its occurrence. A sample of 90 students from the Health Vocational Study Program at Bengkulu University was purposively selected through an observational approach. The research examined several independent variables, including Knowledge, Personal Hygiene, and Stress, while focusing on leukorrhea as the dependent variable. Employing the Chi-Square test and regression analysis, the findings revealed a lack of significant association between knowledge and leukorrhea. In contrast, a substantial relationship was established between personal hygiene behavior and stress about leukorrhea. Multivariate analysis indicated that individual hygiene behavior emerged as the most influential factor affecting leukorrhea. This study highlights the significant impact of personal hygiene behavior and stress on the occurrence of leukorrhea among students at Bengkulu University. Furthermore, it underscores the critical role of private hygiene practices in managing and preventing leukorrhea.

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Introduction

Adolescence is the transition period from puberty to adulthood between the ages of 11 and 20. During this period, feelings of individual identity begin to form, achieving emancipation in the family and making efforts to gain parents' trust. During this time, individuals mature physiologically and psychologically. Adolescence is divided into 3: early, middle, and late adolescence [1].

Reproductive problems often occur among teenagers, one of which is leukorrhea. Leukorrhea is a discharge from a woman's genitalia that is not blood. According to the World Health Organization (WHO), in 2018, the problem of poor female reproductive health has reached 33% of the total burden of diseases affecting women throughout the world, one of which is leukorrhea and the number of women in the world who have experienced leukorrhea is 75%. Leukorrhea can attack women from a young age, old age, healthy reproductive age and regardless of educational, economic, and socio-cultural levels [2].

Leukorrhea is divided into two, namely physiological and pathological leukorrhea. Physiological leukorrhea does not produce many complaints or normal leukorrhea, such as clear fluid, no smell, no itching, and no feeling of pain when urinating. In contrast, pathological leukorrhea is leukorrhea that contains complaints and is a sign of infection in the vagina. This pathological leukorrhea is accompanied by itching, skin rashes, pain, increasing amounts of fluid coming out, and feeling hot when urinating, white, grayish-white, or yellow with an unpleasant odor and clotted [3].

Indonesia has a tropical climate, so fungi quickly grow and develop and cause leukorrhea. Leukorrhea is often associated with acidity levels in the area around the vagina. Leukorrhea may occur due to unbalanced vaginal Potential Hydrogen (pH), causing microorganisms to proliferate. Indonesia's hot and humid tropical climate is one of the external factors that causes leukorrhea [2]. Physiological leukorrhea is caused by two factors, namely external factors and internal factors. External factors that cause leukorrhea consist of temperature, entry of foreign objects into the vagina, use of pantyliners, feminine hygiene, and personal hygiene. Internal factors that cause leukorrhea are related to hormonal influences, stress, and vaginal pH. The leading cause of pathological leukorrhea is infection (fungi, germs, parasites, and viruses), while the reason for leukorrhea is infection with Neisseria gonorrhea, Gardnerella vaginalis, Candida albicans, and Trichomonas vaginalis [3].

Leukorrhea often occurs due to a lack of self-awareness in maintaining health, especially the health of the genital organs. This lack of personal hygiene behavior is related to external factors causing physiological and pathological leukorrhea [2]. Personal hygiene is self-care to maintain physical and psychological health [4].

The research results of Ref. [5] stated that there is a significant relationship between personal hygiene (ρ-value 0.034 < 0.05) and the incidence of leukorrhea [5]. One of the hormonal influences on leukorrhea is related to stress levels. Stress expresses the human body's reaction to every demand experienced. This condition results in feelings of anxiety, anger, and frustration [6]. Some women will feel embarrassed, blame themselves, and be stressed because leukorrhea causes discomfort in their feminine area [3].

The results of Ref. [7] stated that there is a significant relationship between stress (ρ-value 0.04 < 0.05) and the incidence of leukorrhea [7]. Leukorrhea can also occur due to other factors, namely knowledge. Knowledge is everything obtained from the contact of the five senses with particular objects. Knowledge results from seeing, hearing, feeling, and thinking, the basis for human behavior and action [8].

