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The Effect of Reproductive Health Counseling to the Perception on Prevention Behavior of Leucorrhea in Female Students at SMAN 1 Temon (Based on the Health Belief Model/HBM Theory)

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ABSTRACT

Background: Leucorrhea is a problem that is often experienced by women. Female adolescents have inadequate knowledge about handling and preventing leucorrhea. This inadequate knowledge has an impact on the perception that leucorrhea will not affect their health. But in reality, for the last 3 (three) years from 2014 to 2016, there was an increase in complaints according to the screening results by Puskesmas Temon 2 (Community Health Center). Because of this reason, interventions are needed regarding the knowledge about leucorrhea prevention applying the Health Belief Model (HBM) theory, including perceptions of seriousness, vulnerability, benefits, obstacles, and impulse to act that can be measured by a perceptual score.

Objectives: This study aimed to determine the effect of reproductive health counseling on the perceptual score of seriousness, vulnerability, benefits, obstacles, and impulse to act involving female students' perceptions in leucorrhea prevention behavior of SMAN 1 Temon (Senior High School) before and after health counseling. The score was measured by the HBM.

Methods: The research was a quasi-experimental study with a time series design. The population of this research was the female students of class X and XI SMAN 1 Temon. The sample consisted of 55 female students who had fulfilled the inclusion and exclusion criteria by using simple random sampling technique. Data were analyzed using repeated ANOVA test with significance level (α) of 0.05.

Results: The results of this study indicated that there were significant differences in perception scores ($p = 0.000$) before counseling and after counseling in perceptions of seriousness in prevention, vulnerability to leucorrhea, benefits in prevention, barriers to preventive action, encouragement to act and total HBM score.

Conclusions: Reproductive health counseling about leucorrhea based on the Health Belief Model theory is effective to improve female adolescent students' perception in taking action to prevent leucorrhea, especially in perception scores of seriousness, vulnerability, benefits, obstacles, and impulse to act in leucorrhea prevention behavior of female students in SMAN 1 Temon.

Keywords: Health Belief Model / HBM, Leucorrhea, Prevention behavior, Female adolescents

BACKGROUND

Leucorrhea often occurs in female adolescents, especially in Asia where 76% of woman experience leucorrhea and in Indonesia alone there are 75% of women who experience leucorrhea once and 45% experience leucorrhea twice or more due to the humid climate that make conditions susceptible to leucorrhea caused by *Candida albicans* and parasitic fungal infections^{1,2}. An abnormal leucorrhea

can cause feelings of discomfort, and over extended periods of time can cause serious illness, including pelvic infections and infertility³. Some coping efforts involve using antiseptic soaps to wash the genital organs. The use of antiseptics actually disturbs the vaginal ecosystem, especially the pH of bacterial life, characterized by leucorrhea⁴. Based on the statistical data in 2009, in Daerah Istimewa Yogyakarta (DIY), about 68% of 2.9 million people aged 15-24 years

experienced discomfort from leucorrhoea⁵.

Data from the *Puskesmas* Temon 2 indicated there were complaints of leucorrhoea and itching around the genital area of the female students in SMAN 1 Temon and SMK (vocational high school) Ma'arif during the last three years. The results of a preliminary study revealed that their personal hygiene was not good, the habit of wearing tight pants, rarely replacing the sanitary napkins and wrong direction when cleaning after defecation caused an increase in complaints of genital organ disorders^{5,6}.

The Health Belief Model (HBM) is a traditional socio-psychology model. The emergence of this model is based on the fact that health problems are characterized by the failure of people or communities to support prevention and healing efforts from disease. Rosenstock mentioned that HBM has four perceptions, namely perception of seriousness (perceived seriousness) which is a feeling of seriousness of disease, perception of vulnerability (perceived vulnerability) which is perceived susceptibility to risk that will arise against him/her, perceived benefits (perceived benefits) are an individual evaluation of the effectiveness carried out to overcome the health problems they experienced, and perceived obstacles (perceived obstacles) that are perceived by individuals to act as obstacles in carrying out the right behavior⁷. Oliver and Berger added the *cues to action* factor to explain HBM⁸.

