

## The CENAME (Menstrual Panties)

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### ABSTRACT

Indonesia is the first country in its highest cases of cervical cancer in the world, and 62% of them was due to the use of a poor-quality sanitary napkins. There are 400 additional cervical cancer patients annually. Menstrual problems are also triggered by a poor quality sanitary napkins while menstruating and wearing regular sanitary napkins that have been mixed with chemicals and mixed with non-sterile materials from common sanitary napkins. Aim this research is to create a good quality of menstrual panties (named as CENAME). This research applied a research and development (R&D) method. A questionnaire trial on the panties to fertile women who were at menstruation period; they were 18 to 45 years old. The location was in Toyareka Village, Kemangkon District, Purbalingga. This research was carried out in December 2020. Most respondents were 18-20 and 21-30 years old (each with 2 persons), most of them had a high level of education (3 people). The product has passed a product testing of the health experts. The testing was to determine three aspects of comfort, capacity and hygiene. Its comfort level had an average score of 33.8, meaning very comfortable/excellent category. The product has passed the testing of health experts. It has been proved to overcome an irritation which was usually caused by a regular disposable sanitary napkin and it surely minimizes the waste. The selection of the materials must be highly-considered.

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### 1. INTRODUCTION

According to WHO, Indonesia is the country with the highest cervical cancer cases in the world. Among of them, 62% cases are related to the use of poor quality pads. There are 400 new cervical cancer patients every year. According to a research, it was found that there are 107 bacteria / mm<sup>2</sup> in regular menstrual pads. This means that the pads are a source of the growing harmful bacteria. For this reason, the common menstrual pad can be used only in the limit period of 2 hours. [1]

Research data on reproductive health have proved that 75% of women in the world have experienced flour albus (leucorrhoea) at least once in their lives and 45% of them have it more than once. In Indonesia, there are predisposing factors for vaginal discharge. Flour albus (leucorrhoea, vaginal discharge) is a symptom that is frequently identified in gynecological patients. One third of them come with a symptom of flour albus. [2]

According to several studies, a cervic cancer is caused by a virus, Human Papilloma Virus (HPV), which appears, among others, due to the bad behavior of frequently sex-partners changing and unhygienic behavior during menstruation and poor quality of menstrual pads. The virus lives in moist areas, particularly in the vaginal liquid of the patients with flour albus. If this vaginal discharge was not cured immediately, this may lead to a cervical cancer. Usually this condition is characterized by a large amount of vaginal discharge accompanied by an unpleasant odor and bleeding from the vagina, though these are not the case for all the

cancer incidents. It was found out that the main factor of cervical cancer in Indonesia is the poor quality of the menstrual pads. [3]

Wulandari (2012) said that menstrual problems are usually caused by the use of poor quality sanitary napkins, and of using regular sanitary napkins that have been mixed with chemicals and non-sterile materials from them. This can lead to infection and vaginal problems. Signs of infection among menstruating women include frequent urination, dizziness, abdominal pain, backache, vaginal discharge, pain in urination. Poor menstrual pads may cause uterine cancer, myoma, hormone damage, cysts to the risk of defects in babies.

Sanitary napkins are products in the form of pads made of cellulose or synthetic materials used to absorb menstrual or vaginal fluids. In their production process, a cellulose-based pads need to be bleached. A safe method of bleaching uses hydrogen peroxide, instead of chlorine. This is regarded as dioxins-free. [4] Another safer material is cloth, but there are some problems with. They are not a good blood-absorbent, and tend to get moisted fast, which in turn will invite the bacteria and germs to grow. Another important point is that its reuse can be risky; the user should make sure that they are clean and sterile. [5]

The use of sanitary napkins on the female organs causes them to be in hot and humid and no oxygen environment for a long time during menstruation. This creates a certain discomfort and is easy to cause the emergence of bacteria resulting in various gynecological diseases.

Genital health is one of the reproductive organ problems frequently experienced by women in various countries, including Indonesia. According to world health study data, its incidence has reached 33% of all diseases suffered by women in the world. 50% factors in genital health are the use of poor-quality pads. [6]

As generally known, it is important for a product to have superior quality and is expected to create comfort and satisfaction for the users. The product quality is surely one of the determinant factors. As the users get comfortable having it, they will do another purchase. Besides, they also consider that it is safe for their health.

