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Research Article

Relationship Between Knowledge And Genital Hygiene With The Incidence Of Fluor Albus

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ABSTRACT

Fluor Albus (leucorrhea) is an abnormal vaginal secretion in women. Almost all women have experienced leucorrhea. In normal conditions, this is actually normal. This becomes a problem and is called "leucorrhea" if the condition is too much, itchy, smelly, and painful. Factors that influence leucorrhea include personal hygiene, stress levels and physical activity in adolescents. This study aims to determine the relationship between knowledge and genital hygiene with the incidence of fluor albus in class X female students of SMK Muhammadiyah 1 Sumedang. The type of research used is quantitative research which is descriptive analytical with a cross-sectional approach. The population in this study were 52 class X female students, with a sample size of 39 female students using the total sampling technique. The analysis used was univariate and bivariate analysis using the Chi-Square test. The results of the study showed that there was a relationship between knowledge and the occurrence of fluor albus with a ρ-value of 0.004, and there was a relationship between genital hygiene and the occurrence of fluor albus with a ρ-value of 0.003. Female students who have a good level of knowledge about genital hygiene behaviour are less likely to suffer from fluor albus. It is hoped that female students will gain a lot of knowledge from research on fluor albus, namely how to carry out genital hygiene care.

INTRODUCTION

Adolescence is a period of rapid growth and development both physically, psychologically and intellectually. (Dini Afriani, 2024)The typical characteristics of adolescents are having a great sense of curiosity, liking adventure and challenges and tending to dare to take risks for their actions without prior consideration (Hapsari et al., 2019)

Adolescent problems are often a time when adolescents engage in sexual behaviour. Sexual behaviour can be defined as a form of behaviour that is driven by sexual desire either with the opposite sex or the same sex. This form of behaviour varies from feelings of attraction to dating, making out and having sex (Hapsari et al., 2019)

Reproductive health knowledge if given from adolescence (the age identical to puberty) then adolescents will grow and develop into a healthy and useful generation. Adolescents often find it difficult to find the right information about reproductive health, resulting in various perceptions that are not necessarily true. In addition, it helps adolescents in maintaining reproductive health and preventing problems due to negligence in maintaining reproductive health (Rani et al., 2022)

According to the World Health Organization (WHO), it is estimated that 1 in 20 adolescents worldwide experiences vaginal discharge (leucorrhoea) annually. Poor women's reproductive health accounts for approximately 33% of the total disease burden affecting women globally. This figure is significantly higher than the reproductive health issues experienced by men, which only account for 3.1% in the same age group.

In Indonesia, approximately 75% of women have experienced vaginal discharge at least once in their lifetime, and 45% of them have experienced it two or more times. Inappropriate care of the external genitalia may trigger the occurrence of vaginal discharge, particularly pathological discharge. (Kemenkes RI, 2024). According to the latest survey by the Indonesian Ministry of Health (2024), approximately **60**% of adolescent girls in Indonesia have experienced vaginal discharge at least once**.** Globally, the World Health Organization (WHO) reports that 75% of women have experienced vaginal discharge in their lifetime**, with** 45% experiencing it more than once**;** this data also applies to adolescent groups. In Indonesia, the prevalence among adolescents aged 15–24 years ranges from 48.5% to 81% over the past five years**.** (Kemenkes RI, 2024).

The causes of vaginal discharge in adolescents are mainly triggered by infections **(**such as candidiasis, bacterial vaginosis, and trichomoniasis), hormonal changes, and poor personal hygiene**.** Indonesia's tropical climate fosters the growth of fungi like *Candida albicans*, which explains why the local prevalence (±75%) is significantly higher than in Europe (25%).

If pathological vaginal discharge is not properly treated, it can lead to serious complications such as pelvic inflammatory disease (PID)**,** infertility, and even cervical cancer**.** In Indonesia, abnormal vaginal discharge is recognized as one of the early symptoms of uterine cancer and PID, with cervical cancer cases reaching thousands annually (approximately 8,000 deaths**)**.