The purpose of this study was to determine the effect of reproductive health counseling on perceptual scores of seriousness, vulnerability, benefits, obstacles, and impulse to act in leucorrhoea prevention behavior of female students in SMAN 1 Temon before and after counseling measured by the traditional HBM Theory. The research stages were as follows: measurement of perception scores using questionnaires before the counseling, giving female adolescent reproductive health counseling related to leucorrhoea, measuring perception score immediately after counseling, and measuring perception score one month (H+30) after counseling in order to better evaluate the implementation of counseling.

RESEARCH METHODS

This research was a study using quantitative data analysis. The research design was quasi-experimental with a pre and post-test without control with time series design. The population of the study was female students of SMAN 1 Temon especially class X and XI, which amounted to 128 students. The sample size of this study was calculated based on the formula⁹:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} P (1-P) N}{d^2 (N-1) + Z^2_{1-\frac{\alpha}{2}} P (1-P)}$$

Notes:

$$Z^2_{1-\frac{\alpha}{2}} = \text{Statistic Z (Z = 1.96 for } \alpha = 0.05)$$

N = Population (128 students)

P = Proportion (50%)

d = Precision (10%)

Based on calculations, as many as 55 research subjects were selected by simple random sampling method.

The inclusion and exclusion criteria were as follows:

Inclusion Criteria:

- Female students of SMAN 1 Temon with active student status of the school, class X and XI.
- Age 14 - 18 years.
- Willing to be a respondent.

Exclusion Criteria:

- Not present at the time of data retrieval.
- Have been following reproductive health counseling.

An HBM theory application questionnaire on the effort of leucorrhoea prevention was used as a research instrument. The questionnaire consists of 30 questions divided into 5 sub-chapters. Validity tests used product moment correlation and reliability test used Alpha Cronbach test¹⁰. Validity and reliability test results obtained 25 valid and reliable statements.

Statistical analysis was performed by bivariate analysis using repeated ANOVA tests if the data were normally distributed, while multivariate test used Pairwise comparisons tests¹¹.

RESULTS

Most of the respondents were 16 years old and had been exposed to information and experienced discomfort leucorrhoea. As for their habits, they changed their underwear two times daily, changed sanitary napkins $\geq 3x$, used specific femininity soap $\geq 3x$, or they sometimes/never changed femininity soap, sometimes/never replaced sanitary napkins with a cloth that was washed again, and sometimes/never wore panty liner when not menstruating. With other details, Table 1 shows respondents' behavior concerning leucorrhoea prevention.

Perception scores in the prevention behavior of SMAN 1 Temon female students before and after getting counseling about the prevention of leucorrhoea indicated there was an increase of the average total score of HBM before the counseling 9.90 to 14.27 after the counseling and a month after pre-test and post-test I to 15.42. Each component also increased in post-test I and post-test II. In detail, the results of the score can be seen in Table 2.

Table 1. Characteristics of Respondents

Characteristics	n	%
Age		
14 years	4	7.27
15 years	23	41.82
16 years	28	50.91
Total	55	100
Leucorrhoea Type		
Abnormal (Discomfort) Leucorrhoea	49	89.09
Non-Abnormal Leucorrhoea	6	10.91
Total	55	100
Information Exposure		
Ever	33	60
Never	22	40
Changing Underwear (in a day)		
1 X	0	0
2 X	39	70.91
≥ 3 X	16	29.09
Changing Sanitary Napkins (in a day)		
1 X	0	0
2 X	3	4.45
≥ 3 X	52	95.55
Using Special Femenity Soap (in a day)		
1 X	12	21.82
2 X	5	9.09
≥ 3 X	38	69.09
Replacing Special Femenity Soap		
Never	33	60
1 X	15	27.27
2 X	7	12.73
≥ 3 X	0	0
Replacing Sanitary Napkins with Washed Cloth		
Never	49	89.09
Ever	6	10.91
Often	0	0
Using Panty liner When Not Menstruating		
Never	34	61.82
Often	1	1.82
Sometimes	20	36.36
≥ 3 X	0	0

