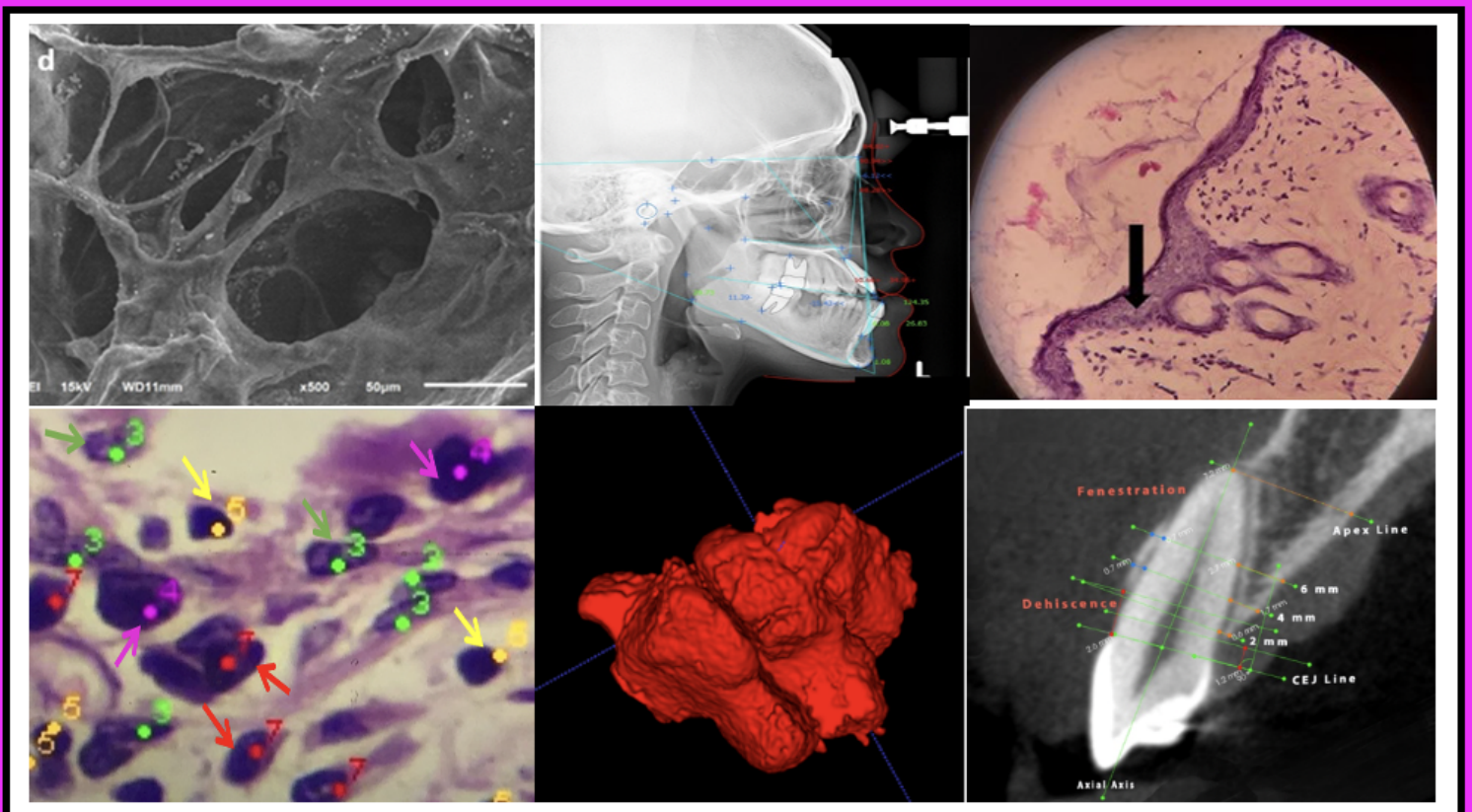


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## The Effect of Health Education on Knowledge, Attitudes, and Actions in Prevention of Leukorrhea in Adolescent Girls

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### Abstract

Leukorrhea is a common problem that is often experienced by many women, the risk of developing vaginitis which causes a bad odor which affects emotional distress, infertility and cancer of the reproductive organs. The aim of this study was to determine the effect of health education on the level of knowledge, attitude and action about the prevention of pathological leukorrhea in adolescent girls.