In West Java (Garut Regency), in 2021, a total of 318,976 women (29.73%) were reported to have experienced vaginal discharge. Several factors influence the occurrence of vaginal discharge, including personal hygiene, stress levels, and physical activity among adolescents. If left untreated, vaginal discharge can lead to both psychological and physical health issues.

According to data from the National Population and Family Planning Agency (Dinkes Kabupaten Sumedang, 2019) approximately 75% of women experiencing vaginal discharge are diagnosed with bacterial vaginosis (BV), which is responsible for 40%–50% of vaginal infection cases, and is

often associated with pathological discharge. (Dini Afriani et al., 2024)A preliminary study conducted at SMKN Muhammadiyah 1 Sumedang on April 30, 2024, involving interviews with 10 female students, revealed that 7 out of 10 students (70%) had limited knowledge about fluor albus (vaginal discharge) and genital hygiene. The students also showed little initiative in seeking information about personal genital hygiene practices. New research on the relationship between knowledge and genital hygiene and the incidence of fluor albus can be found through a more contextual approach, the use of digital methods in education, expanded targeting to specific subpopulations, and longer-term impact evaluation. By combining these elements, the resulting research will not only fill the scientific gap (knowledge gap) but also make practical contributions to the development of more effective and socio-culturally relevant adolescent reproductive health programs.

METHOD

This research includes quantitative research. This study employed a quantitative research design to examine the relationship between knowledge and genital hygiene with the incidence of fluor albus (vaginal discharge), using a descriptive-analytic method with a cross-sectional approach. This design was chosen to analyze the relationship between independent and dependent variables (Nursalam, 2017).

A conceptual framework refers to the interrelationship between the concepts to be measured or observed in a study. A research conceptual framework should consider all variables being examined (Nursalam, 2017). The independent variables, often referred to as free variables, are those that influence or cause changes in the dependent variable (Sugiyono, 2019)In this study, the independent variables are knowledge and genital hygiene.

The dependent variable is defined as the outcome or the effect influenced by the independent variable (Sugiyono, 2019) In this study, the dependent variable is the incidence of fluor albus (vaginal discharge). The study population comprised tenth-grade students at SMK Muhammadiyah 1 Sumedang in 2024, totaling 52 students. The sampling technique used was total sampling, a type of non-probability sampling method in which all members of the population are selected as the sample (Notoatmodjo S, 2012) However, this study included only tenth-grade female students, totaling 39 participants, as students from the eleventh and twelfth grades were not eligible to participate as respondents.

Data collection techniques refer to the methods used to gather data. In this study, primary data were collected through interviews, observations, and questionnaires. The instrument used in data collection was not tested for validity and reliability because the questionnaire was standard from the research on genital hygiene knowledge taken from the research questionnaire owned by Wahyu Denoveta entitled "The Relationship between Knowledge and Behavior of Genital Hygiene with the Incidence of Fluor Albus in Students at SMA Negeri 1 Sidoarjo". In addition, secondary data was obtained from libraries, research journals, and electronic books relevant to the research topic (Drs. Syahrum, M.Pd & Drs. Salim, 2012).

In quantitative research, data analysis is an essential step after all data have been collected. It involves processing the data into useful information so that the characteristics and nature of the data can be understood and utilized as a basis for answering the research questions. The data were analyzed using the Statistical Product and Service Solutions (SPSS) software. Data analysis was carried out in two stages: univariate and bivariate analyses (Notoatmodjo, 2013).

This study was conducted at SMK Muhammadiyah 1 Sumedang. The research schedule was set for June 2024. Ethical approval was obtained from the Faculty of Health Sciences, Universitas Sebelas April, on June 1, 2024, with approval number 312/B-Fikes/UNSAP/VI/2024. The data collection was carried out from June 10 to June 30, 2024.