The research results of Ref. [9] stated that there is no significant relationship between knowledge (ρ-value 0.594 > 0.05) and the incidence of leukorrhea [9]. Good knowledge will influence the prevention of leukorrhea. The solution to preventing leukorrhea is that teenagers must know and understand leukorrhea and how to maintain the cleanliness of reproductive organs and excessive humidity to avoid the recurrence of leukorrhea. For pathological leukorrhea, adequate therapy needs to be given to prevent complications. If it is not treated adequately, complications arise, namely the spread of infection to other areas of the reproductive organs, infertility, pelvic inflammatory disease (PID), and depression [3]. Awareness about leukorrhea prevention significantly increases knowledge, attitudes, and actions [10]. For teenagers to take better care of their reproductive health, especially genital hygiene [11].

Based on the results of an initial survey in Bengkulu University conducted by researchers on Health Vocational students, there were 298 students in the Midwifery study program, 277 students in Nursing, and 271 in Pharmacy. The results of the 30 student respondents interviewed were that they experienced complaints of leukorrhea in the form of itching, slimy, smelly, sticky, and lumpy. All female students who were interviewed hoped to discover other factors that cause leukorrhea. The factors that cause leukorrhea in general need to be explored further, especially in terms of knowledge, personal hygiene, and the level of stress that occurs in female students so that students can know more deeply about the predisposing factors that influence leukorrhea and can prevent and overcome these problems.

Materials and Methods

The method used in this research is observational. This research was conducted at Bengkulu University. The population in this study were all female students from the Health Vocational Study Program, Bengkulu University, in 2022, totaling 846 students, namely 298

students from Midwifery, 277 from Nursing students, and 271 from Pharmacy students. The research sample was selected using a purposive sampling technique. The independent variables are Knowledge, Personal Hygiene, and Stress, and the dependent variable is leukorrhea—data analysis using the Chi-Square and logistic regression tests.

Results and Discussion

The data obtained shows that some students were experiencing pathological leukorrhea. Personal hygiene is the factor that has the most influence on the incidence of leukorrhea. Table 1 shows the female student characteristics based on the leukorrhea issue.

Table 1. Female students characteristics

Factors	Frequency	Percentage
Leukorrhea Type		
• Physiological	78	86.7 %
• Pathological	12	13.3 %
Knowledge		
• Good	48	53.3 %
• Enough	39	43.3 %
• Bad	3	3.3 %
Personal Hygiene Behavior		
• Positive	50	55.6 %
• Negative	40	44.4 %
Stress		
• Normal	46	51.1 %
• Mild Stress	26	28.9 %
• Moderate Stress	16	17.8 %
• Severe Stress	2	2.2 %
Total	**90**	**100%**

Table 2. The relationship between knowledge and leukorrhea among female students

Knowledge	Leukorrhea				Total		P-value
	Physiological		Pathological				
	F	%	F	%	F	%	
• Good	43	86.9	5	10.4	48	53.33	
• Enough	33	84.6	6	15.4	39	43.33	0.464
• Bad	2	66.7	1	33.3	3	3.33	
Total	78	86.7	12	13.3	90	100.0	

The results of the bivariate analysis (Table 2) showed that of the 48 well-informed respondents, 43 respondents (86.9%) experienced physiological leukorrhea, while five people (10.4%) experienced pathological leukorrhea. Of the 39 respondents who had sufficient knowledge, 33 people (84.6%) experienced physiological leukorrhea, while six people (15.4%) experienced pathological leukorrhea. Of the three respondents who had poor knowledge, two people (66.7%) experienced physiological leukorrhea, and one person (33.3%) experienced pathological leukorrhea. The results of the bivariate test using Chi-Square obtained a p-value

of 0.464>0.05, meaning there was no significant relationship between knowledge and leukorrhea in students.

Knowledge is everything obtained from the contact of the five senses with particular objects. Knowledge results from seeing, hearing, feeling, and thinking, the basis for human behavior and action [8]. Knowledge about personal hygiene is essential because good knowledge can improve and motivate individuals to carry out correct personal hygiene actions. Internal difficulties that affect a person are lack of knowledge. A person plays an essential role in determining their health because self-care is the most dominant aspect of health [4]. See Table 3 for this issue.