This study used a pre-experimental research design with a one group pre-post test design approach with a purposive sampling of 150 students. The research data were obtained by means of a questionnaire and tested using the Wilcoxon Signed Rank Test with a significance level of  $p < 0.05$ . The results of statistical tests showed that there were significant differences in knowledge ( $p = 0.000$ ), attitude ( $p = 0.000$ ) and action ( $p = 0.000$ ) after being given health education. Providing health education is an alternative in increasing the knowledge, attitudes and actions of adolescents. It is expected that, after this, the respondent can understand the concept of leukorrhea and can prevent the occurrence of leukorrhea pathology.

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### Introduction

This study aims to analyze the effect of Health Education on leukorrhea knowledge, attitudes and actions in adolescents, this is because leukorrhea is a common problem that is often experienced by many women<sup>1</sup>. Adolescence is a transitional period from childhood to adulthood, which limits adolescence from 12 to 24 years of age. In the stages of adolescent development, each teenager will go through three (3) stages; development stage is a period of susceptibility to reproductive disorders, one of which is the occurrence of leukorrhea<sup>2</sup>.

Maternal Disease Obstetric Caribe (MDOC) in America states that leukorrhea is widely experienced by women, 72.3% are WUS and 27.7% in PUS<sup>3</sup>. It is defined as a fluid other than blood from the vaginal canal that is unusual, smelly or not, accompanied by itching in the surrounding area<sup>4</sup>. Leukorrhea is the main cause of vaginitis which causes an unpleasant odor which affects emotional and social stress<sup>5, 6</sup>. Leukorrhea is also one of the causes from infertility and cancer of the female reproductive organs<sup>7</sup>. This is because they lack access to knowledge about how to care for and prevent reproductive health problems<sup>8</sup>, so that health education to prevention in the genital area for adolescent needs to be given<sup>9</sup>.

The WHO reports the number of women in the world who have experienced leukorrhea is 75%, while European women who have experienced leukorrhea is 25%<sup>10</sup>. The prevalence of leukorrhea in South Asian adolescents is 79%<sup>11</sup>. In Indonesia, about 90% of women have the potential to experience leukorrhea. This is because Indonesia is an area

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with a tropical climate, so fungi can easily develop and result in many cases of leukorrhea<sup>12</sup>. Symptoms of leukorrhea are also experienced by adolescents aged 15-24 years, which is around 31.8%. This shows that adolescents are more at risk of leukorrhea. In 2002, 50% of Indonesian women had experienced leukorrhea, then in 2003 it increased to 60% and in 2004 it increased again to almost 70% of Indonesian women having experienced leukorrhea at least once in their lives<sup>13</sup>. Based on the initial survey on November 13, 2020, through interviews conducted by researchers at Lamongan District junior high school with as many as 10 respondents it was found seven (70%) did not know about leukorrhea, both physiological and pathological, and said they still lacked knowledge about leukorrhea.

Leukorrhea is widely considered to be very polluting and embarrassing in many countries, and remains a taboo to talk about. Many do not have the means for self-care and do not get the support they need when facing problems, which hinders their ability to continue their daily activities and so they experience anxiety<sup>14</sup>. Information may be poorly understood so that it is the main predictor of adolescent experiencing feelings of disgust, anxiety, fear, and confusion<sup>6</sup>. Several studies have also revealed that adolescents have low knowledge and self-care methods to deal with the incidence of fluor albus<sup>4,15,16</sup>. This is because they still feel ashamed to open up about reproductive health problems and there are still many parents who have not provided information about reproductive health<sup>17</sup>. Most of the students (53.0%) had not been exposed to information about how to prevent leukorrhea<sup>18</sup>. The role of mothers is very important in shaping health behavior; there is a positive correlation between knowledge, attitudes and health behavior<sup>19</sup>.

Health education is very beneficial for adolescents because it can increase their understanding and awareness of the problem of leukorrhea and improve social relations<sup>20</sup>. The need to address this problem through reproductive health education has been recognized to increase adolescent knowledge and awareness in self-care<sup>21</sup>.

## Materials and methods

The research method used in this study is a pre-experimental design with one group pre-test and post-test design approaches. The population was all female students and the sample size was 150 students from January to March 2021 in Lamongan District junior high school with a purposive sampling technique. Total respondents is 150 students, with two sessions (session one 75 students and session two 75 students) because of Covid-19 pandemic; inclusion criteria are healthy students and willing to sign an informed consent. The independent variable is health education, the dependent variable is knowledge, attitudes and actions regarding the prevention of leukorrhea. The research instrument used a questionnaire with a total 40 questions, which were made from the literature review. The questionnaire consisted of 25 questions about knowledge, seven questions about attitude and eight questions about actions. The responses of knowledge and actions are measured using a 2-point scale of yes and no, whereas for responses actions are measured using a 3-point scale of agree, uncertain and disagree. The validity test of the instrument used *Product Moment Correlation*, where all the question attitude items on the questionnaire had a significance value  $<0.05$ . The reliability test of the instrument using *Cronbach's alpha* was 0.80.

