

The Relationship Between Vulvar Hygiene Behavior During Menstruation and The Incidence of Vaginal Discharge (Flour Albus) in Adolescent Women

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ABSTRACT

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Background : Vaginal discharge or flour albus refers to the non-bloody discharge other than blood from the vagina under normal conditions. Physiological vaginal discharge is considered normal for women, whereas abnormal or pathological discharge refers to any discharge that deviates from the usual characteristics or quantity typically observed under healthy conditions. Vulvar hygiene is a particular care for women to maintain the external reproductive area. The study aimed to determine the relationship between vulvar hygiene behavior during menstruation and the incidence of vaginal discharge (flour albus) in adolescent women at Senior High School 8 Surakarta. **Method :** This research design employed quantitative using an analytic correlation study with the cross-sectional method. The sample selected 68 respondents of Senior High School 8 Surakarta students using the Slovin formula with proportional stratified random sampling. The analysis utilized the gamma test to examine the relationship between variables.

Results: The results of the gamma test demonstrated a (P-Value 0.007 <0.05), which indicated a relationship between vulvar hygiene behavior and the incidence of vaginal discharge (flour albus). **Conclusion :** It concluded a significant relationship between vulvar hygiene behavior and the incidence of vaginal discharge (flour albus) in adolescent women at Senior High School 8 Surakarta. This study suggests that every woman could maintain the external reproductive organs by accomplishing vulvar hygiene practices to reduce vaginal discharge (flour albus).

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Introduction

Reproductive health refers to all conditions related to the reproductive system in terms of physical, mental, and well-being, and it is more than just free from disease or weakness in humans [1]. Menstruation is the first sign of puberty for women entering early adolescence [2]. Health problems in adolescent girls reaching adulthood are often encountered, namely vaginal discharge, and this reproductive problem can be experienced from various ages, especially for



adolescents [3]. The adolescent body is very vulnerable to the risk of infection, especially in the external reproductive parts, so it has become a special concern in the health sector [4].

The tropical climate in Indonesia is one of the causes humans to sweat more easily until the occurrence of moisture, which can cause bacteria and fungi to develop easily, especially in closed areas such as the pubic area, which can cause vaginal discharge, as many as 90% of Indonesian women are at risk of experiencing vaginal discharge while in European countries there are only 25% of women experiencing vaginal discharge due to cold weather [5].

Based on data obtained by the World Health Organization (WHO), the prevalence rate of cases of vaginal discharge in women in 2021 in Indonesia is 75%, and the experience of vaginal discharge occurs at least once in their lifetime. Meanwhile, around 45% of women experience vaginal discharge more than once. It was found that around 31.8% of adolescents aged 15 years to 24 years began to experience quite a lot of vaginal discharge and had the potential for pathological vaginal discharge [5] [6]. It is known that 79.4% of adolescent girls in Central Java have experienced an increase in the incidence of vaginal discharge, one of which occurs due to the *Candida albican* fungus, which multiplies in a humid place quickly, especially during menstruation as much as 80% - 90%, this is due to lack of knowledge about vulva hygiene [7]. Research conducted by Central Bureau of Statistic Surakarta City (2021) shows that the number of adolescent girls in Surakarta city reaches 59,200 people who are related to the typical reproductive tract due to the level of knowledge about vulva hygiene behaviour, which is 0.52 and is still very low. The results of Sexually Transmitted Infections (STIs) recorded in the city of Surakarta, Jebres sub-district in 2020 were 2 people and increased dramatically in 2021 as many as 23 people experienced STI cases [7]. Sexually transmitted infections are one of the symptoms triggered by vaginal discharge that is not treated seriously and appropriately by most women [8] [9].