Table 2. Perception Score in Leucorrhoea Prevention Behavioral of SMAN 1 Temon Female Students Before and After Health Counseling Measured by HBM Theory

Type of Perception	Number of Female Students	Mean			P
		Pre	Post I	Post II	
Perceptions of Seriousness	55	8.18	13.53	15.49	0.000
Perceptions of Vulnerability	55	6.29	14.60	16.16	0.000
Perceptions of Benefits	55	11.54	15.42	16.00	0.000
Perception of Obstacles	55	12.69	15.47	16.07	0.000
Impulse to Action	55	10.78	12.34	13.36	0.000
HBM	55	9.90	14.27	15.42	0.000

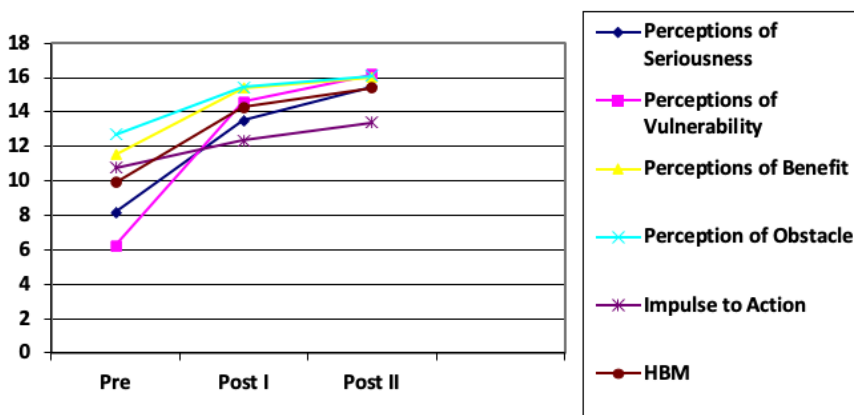


Figure 1. Score Comparison of Perception of Seriousness, Vulnerability, Benefit, Obstacle, Impulse to Action and HBM, Pre-test, Post-test I and Post-test II

The results of the bivariate analysis showed that there were significant differences in all perception scores between pre-test, post-test I and post-test II.

The pattern of increasing perceptual scores continued to increase after counseling and the following month.

Increased perception scores of seriousness, vulnerability, benefits, obstacles, and impulse to act can be seen in the chart below.

The differences in each treatment on each perception can be seen in Table 3 as follows:

Table 3. Pairwise Comparisons Multivariate Test Results

Perceptions	Treatments	<i>p</i> Value
Seriousness	Pre Test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000
Vulnerability	Pre-test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000
Benefit	Pre Test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000
Obstacle	Pre-test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000
Impulse to Action	Pre-test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000
HBM	Pre-test vs Post Test I	0.000
	Post Test I vs Post Test II	0.000
	Pre Test vs Post Test II	0.000

The results of the study showed that there was an average increase of perception scores of seriousness before and shortly after counseling from 8.18 to 13.53. After a month of the study the result was 15.49. The results of repeated ANOVA tests on increasing perception of seriousness were found to have a significant difference ($p=0.000$). Pairwise comparison tests provided the following results on pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Perceptions of Vulnerability

The results showed that the average score of vulnerability perceptions of female students of SMAN 1 Temon experienced a significant increase after health counseling about leucorrhoea ($p=0.000$). The increase in scores occurred in all treatments, both in the pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Perceptions of Benefits

The increases in benefit perception scores were also statistically significant ($p=0.000$). The increases in the benefit perception occurred in pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Perception of Obstacles

The results showed that the average score of obstacles

perception experienced a good increase shortly after counseling and a month after counseling. The results of the bivariate tests also showed that there was significant difference of mean score of perception before and after the counseling ($p=0.000$). Differences occurred both in the pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Impulse to Action

The results showed that the average score of the impulse to action experienced a good increase shortly after counseling and a month after counseling. The results of the bivariate test also showed that there was significant difference of mean score of perception before and after the counseling ($p=0.000$). Differences occurred both in the pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Health Belief Model / HBM

Overall the average HBM score was increased and considered statistically significant ($p=0.000$), in each treatment, both in the pre-test – post-test I ($p=0.000$), pre-test – post-test II ($p=0.000$), and post-test I – post-test II after H+30 ($p=0.000$).