Table 3. The relationship between personal hygiene behavior and leukorrhea

Personal hygiene behavior	Leukorrhea				Total		P-value
	Physiological		Pathological				
	F	%	F	%	F	%	
• Positive	47	60.3	3	25.0	50	55.6	0.022
• Negative	31	39.7	9	75.0	40	44.4	
Total	78	86.7	12	13.3	90	100.0	

The results of this study are in line with Ref. [9] that as many as 170 (98.8%) respondents had good knowledge of experiencing leukorrhea, as many as 2 (1.2%) respondents had good knowledge of not experiencing leukorrhea, as many as 31 (93.9%) respondents had less knowledge of experiencing leukorrhea and as many as 2 (6.1%) respondents had less knowledge of not experiencing leukorrhea. The results of the analysis showed that there was no significant relationship between knowledge (p-value 0.122 > 0.05) and the incidence of leukorrhea [9]. Another researcher also reinforced the results of this research. [12] who stated that respondents who had leukorrhea and fairly good knowledge were 57 (83.8%) respondents, who had leukorrhea but not good knowledge were 11 (14.5%) respondents, while those who did not have leukorrhea and knowledge was quite good, namely 8 (10.5%) respondents. The analysis showed no significant relationship between knowledge (ρ-value 0.594) and the incidence of leukorrhea [12].

The bivariate analysis results related to personal hygiene behavior (Table 3) showed that of the 50 respondents who had positive personal hygiene, 47 people (60.3%) experienced physiological leukorrhea. In contrast, three people (25.0%) experienced pathological leukorrhea. Of the 40 respondents who had negative personal hygiene, 31 people (39.7%) experienced physiological leukorrhea, and nine people (75.0%) experienced pathological leukorrhea. The results of the bivariate test using Chi-Square obtained a p-value of 0.022 <0.05, meaning a significant relationship exists between personal hygiene behavior and leukorrhea.

Personal hygiene is self-care to maintain physical and psychological health [4]. Leukorrhea often occurs due to a lack of self-awareness in maintaining health, especially the health of the genital organs. This lack of personal hygiene behavior is related to external factors causing physiological and pathological leukorrhea [2]. The results of this research align with Ref. [2], which states that of the 45 respondents with poor personal hygiene who experienced leukorrhea, 38 (84.4%) respondents did not experience leukorrhea. In comparison, six respondents with personal hygiene did not participate in leukorrhea. For good hygiene, only 1 (16.7%) respondent experienced leukorrhea, and 5 (83.3%) respondents did not share leukorrhea. The analysis showed a significant relationship between personal hygiene (p-value 0.001) and the incidence of leukorrhea [5].

The results of this study are also in line with Ref. [13], which stated that those who experienced leukorrhea with good personal hygiene were 15 (31.9%) respondents, and those who experienced leukorrhea with moderate personal hygiene were 24 (51.1%) respondents and those who did not experience leukorrhea with moderate personal hygiene was 8 (17.0%) respondents. The results of the analysis showed that there was a significant relationship between personal hygiene (p-value 0.034 <0.05) and the incidence of leukorrhea [13]. This was confirmed by Ref. [14], who stated that the incidence of leukorrhea with poor personal hygiene was 34 (58.6%) respondents, while those who experienced leukorrhea with good personal hygiene were 24 (41.4%) respondents. The results of the analysis showed that there was a significant relationship between personal hygiene (p-value 0.03 <0.05) and the incidence of leukorrhea [14].

The results of the bivariate analysis related to the stress (Table 4) showed that of the 46 respondents who had normal conditions, 45 people (97.8%) experienced physiological leukorrhea, while one person (2.2%) had pathological leukorrhea.

Table 4. The relationship between stress and leukorrhea

Stress	Leukorrhea				Total		P-value
	Physiological		Pathological				
	F	%	F	%	F	%	
• Normal	45	97.8	1	2,2	46	51.11	0.003
• Mild stress	21	80.8	5	19.2	26	28.89	
• Moderate Stress	10	62.5	6	37.5	16	17.78	
• Severe Stress	2	100.0	0	0	2	2.22	
Total	78	86.7	12	13.3	90	100.0	

Of the 26 respondents who were mildly stressed, 21 people (80.8%) experienced physiological leukorrhea, while five people (19.2%) experienced pathological leukorrhea. Then, of the 16 respondents who were moderately stressed, 10 people (62.5%) experienced physiological leukorrhea, and six people (37.5%) experienced pathological leukorrhea. Then,

of the two respondents who were severely stressed, two people (100.0%) experienced physiological leukorrhea, and 0 people (0.0%) experienced pathological leukorrhea. The results of the bivariate test using Chi-Square obtained a ρ-value of 0.003 < 0.05, meaning there is a significant relationship between the conditions encountered and leukorrhea in students.