The product trial obtained an average percentage satisfaction of 90% in the limited group trial and the field trial. It means the product is very feasible. It can be said that the cloth sanitary napkins developed have benefits to the users. They have received positive responses from students; this is due to the advantages of its soft top layer material. Meanwhile its middle layer is very effective to absorb, and its bottom layer material is strong enough. Its washing method is also easy by soaking it in detergent solution to remove the bloods and other dirt, then wash it normally. The advantages of this cloth pad are durable, cleanable, and more eco-friendly as it can be used many times, compared to regular disposable pads. [7]

Disposable pads do not only affect the environment because of its plastic-based materials. Besides, its content needs to be considered further, especially its effect on genital organ's health. It has been identified that some hazardous materials are contained there, like cyanide, dioxin, bleach, and others. Several respondents said that this type of disposable pads are often found to be dumped in rivers. The bad habit of the community in treating the waste can cause many environmental problems. One of them is a negative effect on the fish habitat. The chemical in the pads may be induced into their body, which results in a phenomenon of intersex and sterility in them. Such a situation will even lead to their extinction and surely creates a damage to the balance of nature. [8]

Various kinds of alternative product innovations have been created as a substitute for disposable pads in an effort to reduce the waste of disposable sanitary napkins which increases every year and reduce environmental pollution. Other innovative alternative products include menstrual cups, cloth pads, tampons, menstrual sponges, and others. [7]

The research by Zamani, Husna and Yulianingstyas in Yogyakarta 2013 said that this project aims to make a safe sanitary napkins, which will not harm the environment and aesthetics. Menstrual Hygiene Management (MHM) is the use of clean materials to absorb blood that can be replaced personally, safely, hygienically and as often as needed during the menstrual cycle (UNICEF & WHO, 2012). Commercially produced disposable pads and tampons have made period management easier but it can give a major contribution to the global problem of menstruation. The average woman needs 12,000 to 14,000 disposable pads that generate 250 to 300 pounds of waste in her lifetime.

When disposed improperly, plastic and chemical contents in the disposable pads can harm our ecosystem. [9] Even if it is properly disposed, these non-biodegradable plastic products will end up in our landfills which take about 500-800 years to decompose [10], which contributes to the pollution. While 97% of women express their concern on their environment in a US study, 85% of them admit that they ignore the harmful environmental impacts of improperly disposing of sanitary products by flushing them down the toilet for instance. [11]

Considering the background above, this study has developed an innovation of menstrual panties, "CENAME", which can be used among teenagers to adults at the productive age of 18 to 45 years using the

main material, cloth. Using cloth material does not have an impact on the environment so as to make the environment clean and reduce the amount of waste. Fabrics can be used repeatedly even though they are expensive but relatively inexpensive because they can be used repeatedly. They do not cause irritation to the skin, avoid and are easy to use even if you are in a hurry or are more simple and practical in use because their use is like using underwear in general but there are already pads in the underwear so as to minimize blood from spilling everywhere. The aim of this innovation is to make menstrual underwear comfortable and ergonomically suited for women.

## 2. RESEARCH METHOD

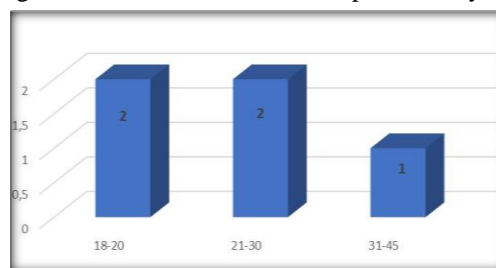
This research used method the process of designing this menstrual panties is carried out, by maximizing the level of comfort both in terms of material and size. It can accommodate approximately 90cc to 100cc of blood per day. By changing them regularly every 3-4 hours will reduce the risk of irritation to the skin.

## 3. RESULTS AND DISCUSSIONS

The general description of the respondents in this study can be seen as follows:

- a. Description of respondents by their age.

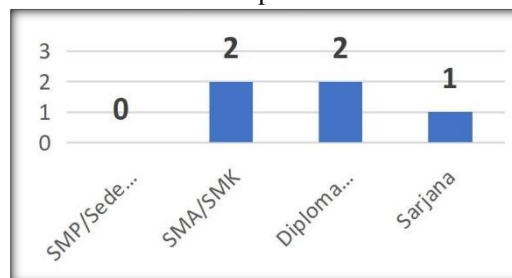
Diagram 4.1 Characteristics of Respondents by Age:



It is seen in the chart that among 5 respondents, two of them are 18-20 years old, other two are 21-30 y.o and the last one is 31-45 y.o.

- b. Characteristics of respondents based on education level.

Diagram 4.2 Characteristics of Respondents Based on Education Level:



Seen from their education, three of them have a higher education D3 (Associate's degree) and S1 (Bachelor Degree), and the other two have a secondary education (Senior high school).