The researcher asked for approval by means of informed consent and explained to the respondents about the research objectives. The researcher provided a questionnaire sheet and explained the instructions for filling it out. Respondents were asked to fill out a questionnaire before and after the health education intervention was carried out.

The data normality test used *Kolmogorov Smirnov*; the significance value was 0.01 where the data results were not normally distributed. The data scale is ordinal. The level of knowledge, attitudes and actions is categorized into three, high if the score is 76-100%, moderate if the score is 56-75% and low if the score is  $<56\%$ . The results of data analysis used the *Wilcoxon Signed Rank Test* with a significance level of  $p < 0.05$ , using SPSS PC for Windows version 22.0. The Ethical Committee of Medical Research, Muhammadiyah University stated that it is ethical with no. 063 / EC / KEPK-S2 / 02-2021.



## Results

Table 1 shows the characteristics of the respondents based on age, menarche, sources of information and parental education.

Characteristics	N	%
Age		
12-14 Years	90	60.0
15-17 Years	60	40.0
Menarche		
11-13 Years	72	48.0
14-16 Years	78	52.0
Resources		
Parents	18	12.0
Mass media	92	61.3
Health workers	12	8.0
Lessons at school	28	18.7
Parental Education		
Not finished	12	8.0
Elementary School	14	9.3
Junior High School	74	49.3
Senior High School	30	20.0
Higher Education	20	13.4

**Table 1.** Socio-demographic characteristics of adolescent girls.

Characteristics	Pre-test		Post-test		P-value
	Mean	SD	Mean	SD	
Knowledge	15.44	2.462	21.03	3.062	0.000
Attitude	33.03	5.099	44.67	6.336	0.000
Actions	33.16	5.370	44.97	6.557	0.000

**Table 2.** Difference Pre-test and Post-test on Health Education.

\* Wilcoxon Signed Rank Test was used, < 0.05 was considered statistically significant.

Difference between before and after being given health education about the prevention of leukorrhea (Table 2) showed a significant increase in knowledge, attitudes and actions between all groups ( $p < 0.05$ ).

Characteristics	Pre-test		Post-test		P-value
	Mean	SD	Mean	SD	
Definition	2.84	.731	3.54	.720	0.000
Etiology	2.70	.674	3.47	.774	0.000
Classification	2.57	.660	3.51	.872	0.000
Management	4.74	1.100	6.88	1.460	0.000
Impact	2.53	.973	3.32	1.098	0.000

**Table 3.** Difference in Pre-test and Post-test on Knowledge of Leukorrhea.

\* Wilcoxon Signed Rank Test was used, < 0,05 was considered statistically significant.

Furthermore, difference between sub-variables, showed significant differences before

and after health education about leukorrhea related to definition, cause, classification, management and impact ( $p < 0.05$ ).

Variable	Knowledge		Attitude		Actions	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Age	0,793	0,799	0,364	0,554	0,342	0,607

**Table 4.** Difference in Pre-test and Post-test related to age.

\* Pearson Chi-Square Test was used, result >0,05 was considered statistically not significant.

Difference between age and knowledge, attitude and action (Table 4) showed no significance with a value > 0.05.

## Discussion

The results showed the positive impact of the health education intervention on knowledge, attitudes and actions about leukorrhea among adolescent girls. Knowledge of leukorrhea parameters before and after intervention (obtaining knowledge) is the initial phase for developing positive behavior and increasing self-esteem in adolescents who experience leukorrhea<sup>22,23</sup>. The awareness of students about leukorrhea prevention will improve their attitudes, health behaviors and habits of maintaining personal hygiene, which, in turn, increases self-esteem and reduces psychoemotional disorders<sup>24</sup>. Several studies have shown that there is a positive effect after health education has been carried out on increasing the knowledge, attitudes and behavior of students in preventing leukorrhea<sup>25,21,4</sup>. Several campuses in Portugal stated that reproductive health education in schools affects students' knowledge and attitudes about adolescent reproductive health<sup>26</sup>.