Stress expresses the human body's reaction to every demand experienced. This condition results in feelings of anxiety, anger, and frustration. Stress is caused by fatigue, exhaustion due to life, unfavorable conditions, mobilization of the body's defenses against violent or threatening events, disruption of internal balance mechanisms, heavy burdens and needs that cannot be met within a person [6]. The results of this study are in line with Ref. [5], stating that 10 (55.6%) respondents experienced low stress who had leukorrhea and 8 (44.4%) respondents who did not have leukorrhea, 7 (50%) respondents who were moderately stressed had leukorrhea and 7 (50%) had no leukorrhea, and 28 (62.2%) of the severely stressed respondents had leukorrhea and 17 (37.8%) had no leukorrhea out of a total of 77 respondents. The results of the analysis showed that there was a significant relationship between stress (ρ-value 0.022 < 0.05) and the incidence of leukorrhea [7].

The results of this study are also in line with Ref. [15], stating that as many as 3 (40.0%) respondents experienced mild stress with physiological leukorrhea, as many as 1 (25.0%) respondents experienced mild stress with pathological leukorrhea, as many as 21 (51.2%) respondents experienced mild stress with pathological leukorrhea. %) respondents experienced moderate pressure with physiological leukorrhea, 20 (48.8%) respondents experienced moderate stress with pathological leukorrhea, 2 (16.7%) respondents experienced severe stress with physiological leukorrhea, then 10 (83.3%) respondents experienced extreme stress with pathological leukorrhea. The results of the analysis showed that there was a significant relationship between stress (p-value 0.04 <0.05) and the incidence of leukorrhea [15]. Other findings stated that out of 60 respondents, 31 (68.9%) respondents experienced mild levels of stress without leukorrhea, 14 (31.1%) respondents experienced mild levels of pressure with physiological leukorrhea, as many as 3 (100 %) respondents experienced moderate stress with physiological leukorrhea. The results of the analysis showed that there was a significant relationship between stress (ρ-value 0.006 < 0.05) and the incidence of leukorrhea [16].

The results of the multivariate analysis (Table 5) showed that the significant value obtained for knowledge was 0.048, for personal hygiene behavior, it was 0.019, and for the stress variable, it was 0.004.

Table 5. Variables that have the most influence on the incidence of leukorrhea

Variable	B	S.E	Wald	Sig.	Exp(B)
Personal Hygiene Behavior	2 . 207	. 940	5 . 518	. 019	9 . 088
Stress	1 . 254	. 433	8,383	. 004	3 . 504

The variables knowledge, individual hygiene behavior, and stress have significant values less than 0.05; then accept H_0. Therefore, it can be concluded that these three variables significantly influence leukorrhea: knowledge with an influence coefficient of 1.306, personal hygiene behavior with an influence coefficient of 2.207, and stress with an influence coefficient of 1.254. So, it was found that the individual hygiene behavior variable was the variable that had the most influence on the incidence of leukorrhea; namely, the standard logistic regression coefficient was 2.207 with sig. 0.019. The results of this study are in line with Ref. [17], which stated that the personal hygiene behavior variable (ρ-value 0.018) is the most dominant variable associated with the prevalence of leucorrhea (PR = 3.305, 95% CI- 1.232 – 8.868)[17].

Conclusion

The research results showed that students showed that of the 90 respondents who experienced normal leukorrhea, 78 (86.7%) respondents had normal leukorrhea, while 12 (13.3%) respondents experienced abnormal leukorrhea. Students with knowledge showed that out of 90 respondents, 48 respondents (53.3%) had good knowledge. A total of 39 respondents (43.3%) had sufficient knowledge. Meanwhile, three respondents (3.3%) needed a better understanding. Students with personal hygiene showed that out of 90 respondents, 50 (55.6%) had positive individual hygiene behavior. Meanwhile, 40 (44.4%) had negative personal hygiene behavior. Students with stress levels showed that out of 90 respondents, 46 (51.1%) had everyday stress. A total of 26 (28.9%) had mild stress. A total of 16 respondents (17.8%) had moderate pressure, and two respondents (2.2%) had severe anxiety. The bivariate analysis of the three variables showed no significant relationship between knowledge and leukorrhea in students (ρ-value 0.464). A significant relationship exists between personal hygiene behavior and leukorrhea with a ρ-value of 0.022 < 0.05. There is an essential relationship between stress and leukorrhea with a ρ-value of 0.003 < 0.05. The results of multivariate analysis, the variable with the most critical influence on leukorrhea is the personal hygiene behavior variable (ρ-value = 0.019) and an influence coefficient of 2.207. The results of this research can provide information and input as well as education for female students to better understand the importance of awareness of maintaining health and cleanliness, especially in the genital organs, as well as the level of stress experienced and predisposing factors that influence leukorrhea in female students, resulting in the incidence of leukorrhea. Among teenagers, it may decrease.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