According to the study, 9 out of a total of 10 articles stated that >90% of the occurrence of pathological vaginal discharge to the occurrence of pruritus or itching in the external feminine area in women due to inappropriate vulvar hygiene, especially during menstruation, therefore reproductive health problems are more experienced by a woman who does not maintain hygiene during menstruation [10]. Vulvar hygiene that is lacking during menstruation and menstrual hygiene care that is not the main cause of Reproductive Tract Infections (RTI), Urinary Tract Infections (UTI), Sexually Transmitted Infections (STI) characterized by vaginal discharge, Pelvic Inflammatory Disease (PRP), vaginal discharge (Flour Albus), Infertility and the possibility of uterine cancer to death [11].

Vulvar hygiene is an act of care in women to clean and maintain the external female reproductive area, which is very sensitive [12]. The purpose of vulva hygiene is very important for improving health, preventing disease and irritation around the vulva, and maintaining vaginal hygiene can also increase self-confidence in women [13][14]. Vulvar hygiene actions that can be taken care of cleaning the outer area of the genitalia after urinating or after defecating, washing the vagina remains clean enough with running water by cleaning it starting from the front towards the back, using cotton underwear so that it can absorb all sweat and prevent moisture from preventing the development of fungi, taking care of hair on the genitals, diligently changing pads every 4 hours during menstruation [15].

Based on the preliminary study conducted by the researcher on December 12, 2023, the researcher has released the results of interviews with 20 students at SMAN 8 Surakarta. The results of the preliminary study where there were 16 students said they did not know how to do vulva hygiene. From 20 students, 4 students said they had experienced vaginal discharge after menstruation in large quantities, and 3 students said their vaginal discharge continued to appear and did not stop, and 2 students said their vaginal discharge was yellow and slightly smelly, the rest never experienced vaginal discharge after menstruation. It was found that in SMAN 8 Surakarta, counselling on how to take care of the feminine area had been conducted, but it was unstructured and incidental.

In general, the results of most studies are only related to knowledge of vulvar hygiene and the application of vulvar hygiene with the incidence of vaginal discharge, but rarely studies

that assess vulvar hygiene behavior during menstruation in adolescents to measure vulvar hygiene behavior without health education conducted at the beginning of the study. It is necessary to know the vulvar hygiene behavior during menstruation in today's adolescents and how it affects the incidence of vaginal discharge that occurs. It is expected that vulvar hygiene during menstruation can be a way to maintain women's external reproductive health and prevent the occurrence of vaginal discharge (flour albus). Based on the survey that has been conducted, the researcher is very interested in uncovering the problem of vulvar hygiene behaviour during menstruation with the incidence of vaginal discharge (flour albus). With this condition, the researcher wants to know whether there is a relationship between vulvar hygiene behaviour during menstruation and the incidence of vaginal discharge (flour albus) in adolescent girls at SMA Negeri 8 Surakarta.

Materials and Method

This research design is quantitative research using an analytic correlation study design, one of the cross-sectional designs that connects one variable with another. *Cross-sectional research* is an observational study used to analyze data collected throughout the sample population at a certain time [16] In this study, the sample was taken by probability sampling, namely proportional stratified random sampling. The sample of this study was obtained using the Sovlin formula with as many as 68 respondents.

This study used an instrument for data collection in the form of a questionnaire sheet containing information on vulvar hygiene behaviour and the incidence of flour albus. The vulva hygiene behaviour questionnaire sheet contains 15 questions about vulva hygiene methods with answers using a Likert scale. The Flour Albus questionnaire sheet contains the characteristics of pathological vaginal discharge with 6 questions using the gamma scale question answers. From the results of the validity test in the vulva hygiene behaviour questionnaire and the flour albus incidence questionnaire. Conducted with the assistance of two expert experts in their fields and using the reliability test using the Cronbach alpha test on the vulva hygiene behaviour questionnaire and the incidence of vaginal discharge (flour albus) which is 0.762 which exceeds the constant value indicates that this questionnaire can be used as data collection and collection.