Perceptions from Respondents

Respondents stated counseling about leucorrhoea that had

been conducted was good. The material presented was in accordance with what they expected so far, and the counselor could explain in an easy-to-understand language about the importance of personal hygiene.

DISCUSSION

Perceptions of Seriousness

The increase of perception score of seriousness was due to the female students of SMAN 1 Temon feeling that leucorrhoea is a serious problem for reproductive health with the result that they will take action to prevent or treat it. This is in accordance with the definition of the perception of seriousness, specifically the perception concerning the sense of seriousness of the disease, if not handled, there will be medical consequences (death, disability, and pain), psychological consequences (depression, anxiety, and fear), and social consequences (impact toward work, family life, and social relations)¹². Due to the good leucorrhoea prevention habits such as frequent information about leucorrhoea from TV, community health centers, Internet, and magazines were available to the female students of SMAN 1 Temon, if these continue then the health benefits of action are more than the obstacles that may be found¹³. This finding is in contrast to research which states that most (64.04%) of female adolescents do not regard leucorrhoea as a serious problem¹⁴.

Perceptions of Vulnerability

Respondents who did not perceive themselves vulnerable argued that the use of underwear that does not absorb sweat and the use of antiseptic solutions will not lead to leucorrhoea, when in fact it facilitates the growth of germs, bacteria, fungi attached to feminine areas while the use of antiseptic changes normal vaginal pH (4-4.5) to become base/alkaline nature¹⁵. A person should perceive their vulnerability in taking action to prevent or treat an illness¹³, and this is in accordance with the perception of vulnerability which states that the higher the perception of vulnerability, the greater the perceived threat, and the greater the likelihood that the individual will take action to overcome the problem¹⁶.

Perceptions of Benefits

There was an increase in the average scores of perception of benefits because the respondents agree with the benefits of the act of maintaining personal hygiene, the use of special femininity soap with suitable pH, changing pads/sanitary napkins periodically while menstruating, and replacing the underwear at least 2x a day to reduce the occurrence of leucorrhoea in women¹⁷. Another study suggests that there is a relationship between maintaining the cleanliness of female organs with the incidence of leucorrhoea in adolescents in accordance with the perception of the benefits that shows positive health results when a person believes as a result of preventive and treatment actions and consequently will form an action by themselves¹⁸.

Perception of Obstacles

Respondents considered that there was nothing to prevent them from taking leucorrhoea precautions, either from themselves or from outside, and this is in accordance with

the definition of obstacles of perception which states that the negative health results when a person believes there are obstacles as a result of the preventive actions coming from within and from outside of the individual.

This result is different from one study which found that the perception of obstacles is very strong in taking precautionary measures, and this is because the respondents may select a bad action in preventing against abnormal leucorrhoea, despite knowing the threat to her feminine area¹⁴. The obstacles felt by the respondents included that they should come to the *Puskemas* first. Actually, in order to prevent abnormal leucorrhoea, there is no need to come to *Puskemas*, but it is sufficient to maintain the hygiene of the feminine area properly. The obstacle factors were not a big problem in taking leucorrhoea precautions. This is seen from the results of the study that most respondents had changed the sanitary napkins with a cloth (washed cloth), changed underwear 2x in a day, and replaced sanitary napkins $\geq 3x$ in a day.