- a. External looks

Figure 4.1 Front and back looks



Based on the figure 4.1, it is seen that the looks of the product looks very similar to the common panties. It was made from spandex materials. Like other wares, its size can be made according to the users' need. Spandex was chosen because it is smooth and soft and has a high elasticity to wrap up the body shape.

b. Internal sides of the panties

Figure 4.2 The insides (front and back looks)



Here, the insides of the panties are different from the usual products. The part has been added with new materials like microfleece, microfiber and waterproof which function to absorb blood and other menstrual fluids; this is a substitute of the menstrual pad.

Table 4.3 General Comfort Level

No Respondent	Score
1	30
2	32
3	35
4	36
5	36
mean	33.8

The survey on the respondents about using the product gives the following results Based on diagram 4.3, it is seen that the mean score given by the respondents in evaluating the product's comfort is 33.8.

1. Characteristics of the respondents

Based on the results, it is revealed that the highest score of respondents of the 18-20 yo group is on the product comfort, they agree that it is very comfortable. However, they give the lowest score on the product cleaning. As adolescence, they value the product for its comfort so high. The product is easy to use, and is quite safe to wear. It was attached strongly to the body, and has no risk of falling over like the usual pad they use. This is appropriate for their usually high activities.

Meanwhile, they do not like the product very much because it requires them to wash. For the usual pads, they can simply throw out it in the trash can. Washing the bloody panties is not easy for every one, particularly among the teenagers. In addition, such an extra job is something they don't prefer in their busy days.

Another lowest score was found among the 21-30 respondents. They undervalued the safety aspect of the panties. It was later known that they had redness and itching. They said that the size they wore does not really fit them. Thus, the tight panties has caused a kind of irritation problems.

From their education, the respondents in this study had a range of secondary and higher education. With their education, they would be able to increase knowledge and change the respondent's behavior in performing personal hygiene during menstruation by selecting a better product, like the panties. Such a notion has been also argued by Pythagoras (2017) as saying that the level of education taken has an impact on their readiness to take new knowledges. An individual with low education will be difficult to understand and to accept new knowledge and inputs from others, and otherwise.

2. A Simple Technology Products of Menstrual Panties

Cename as a product has passed product testing from health experts. The test was carried out to determine three aspects of comfort, capacity and hygiene. The inner material of the panties has been added

with materials from microfleece, microfiber and waterproof (Figure 4.2). The use of spandex functions to reduce genital health problems such as irritation problems. It is also resistant to acids, alkalis and sweat.

### 3. The Comfort of using the product

Based on the survey results, the average score of the assessment is 33.8, meaning the product is very comfortable/good. The results of the study also found that the level of comfort of using the products, as viewed from 10 indicators, is very good. The product is very good showed that 4 people said that CENAME's comfort was very good (80%), its material is good (60%), and its design and color is are very good (60%). They make a replacement after 3-4 hours (60%). They mostly undervalue the panties cleaning; only 40% believe that doing it is easy. From its safety, the product is safe (80%); they said that they had no problem of irritation from using it. More than half of the respondents (60%) think that the product can be soaked in fresh water, the product's size is also very good, and its economic value is good.

The test capacity of the pads has been tested using 90cc of water before the product was tested for the respondents to wear. The test was done in some stages. At first, 50cc water was poured in it. After 2 hours, another water of 40cc was put again into the pad. Thus the total liquid contained in the panties is 90cc. Then, it was found out that it can hold the water in 3-4 hours. This result is proved from the report of the respondents, saying that the panties can contain 90cc to 100cc in the period of 3 to 4 hours. Thus, it can be said the product has passed the test.

The disadvantage of the product is that the frequency of its washing must be short. It is basically made of cloth which is given with a waterproof base to prevent the leakage. Meanwhile its advantages include durability, comfort, eco-friendly, and washable. The products will be very durable when they are cared for and washed properly. They are very environmentally friendly since it can be used many times. Its top layer material is very soft so it is comfortable to use in any situation. The middle layer is easy to absorb the fluids, based on the fabric thickness. Its bottom layer is highly waterproof. The washing method is very easy by soaking in a detergent solution, and can be dried in the washing machine. [7]

## 4. CONCLUSIONS

Characteristics of respondents: 18-20 years old and 21-30 years old are 40% for each (2 people) and most of them (60%) have a higher education and Cename has passed the product testing done by health experts; the testing covers its comfort, capacity and hygiene. This product comfort level has an average score of 33.8, meaning it is very comfortable.

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