This research procedure uses a cross-sectional method, respondents who are selected when the researcher conducts proportional stratified random sampling will be given a research information sheet and informed consent sheet as well as 2 questionnaires in the form of a vulvar hygiene behaviour questionnaire and a vaginal discharge questionnaire (flour albus) and asked for respondents to fill in at one specific point in time. The data collected will be subjected to a non-parametric correlation test using the gamma correlation test. This study obtained an ethical clearance test from Moewardi Surakarta Hospital and a letter from the Health Research Ethics Commission (number: 533/II/HREC/2024).

Results and Discussion

Results

Univariate analysis of research characteristics includes age, vulvar hygiene behaviour during menstruation and the incidence of vaginal discharge (flour albus). This study had 68 respondents, based on the sampling results using probability sampling. Age characteristics are explained using the average age, while the characteristics of vulvar hygiene behaviour during menstruation and the incidence of vaginal discharge (flour albus) with a percentage size. The results of respondent characteristics are shown in Table 1. The characteristics of respondents are based on the average age of 15.66, with the youngest age category being 15 years and the oldest age being 17 years. Characteristics of respondents based on Vulva Hygiene behaviour when menstruation occurs, it is known that the majority of respondents are in sufficient behaviour, as many as 35 respondents (51.5%). Characteristics of respondents based on the occurrence of

vaginal discharge (flour albus) found that the majority of respondents the occurrence of vaginal discharge, as many as 41 respondents (60.3%).

Table 1. Characteristics of Respondents

Characteristics	Penelitian				
	Min	Max	Mean	SD	Median
Age	15	17	15,66	0,614	16,00
Variable				n= 68	% (percentage)
Vulvar hygiene behaviour					
Good				29	42,6
Average				35	51,5
Poor				4	5,9
Incidence of vaginal discharge					
Vaginal discharge occurs				41	60,3
No vaginal discharge				27	39,7

The analysis test in this study was to determine the relationship between vulva hygiene behaviour during menstruation with the incidence of vaginal discharge (flour albus) in adolescent girls at SMAN 8 Surakarta. The research analysis test used the gamma test. The results of the correlation test in the study of vulvar hygiene behaviour during menstruation with the incidence of vaginal discharge (flour albus) in adolescent girls at SMAN 8 Surakarta can be seen in Table 2. It shows that students with good vulvar hygiene with no occurrence of vaginal discharge were 16 respondents, and sufficient vulvar hygiene with the occurrence of vaginal discharge was 24 respondents. The results of the gamma test in this study are P-Value 0.007 (0.007 < 0.05), which means H_0 is rejected, and H_a is accepted, so it can be concluded that there is a significant relationship in this study. The correlation coefficient value in this study is 0.550, and it can be concluded that the strength of the relationship in this study is moderate/sufficient in the correlation value range of 0.40 - 0.599. This study obtained the results of the correlation coefficient sign, which is positive, which means that it has a positive relationship direction (+), which means that the increasing vulvar hygiene behaviour increases the non-occurrence of vaginal discharge, and vice versa.

Table 2. Analysis of Menstrual Vulvar Hygiene Behavior with Incidence of Vaginal Discharge (Flour Albus)

Variable	Vaginal Discharge (Flour Albus)		Total	P-value	(r)
	No Vaginal Discharge	Vaginal discharge			
	Good	16			
Average	11	24	35		
Poor	0	4	4		
Total	27	41	68		

Discussion

Adolescence is the age of the population with a range of 10-19 years according to (World Health Organization) WHO 2023, while (Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014) says adolescence starts from 10-18 years. Adolescence is also called the period for each individual to prepare for the future, and this period is very sensitive because puberty will cause the development of physical maturity. (World Health Organization) WHO 2023 states that adolescence is an important mass to determine the formation of a good personality for every teenager because it is during this time that there is a transition to adulthood so that it undergoes many physical and psychological changes. Adolescents are still developing, do not yet have psychological or intellectual maturity, and are not fully mature enough to recognize and form their identities [17]. Adolescents can already manage their desires based on awareness, and a good situation will also exist [18]. Adolescence is a very good time to improve good habits to maintain external reproductive hygiene, which is an important asset for women, especially adolescent girls. Along with increasing age, a person's maturity level or maturity will also improve in thought and the work she does.