[1] A. M. A. B, Ilmu kandungan. Jakarta: PT Bina Pustaka Sarwono Prawirohardjo, 2018.
[2] P. Y. E. Widyasih H, Hernayanti M.R, Modul Praktik Asuhan Kebidanan Holistik Pada Remaja dan Pranikah, vol. 53, no. 9. 2018.
[3] H. Edi, "Infeksi Pada Remaja." p. 87, 2022.
[4] A. P. Anggita I, Buku ajar keterampilan dasar praktik kebidanan. yogyakarta: deepublish, 2020.
[5] I. P. L. . Sari D. M, Riski M, "Hubungan Penggunaan Panty Liner, Cairan Pembersih Vagina Dan Personal Hygiene Dengan Keputihan (Flour Albus)," J. 'Aisyiyah Med., vol. 7, no. 2, 2022, doi: 10.36729/jam.v7i2.868.
[6] P. D. E. . Gintings, Mengantisipasi stres dan penanggulangannya. yogyakarta: ANDI, 2021.
[7] S. A. Fitrie F, "Hubungan Tingkat Stres dan Vulva Hygiene dengan Keputihan pada Remaja Putri," Indones. J. Midwifery Sci., vol. 1, no. 1, pp. 20–28, 2021, doi: 10.53801/ijms.v1i1.4.
[8] S. Notoatmodjo, Metodologi penelitian kesehatan. jakarta: PT. Rineka cipta, 2018.
[9] F. I. Salina S, "Hubungan pengetahuan dan perilaku putri tentang kebersihan genetalia terhadap kejadian flour albus," Kesehat. Masy., vol. 6, no. 3, pp. 1574–1581, 2022.
[10] Iswatun et al., "The effect of health education on knowledge, attitudes, and actions," J. Int. Dent. Med. Res., vol. 14, no. 3, pp. 1240–1245, 2021.
[11] A. I. Bansu and N. Lante, "Psychosocial Stress with Leukorrhea of Adolescent Women in the New Normal Era," Sci. Midwifery, vol. 10, no. 2, pp. 959–963, 2022, [Online]. Available: www.midwifery.iocspublisher.org
[12] & M. N. U. Alwi M. K, "Faktor yang Berhubungan dengan Gangguan Keputihan pada Siswi di MA Muhammadiyah Sibatua Pangkajene," Wind. Public Heal. J., vol. 2, no. 4, pp. 1338–1347, 2021.
[13] O. W. Ayuningtyas B. Y. O, "Hubungan personal hygiene dengan kejadian keputihan pada remaja putri Di SMK YPE cilacap," J. Bina Cipta Husada, vol. 17, no. 2, pp. 97–106, 2021.
[14] M. S. Acyeanir, N, Darwis D, "Hubungan personal hygiene dengan kejadian keputihan pada remaja putri kelas XI," J. Ilm. Mhs. Penelit. Keperawatan, vol. 1, no. 3, pp. 387–392, 2021, doi: 10.35872/jurkeb.v12i01.361.
[15] W. Atusnah, "Stres Berhubungan dengan Kejadian Keputihan pada Mahasiswi Keperawatan Semester 2," J. Keperawatan Silampari, vol. 5, no. 1, pp. 272–281, 2021, doi: 10.31539/jks.v5i1.2933.
[16] T. Y. Y. Judha M, "Hubungan Tingkat Stres Terhadap Kondisi Sosial Dengan Kejadian Keputihan Fisiologis," Med. Respati J. Ilm. Kesehat., vol. 14, no. 2, p. 127, 2019, doi: 10.35842/mr.v14i2.228.
[17] & Hashim H. Krisdayanti N, "Knowledge, Attitude, and Personal Hygiene Behaviors with Pathological Leukorrhea in Adolescent Girls at SMK 'Aisyiyah Palembang," J. Ilmu Kesehat. Masy., vol. 12, no. 2, pp. 181–191, 2021, doi: 10.26553/jikm.2021.12.2.92-103.

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