RESULTS

Table 1. Knowledge Statements

No.	Statement	Correct	Incorrect
1	Vaginal discharge is a fluid released from the genital area that is not blood.	39	0
2	Vaginal discharge is a malignant infection of the reproductive system.	14	25
3	Normal discharge is thin, clear, non-itchy, odorless, and occurs in small amounts.	33	6
4	Normal discharge occurs when there are no signs of abnormalities.	32	7
5	Wearing tight pants is one of the causes of vaginal discharge.	17	22
6	One way to maintain female genital hygiene is to wipe from front to back.	31	8
7	Frequently changing underwear is a way to prevent vaginal discharge.	36	3
8	Vaginal discharge can be prevented by practicing clean and healthy living habits.	34	5
9	I purchase feminine hygiene soap when experiencing excessive vaginal discharge.	13	26
10	Maintaining genital hygiene is one way to prevent vaginal discharge.	33	6

Source: Primary Data, 2024

Each statement has 10 statements given to respondents or class X female students at SMK Muhammadiyah 1 Sumedang. In the genital hygiene knowledge statement, there are 10 statements given to respondents or class X female students at SMK Muhammadiyah 1 Sumedang, then in the fluor albus statement, there is 1 statement given to students at SMK Muhammadiyah 1 Sumedang.

Table 2. Genital Hygiene Statements

No.	Statement	Yes	No
1	I always wash my hands before touching the genital area.	39	0
2	I often use water from buckets or stored containers to clean the genital area.	27	12
3	I always clean the genital area from front (vagina) to back (anus).	37	2
4	I use soap or other cleansers to clean the genital area.	22	17
5	I always dry the genital area after urinating or defecating.	30	9

No.	Statement	Yes	No
6	I dry the genital area using a towel.	24	15
7	I dry the genital area using tissue.	10	29
8	During menstruation, I use soft and thin sanitary pads.	34	5
9	When experiencing vaginal discharge (fluor albus), I always use pantyliners.	7	32
10	I change my underwear twice a day.	33	6

Source: Primary Data, 2024

Each statement has 10 statements given to respondents or class X female students at SMK Muhammadiyah 1 Sumedang. In the genital hygiene statement, there are 10 statements given to respondents or class X female students at SMK Muhammadiyah 1 Sumedang, then in the fluor albus statement, there is 1 statement given to students at SMK Muhammadiyah 1 Sumedang.

Table 3. Fluor Albus Statement

Statement	Yes	No
I experience vaginal discharge (fluor albus) accompanied by itching	27	12

Source: Primary Data, 2024

Each category consists of 10 statements for knowledge and genital hygiene, and 1 statement for fluor albus. These statements were distributed to tenth-grade female students at SMK Muhammadiyah 1 Sumedang.

Table 4. Frequency Distribution of Respondents' Knowledge

Category	Frequency (f)	Percentage (%)	Valid Percentage (%)
Good	0	0.0	0.0
Fair	27	69.2	69.2
Poor	12	30.8	30.8
Total	**39**	**100.0**	**100.0**

Source: Primary Data, 2024

Table 4 shows that a small portion of the students had poor knowledge (12 students or 30.8%), the majority had fair knowledge (27 students or 69.2%), and none had good knowledge (0%).

Table 5. Frequency Distribution of Genital Hygiene

Category	Frequency (f)	Percentage (%)	Valid Percentage (%)
Good	14	36.0	36.0
Poor	25	64.0	64.0
Total	**39**	**100.0**	**100.0**

Source: Primary Data, 2024

Table 5 shows that most students practiced poor genital hygiene (25 students or 64%), while a smaller number had good hygiene practices (14 students or 36%).

Table 6. Frequency Distribution of Fluor Albus

Category	Frequency (f)	Percentage (%)
Yes	27	69.0
No	12	31.0
Total	**39**	**100.0**

Source: Primary Data, 2024

Table 6 indicates that most students experienced fluor albus (27 students or 69%), and a smaller portion did not (12 students or 31%).

Table 7. The Relationship Between Knowledge and Fluor Albus

Knowledge	Fluor Albus			p-value
	No (f/%)	Yes (f/%)	Total (f/%)	
Poor	4 (33.3%)	8 (66.7%)	12 (100%)	0.004
Fair	8 (29.6%)	19 (70.4%)	27 (100%)	
Good	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Total	12 (30.8%)	27 (69.2%)	39 (100%)	

Source: Primary Data, 2024

the p-value = 0.004, which is less than 0.005, indicating a significant relationship between knowledge and the incidence of fluor albus among female students at SMK Muhammadiyah 1 Sumedang. As the result is significant, H_0 is rejected and H_a is accepted. The majority of students with fluor albus had fair knowledge, with a frequency of 19 students (70.4%).