In this study, based on the data on the characteristics of the respondents, the average age was 15.66, while the youngest was 15 years, and the oldest was 17 years. In the results of this study, it was found that the age of most respondents was 16 years (51.5%). This study was similar to other studies, with the majority of the respondents being 16 years old (31.1%), and this age is in the middle adolescent age category [19]. So that at this stage, adolescents have felt puberty, where every woman will face her first period, and normally, adolescent girls will experience physiological vaginal discharge during menstruation. In this adolescent mass, self-confidence will also arise, this makes it easy for adolescents to determine their identity and take the actions they want to take.

The results showed that adolescents aged 16-21 already knew enough about vulva hygiene [7]. At the age of adolescence, the ability to think has begun to move into a phase of maturity that can be called adulthood in thinking so that it can think about more concrete things and begin to be able to solve various problems on its own. Based on research conducted by other researchers, a P-value of 0.007 showed a relationship between age and adolescent knowledge [20].

Vulvar hygiene behaviour during menstruation

In this study, it was found that vulvar hygiene behaviour during menstruation in adolescents is sufficient, namely, 35 respondents (51.5%). This study is in line with previous researchers who showed that as many as 79 respondents (41.2%) most respondents with a level of vulvar hygiene behaviour during menstruation could be considered sufficient [21]. This research is also supported by the incidence of vulvar hygiene behaviour in research conducted by BPS Surakarta City 2021 obtained 0.52, which is the number of adolescent girls reaching 59,000 people having very low vulvar hygiene behaviour in Surakarta city. It can be seen from the typical cases related to the reproductive tract that the results of the incidence of STIs in Jebres District itself in 2020 were 2 people and increased very drastically in 2023, as many as 23 people.

Environmental and individual characteristics can influence behaviour. Variables such as motives, character, values, personality, and attitudes that interact with each other and then interact with factors that influence behaviour are individual characteristics. Meanwhile, environmental factors can determine behaviour, and even the power of environmental factors is considered greater than individual characteristics to determine behaviour [22]. Similarly, previous researchers have said that one of the important things for adolescents to determine good behaviour is their age [17]. The incidence rate makes vulva hygiene behaviour, especially in adolescents, increase awareness of loving their bodies, which can also be influenced by adolescents' knowledge and age [23,24].

Today, adolescents' knowledge is considered to have developed, and one is from the learning process. Much information was obtained by respondents on the correct actions when

performing vulva hygiene, especially during menstruation, because it is very influential for their reproductive health. Supported by the preliminary study conducted by the researcher, it was found that SMAN 8 Surakarta always held health education counselling on how to care for the feminine area by the Mojosongo Sibela Health Center during the Period of Introduction to the School Environment (MPLS). So, health education about vulva hygiene has been done but unstructured and incidental.

Vaginal discharge (flour albus)

This study found that 27 respondents (39.7%) did not experience vaginal discharge, while 41 respondents (60.3%) experienced vaginal discharge. It can be interpreted that the respondents of SMAN 8 female teenagers in this study mostly experienced the occurrence of vaginal discharge (flour albus) during menstruation. Vaginal discharge (flour albus) is a condition where there is a discharge of fluid other than blood from the vagina under normal conditions, and this is normal or physiological. If there is much discharge, it will cause problems for women, such as itching, odour, and pain to cause pathological vaginal discharge and up to the occurrence of typical Sexually Transmitted Infections (STIs) [9, 25]. The results of the study, when conducting observations in interviews by researchers, found that there were 20 students, 4 students said they had experienced vaginal discharge after menstruation in large quantities, and 3 students said their vaginal discharge continued to appear and did not stop, and 2 students said their vaginal discharge was yellow and slightly smelly, the rest never experienced vaginal discharge after menstruation.