The first finding indicated that the knowledge score about leukorrhea increased after being given health education. The results of other studies that indicate an increase in knowledge after the health education program strongly support this view<sup>4,27</sup>. Lack of knowledge prior to intervention could be attributed to a lack of information about leukorrhea. Leukorrhea events that have not been seriously handled by health workers when adolescents girls enter developmental stages can cause heightened anxiety and are one of the causes of adolescent girls experiencing depression<sup>6</sup>. This supports the



research results, that adolescent girls get information about leukorrhea in large part from the mass media and which are deemed incomplete and unscientific. An encouraging finding in this study is that most of the study participants realized that, concerning the unpleasant odor caused by leukorrhea, impaired self-concept, and lack of self-care, as factors in the occurrence of fluor albus prior to intervention; this is consistent with several studies<sup>28,24</sup>. After the intervention, it was seen that there was an increase in knowledge on items about self-care.

The highest increase was seen in knowledge about the management (prevention and treatment) of leukorrhea, indicating the benefits of the health education provided. Likewise, in a study conducted at Islamic boarding schools, the highest increase was found in knowledge of self-care methods<sup>29,30</sup>. In line with research conducted at high schools in Denpasar, there is a significant relationship between knowledge and leukorrhea prevention behavior<sup>31</sup>. There is a significant relationship between education level, knowledge and health status<sup>32</sup>.

The second finding relates to attitudes to leukorrhea before and after the intervention. That the attitude toward leukorrhea is one of the factors that influence anxiety in adolescents during the occurrence of leukorrhea. When adolescent girls achieve a better attitude toward leukorrhea, their anxiety will decrease<sup>6</sup>. Attitude is an organizing principle that is effective in acting and can initiate health behavior because of its influence on the person<sup>33</sup>. In this study, health education was a protector of positive attitudes to leukorrhea for students. Among other factors, the attitude of adolescent girls to leukorrhea is influenced by their contribution to participating in a health education programs that can help them to become self-confident and willing to take care of themselves. Research results that show an increase in positive attitudes after health education interventions can support this view<sup>4</sup>. In this study, the participants' attitudes were influenced by the education provided so that it is hoped that there will be changes in participants' attitudes towards leukorrhea.

The third finding is the effect of nursing actions before and after health education. The existence of good knowledge and attitudes will encourage adolescent girls' behavior in the

prevention of leukorrhea<sup>20,34</sup>. This is in accordance with the objectives of health education, namely the expected behavior change. Health education is all efforts that are planned to influence other people so that they do what is expected by education actors<sup>33</sup>. A person's knowledge and attitudes will affect behavior<sup>35</sup>, including in the prevention of leukorrhea. Several studies have shown that there is a relationship between the level of knowledge and the prevention behavior of leukorrhea in adolescents<sup>36</sup>. Likewise with attitudes, there is a significant relationship between attitudes and leukorrhea prevention behavior<sup>20</sup>.

In this study, age did not have a significant relationship with changes in knowledge. However, another study found that age has a significant effect on increasing knowledge<sup>37</sup>. A possible reason for this difference could be due to the homogeneity of the study participants in this study, which is unlike comparative studies where participants have different age backgrounds. Age can affect knowledge because age affects a person's perception and mindset. Someone who is old enough, will be more mature to think and work<sup>38</sup>.

Late adolescents search of new experiences and their increased interest in higher power or thought processes relating to knowledge<sup>39</sup>. The increase in knowledge was significantly higher in those with parents with a higher educational background. There is a relationship between education levels and knowledge, attitudes and behavior<sup>40</sup>.

This study shows that there is no significant relationship between the increase in attitudes and age of the participants. Prior to the intervention, study participants believed that every woman would experience leukorrhea and disgust. In the same study, adolescent girls also had an unpleasant attitude toward the occurrence of leukorrhea<sup>41</sup> and agreed that the lives of women at the time of the leukorrhea had disturbed them psychologically. In this study, women can take care of themselves by using the information they get from external sources. Sources of information also greatly affect the attitudes of adolescents with leukorrhea<sup>42</sup>.

Several schools in the United States claim that youth reproductive health policies in schools offer a practical form of reaching adolescents through health information and services to

students who may not have access to education about reproductive health<sup>43</sup>. A survey conducted by the WHO in several countries shows that good and correct information can reduce reproductive problems<sup>44</sup>. Thus there is the influence of health education about fluor albus on knowledge, attitudes and actions in adolescent girls. Limitation of this study is that the research period was quite short.

## Conclusions

Prevention of leukorrhea incidence in adolescent girls should be increased. Therefore the current study evaluates the effect of health education on leukorrhea prevention with a before and after design. And according to the results of this study, knowledge, attitudes and actions in the prevention of leukorrhea in adolescent girls can be improved through health education about leukorrhea prevention.

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## Declaration of Interest

All authors declare that there was no conflict of interest in this study.

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