Table 8. The Relationship Between Genital Hygiene and Fluor Albus

Genital Hygiene	Fluor Albus			p-value
	No (f/%)	Yes (f/%)	Total (f/%)	
Poor	7 (30.4%)	16 (69.6%)	23 (100%)	0.003
Good	5 (31.3%)	11 (68.8%)	16 (100%)	
Total	12 (30.8%)	27 (69.2%)	39 (100%)	

Source: Primary Data, 2024

Based on Table 8, the p-value = 0.003, which is less than 0.005, indicating a significant relationship between genital hygiene and the incidence of fluor albus among female students at SMK Muhammadiyah 1 Sumedang. As the result is significant, H_0 is rejected and H_a is accepted. The majority of students who experienced fluor albus practiced poor genital hygiene, with a frequency of 16 students (69.6%).

DISCUSSION

The findings of this study indicate that the majority of female students had a moderate level of knowledge regarding fluor albus, with the highest frequency in this category being 27 students (69.2%). Meanwhile, 12 students (30.8%) were found to have low knowledge, and none (0%) had good knowledge regarding fluor albus.

Knowledge or cognition is a crucial domain in shaping individual actions. Knowledge acquisition begins with awareness, which occurs after an individual becomes familiar with a particular object (Siswanto & Lestari, 2020)

This result is consistent with a study which showed that out of 100 students, the majority (57.5%) had poor knowledge. It also aligns with research by (Fitriyani et al., 2021) which found that knowledge had the strongest correlation with the incidence of fluor albus.

The researcher assumes that this is due to a lack of student knowledge about fluor albus and a lack of initiative among students to seek information on their own. As a result, students' understanding of the condition remains considerably lacking.

Furthermore, the results show that the majority of female students demonstrated poor genital hygiene behaviour, with a frequency of 25 students (64%). Meanwhile, only 14 students (36%) showed good genital hygiene behaviour.

Personal genital hygiene, or vulva hygiene, consists of two terms: vulva (referring to the external genital folds in women) and hygiene (Central Java Provincial BKKBN Representative, 2018).

This result is consistent with a study where out of 80 female students, 68 (85%) exhibited poor genital hygiene behaviours related to fluor albus. Similarly, the study by (Fitriyani et

al., 2021)found a significant relationship between vulva hygiene and the incidence of fluor albus.

The researcher assumes that this is due to a lack of proper implementation of good genital hygiene practices and a limited understanding among students of how to maintain genital hygiene appropriately.

The findings of this study also show that the majority of students experienced fluor albus, with the highest frequency being 27 students (69%), while 12 students (31%) did not experience the condition.

The primary causes of pathological vaginal discharge include infections caused by fungi, bacteria, parasites, and viruses. Contributing factors include poor hygiene practices, such as washing the genital area with stagnant water from a bucket, overuse of cleansing products, wearing tight and non-breathable underwear, infrequent changing of underwear, and infrequent changing of sanitary pads.

This study aligns findings, where 45 out of 80 female students (56.3%) experienced fluor albus.(D Afriani et al., 2023)

The researcher assumes that the high incidence of fluor albus among students is due to their low knowledge levels and poor genital hygiene practices (Rachmadianti, 2019) .

Relationship Between Knowledge and Incidence of Fluor Albus

The results of this study show a significance value of 0.004 < 0.005, indicating a significant relationship between knowledge and the incidence of fluor albus among students at SMK Muhammadiyah 1 Sumedang. This demonstrates a strong correlation between the two variables, suggesting that higher knowledge levels correlate with lower incidences of fluor albus, and vice versa. As the relationship is significant, the null hypothesis (H_0) is rejected.

The findings also show that the average student had poor knowledge. Another factor influencing this is the lack of experience or reliable sources of information. Among students who had experienced fluor albus, 8 students (66.7%) had poor knowledge. Notably, none of the students (0%) had good knowledge.