The application and behaviour of vulvar hygiene are very influential on the occurrence of vaginal discharge in this study is also in line with previous research, which shows that most respondents experience vaginal discharge 37 respondents (52.9%) of 70 respondents [26]. This research is also supported by other research, which explains that there are a total of 10 articles, where 9 articles state that >90% of the occurrence of pathological vaginal discharge [10].

Pathological vaginal discharge usually occurs when physiological vaginal discharge is not considered and handled properly and will cause bacteria to develop easily, making it a disease of the reproductive organs. This research is not in line with research where stressors can trigger the occurrence of vaginal discharge itself because the brain controls everything, if the receptors in the brain are weak, it can cause hormones in the body to experience changes in balance so that it can trigger vaginal discharge [27]. Supported by others who say that there is a relationship between stress levels in adolescents and the occurrence of vaginal discharge [28].

Test analysis of vulvar hygiene behaviour during menstruation with the incidence of vaginal discharge (flour albus)

In this study using the gamma test, the results showed a significant relationship that is p-value 0.007 the value is smaller than 0.05 ($0.007 < 0.05$) so that it means there is a relationship between vulvar hygiene behaviour during menstruation with the incidence of vaginal discharge (flour albus) in adolescent girls at SMAN 8 Surakarta. This is the opinion of Green Lawrence, 1980 who says behaviour can be carried since an organism is born in the form of reflexes and instincts, namely natural behaviour (innate behaviour), while operant behaviour, which is a behaviour created by going through the learning process so that this includes dominant behaviour. This behaviour is largely controlled by the centre of consciousness [22]. Because knowledge and awareness of adolescents make behaviour that is very influential for their reproductive health, in previous studies, it was also stated that there was a significant relationship between knowledge of good behavioural attitudes in hygiene against the incidence of vaginal discharge [19]. One way to reduce the risk of female reproductive problems, such as vaginal discharge in adolescent girls, is with good vulva hygiene behaviour [23, 29].

This study obtained information when conducting a preliminary study that obtained poor vulvar hygiene behavior. As many as 9 students out of 20 students who were interviewed randomly students were experiencing vaginal discharge. This research is in line with research, which states that the occurrence of vaginal discharge in adolescent girls is 72.4% of the 87 sample

respondents and the results of other research analysis state that there is a significant relationship between knowledge and the occurrence of vaginal discharge. There is an attitude relationship with the occurrence of vaginal discharge [30]. Researchers assume that human knowledge is essential, especially in one's behavior when acting. Lack of knowledge and attitudes about awareness resulted in many adolescents and respondents lacking in maintaining vulvar hygiene, especially during menstruation [3, 24].

Other studies explain that attitude variables can affect the prevention of pathological vaginal discharge with a strong relationship category. Adolescents must go through a learning process to get the results of changes in behavior and good attitudes. The limitation of this study is that it uses an instrument that only refers to the available questionnaire. This causes a lack of opportunity for the author to explore information related to the variables used and can cause recall bias. Another limitation is that this study was only conducted in one school and only used minimal respondents.

Conclusion

In this study obtained p-value 0.007 value is smaller than 0.05 ($0.007 < 0.05$) means that there is a significant relationship in this study that is vulva hygiene behavior during menstruation with the incidence of vaginal discharge (flour albus) in adolescent girls at SMAN 8 Surakarta. Suggestions from other researchers so that further research can be carried out by observing vulvar hygiene behavior, for schools can continue to improve and prioritize health education within the school environment, which can collaborate with the health department to improve reproductive health in a structured and incidental manner for each student. All respondents are expected to be able to perform vulvar hygiene behavior properly and appropriately independently to reduce the risk of vaginal discharge, especially during menstruation.

Declaration

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