Impulse to Action

The results of the study found that there was a relationship between the impulse to act to take the precaution against leucorrhoea. These results are consistent with studies suggesting a relationship of an impulse to act with the prevention of leucorrhoea in female adolescents¹⁴. This is because respondents understand the importance of maintaining the cleanliness of their female organs so as not to cause leucorrhoea. Respondents who are not encouraged in taking precautionary measures tend to take unhealthy precautions in preventing leucorrhoea.

Factors that play a role in influencing the impulse to act in adolescence are the role of their parents. The role of parents is necessary for changing behavior in adolescents because parents took care of them since childhood so parents should help their children early in changing behavior and train them to familiarize themselves in maintaining the hygiene of the feminine area to prevent the occurrence of leucorrhoea^{15,19}. Parents, health workers, teachers, peers, electronic media, and print media are the central sources where the respondents get information about leucorrhoea, and if the information provided in the prevention of leucorrhoea is good then the respondents' actions in the prevention of leucorrhoea will be good as well, whereas if the information provided is not good in preventing leucorrhoea, then the respondent will take the wrong action.

Health Belief Model / HBM

Many factors influence the increase in HBM average score, one of which is the effective implementation of reproductive health education about leucorrhoea that goes well. This is consistent with the theory which states that health counseling can shape an individual's perception of good health action^{20,21}. Another study also states that health counseling can affect the perception of female adolescents in doing leucorrhoea prevention^{22,23}.

Responses from Respondents

Leucorrhoea problems are not only related to a person's

medical beliefs and perceptions, but are influenced by culture and social values²⁴. This is in accordance with research which states that there is a direct relationship between the incidence of leucorrhoea and women's perceptions of leucorrhoea²⁵. But most women consider leucorrhoea to be a very natural thing and will not cause harmful effects. Actually, disruptive leucorrhoea can be fatal for their health if not handled properly²⁶.

The positive results of the study indicate that the provision of health information through counseling can change the female students' perceptions that abnormal leucorrhoea if left unchecked can lead to many health problems and possibly death.

Sources of information accessed by adolescents who attend school contribute to improving knowledge, attitudes, and behaviors about reproductive health. Good information will have a positive impact, or vice versa, wrong information can lead to misperceptions. Although information about leucorrhoea is abundant and easy accessed, not all information sources are accurate. Reproductive health education about leucorrhoea, should be done by parents at home and teachers at school. But the general conditions in our society indicate that reproductive health education was still taboo to be discussed between parents and their children²⁷.

The self-perception theory says that the positive or negative perceptions of something depends on the persons' maturity. The factors that influence perception are personal experiences, external factors, culture, media, educational institutions, and emotional state. Good perceptions can be produced as a positive effect of their culture. The influence of important people in the life of female students can also positively affect the attitude of self-control regarding the prevention of abnormal leucorrhoea¹⁹.

The adolescent stage is a transition period between immaturity, childhood and adult maturity. In this period of development, it is important to find their identity. Female students will follow the attitude of their role models or the people who are important to them (for example, their mother). Ultimately, this study is expected to encourage the respondents to take better care of themselves and follow proper actions to prevent abnormal leucorrhoea.

Counseling conducted in SMAN 1 Temon is considered to be successful because it can improve the perception scores of the female students about the prevention of leucorrhoea. Following this research, it is expected that the adolescent reproductive health counseling program will be done periodically in collaboration with the *Puskesmas* Temon II as a source of health counseling, while the schools are encouraged to conduct reproductive health counseling through the school health unit, with the installation of pamphlets as additional sources of information related to adolescent reproductive health in school magazines.

CONCLUSIONS

Reproductive health counseling has an effect on increasing perception scores of seriousness, vulnerability, benefits,

obstacles, and impulse to act in leucorrhoea prevention behavior of female students in SMAN 1 Temon.

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Ethical Approval

This study was approved by The Medical and Health Research Ethics Committee (MHREC) from the the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta with the reference number: KE/FK/0680/EC/2017 dated June 14th, 2017.

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Availability of Data and Materials

Please contact the author for the availability of data and material through the author's correspondence.

Conflict of Interest

None.

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