Students are therefore expected to be more aware of the symptoms they have experienced or are experiencing due to their limited knowledge of genital hygiene. Good knowledge positively influences genital hygiene behavior (Aisyah & Fitria, 2019).

The data indicate that students had limited knowledge about fluor albus. The researcher assumes that adolescents' lack of concern for their health in the digital era contributes to their insufficient understanding. Students also failed to effectively utilize digital sources or receive adequate health education from schools or related institutions. As a result, many students could not distinguish between normal and abnormal fluor albus and tended to dismiss symptoms as normal. Thus, knowledge of fluor *albus* among students at SMK Muhammadiyah 1 Sumedang can still be categorized as low.

The researcher also assumes that good knowledge directly affects proper genital hygiene behaviour during episodes of *fluor albus*, helping to minimize inappropriate actions. This knowledge empowers students to prevent the occurrence of *fluor albus* or abnormal vaginal discharge.(Mahmudah et al., 2016)

Relationship Between Genital Hygiene and Incidence of Fluor Albus

The findings of this study show a significance value of 0.003 < 0.005, indicating a significant relationship between genital hygiene and the incidence of *fluor albus* among students at SMK Muhammadiyah 1 Sumedang. This finding demonstrates a strong correlation, where better genital hygiene behaviours are

associated with a lower incidence of fluor albus, and vice versa. As the result is significant, the null hypothesis (H_0) is rejected (Dini Afriani & Kes, 2019).

The researcher assumes that students' lack of knowledge and poor hygiene behaviour may result in continued occurrences of *fluor albus*. One factor influencing this behaviour is how students respond when experiencing symptoms. Many choose to ignore the condition rather than seek help from health services. When this behaviour becomes a pattern, it may indicate a lack of self-care and awareness of symptoms, consequences, or signs of more serious health problems (Mahmudah et al., 2016).

The study also identifies several factors contributing to inappropriate genital hygiene practices. These include not washing hands before touching the genital area, frequently using stored water from buckets to clean the genitals, rarely drying the area after urination or defecation, and often wearing tight underwear. These behaviours indicate a general lack of knowledge about proper genital hygiene practices (Prabawati, 2019).

This study aligns with research conducted which also found a significant relationship between genital hygiene and the incidence of *fluor albus*.

Likewise, it is consistent with findings by (Dwi Kumala et al., 2019) which identified a strong correlation between these variables.

The researcher assumes that students with good genital hygiene behaviours are better able to prevent conditions related to poor hygiene, such as urinary tract infections, cervical cancer, and even infertility, which can have serious consequences. However, most students at SMK Muhammadiyah 1 Sumedang still practice poor genital hygiene.

Additionally, even students with moderate hygiene behaviour might not experience *fluor albus* due to other protective factors such as individual immune response or vaginal pH balance, which functions as a defense mechanism by inhibiting the growth of harmful bacteria in the genital area.

CONCLUSIONS AND RECOMMENDATION

The majority of female students at SMK Muhammadiyah 1 Sumedang have a moderate level of knowledge regarding *fluor albus*. Most of them demonstrate poor genital hygiene behaviour. In terms of health outcomes, the majority of students have experienced fluor albus. The study also found a significant relationship between knowledge and genital hygiene behaviour with the incidence of fluor albus. The results of this study are expected to contribute to increasing knowledge and awareness related to proper and correct genital hygiene practices, as well as improving understanding of *fluor albus* among female students.

Recommendations for further research include adopting a longitudinal or quasi-experimental approach to assess the impact of reproductive health education interventions on changing genital hygiene behavior and sustainably reducing the incidence of vaginal discharge. Medium- to long-term evaluation (e.g., over 3–6 months) is crucial to assess the stability of these behavioral changes. Second, future researchers are also advised to include other relevant variables, such as access to information, social support, cultural norms, and risk perception, which may mediate the relationship between knowledge and behavior. By integrating a socio-ecological approach, research results will have greater analytical depth. Third, future research is expected to utilize digital technology-based educational media, such as educational apps, animated videos, or social media campaigns tailored to the characteristics of adolescents. This digital approach is not only relevant to the learning styles of the younger generation but also more effective

in reaching a broader and more interactive adolescent population.

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