



Training for Making Hand Sanitizer Based on Natural Materials at Housewares, Dukuh Jetak, Kudus

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ABSTRACT

The rise of the Covid-19 virus has made many people quite uneasy, especially with restrictions on every activity involving communities or community organizations. Therefore, to suppress the spread of the Covid-19 virus, the empowerment of the habit of washing or cleaning hands every time they carry out activity makes many people buy cleaning equipment such as hand soap and hand sanitizer. Knowledge of the procedures for making natural hand sanitizers is essential to provide easy and inexpensive means of self-cleaning. Dukuh Jetak, Kedungdowo Kudus Village, is an area where the community still upholds religious values so that some religious activities are still carried out during the pandemic but by complying with existing health protocols. It makes the people of Dukuh Jetak still gather to respect and enliven the culture of local wisdom preserved from generation to generation. Therefore, by organizing training activities for making hand sanitizers using natural ingredients for the people of Dukuh Jetak, Kedungdowo Village, it is hoped that in addition to increasing public skills and awareness of the importance of washing hands, it also makes the community less dependent on the availability of cleaning equipment on the market.

Maraknya virus Covid-19 membuat banyak masyarakat cukup resah, apalagi dengan adanya pembatasan-pembatasan pada setiap kegiatan baik yang menyangkut komunitas atau organisasi masyarakat. Oleh karena itu, untuk menekan penyebaran virus Covid-19 diberdayakannya kebiasaan mencuci atau membersihkan tangan setiap melakukan suatu kegiatan, hal ini membuat banyak masyarakat membeli perlengkapan kebersihan seperti sabun cuci tangan dan hand sanitizer. Pengetahuan mengenai tata cara pembuatan hand sanitizer alami menjadi penting sebagai upaya menyediakan sarana kebersihan secara mandiri dengan mudah dan murah. Dukuh Jetak Desa Kedungdowo Kudus merupakan daerah yang masyarakatnya masih menjunjung tinggi nilai agama sehingga beberapa kegiatan keagamaan tetap dilaksanakan pada masa pandemi namun dengan mematuhi protokol kesehatan yang ada. Hal ini membuat masyarakat Dukuh Jetak tetap berkumpul untuk menghormati dan memeriahkan budaya kearifan lokal yang dilestarikan secara turun-temurun. Oleh karena itu, dengan penyelenggaraan kegiatan pelatihan pembuatan hand sanitizer menggunakan bahan alami kepada masyarakat Dukuh Jetak Desa Kedungdowo diharapkan selain menambah keterampilan dan kesadaran masyarakat akan pentingnya mencuci tangan, juga menjadikan masyarakat tidak terlalu bergantung terhadap ketersediaan perlengkapan kebersihan di pasaran.

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INTRODUCTION

Dukuh Jetak, Kedungdowo village, Kudus district, has a community that upholds religious values with several religious activities preserved from generation to generation. This area has a relatively large area of rice fields accompanied by adequate irrigation, which proves that the land in the Jetak area of Kedungdowo village is fertile. Lime plants can quickly grow in this area because the growth of this plant requires fertile soil, regular watering, and sufficient sunlight to grow well and produce abundant fruit. Lime can hydrate the skin optimally thanks to its vitamin C content in it has chemical components such as flavonoids, alkaloids, tannins, essential oils, and saponins that have antimicrobial activity. At the beginning of 2020, the Coronavirus attacked the world, and Indonesia was no exception. This positive single-strain RNA virus can infect the respiratory tract (Yuliana, 2020). This attack caused losses in all fields, especially in the economic and health sectors. To prevent exposure to the virus, the government has required all Indonesians to practice 3M (wash hands, wear masks, maintain distance) and limit activities outside the home.

Soap or hand sanitizer is a primary need to maintain hand hygiene. Soap and hand sanitizer have respective effectiveness in killing the Covid-19 virus. When asked which is an effective soap and hand sanitizer, it is essential to emphasize that the two ingredients both have chemical compositions that can weaken and even kill the Covid-19 virus. Hand sanitizer is an antiseptic liquid that replaces soap when soap and water are not found to clean hands, especially with the busy conditions of the community in various activities who want everything practical in cleaning their hands. This sanitation system is a convenient alternative for the community. Hand sanitizer is a hand sanitizer liquid made from alcohol or ethanol, which functions as an antiseptic to kill viruses and bacteria. The use of hand sanitizers is increasing among the public, especially after the Covid-19 virus attacked various parts of the world.

As the main component of hand sanitizer, alcohol acts as an antiseptic on clean skin surfaces. Continuous use of alcohol as a hand sanitizer is not safe for skin health. Alcohol is flammable and, with repeated use, causes dryness and irritation of the skin. In order for the use of alcohol to be effective without causing any impact on the user, then the addition of additives from natural ingredients, such as lime and aloe vera, to reduce irritation to the skin. Lime can be used for making hand sanitizers because it has chemical components such as flavonoids, alkaloids, tannins, essential oils, and saponins that have antimicrobial activity. Lime can inhibit the growth of *Staphylococcus aureus* bacteria in vitro in several concentrations,

namely 25%, 50%, 75%, and 100%. The higher the concentration of lime (*Citrus aurantifolia* Swingle), the better the inhibitory power (Razak et al., 2013).

In addition, lime can also inhibit the growth of *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Salmonella typhi*, *Enterococcus faecalis* bacteria (Nurdin et al., 2013; Pratiwi et al., 2013; and Ramadhinta et al., 2016). Based on this background, the manufacture of hand sanitizers with the addition of additives from natural ingredients (lime and aloe vera gel) has the potential to be developed among the people of Dukuh Jetak Kedungdowo Village, mainly because the area is fertile, so it is easy to grow lime. The purpose of this activity is (1) to educate the use of lime plants as additives in the process of making hand sanitizers, (2) to provide training on how to make hand sanitizers independently (3) to transfer knowledge from the academic environment to the general public.

The COVID-19 pandemic has had a significant impact on human life. The virus has spread and become a global pandemic that has shifted people's lives worldwide. The pandemic has changed the way of interaction. Shaking hands is temporarily not allowed, limiting speaking and keeping a distance of at least one meter. On the other hand, despite the adverse effects caused by the Covid-19 pandemic, there are also positive effects on people's lives. Public awareness about a clean and healthy lifestyle is increasing. A recommended way to prevent the spread of the Covid-19 virus is to frequently wash your hands with soap or hand sanitizer when traveling to replace soap. The pandemic has destroyed the economy, slowed economic progress, and hampered economic activity. This issue affects the community. Each community must be more careful in using money to meet needs. The need to clean hands, soap, and hand sanitizers are of primary importance to families. This hand sanitizer is part of the family's shopping list. In addition, hand sanitizers are supplies that are very easy to prepare yourself using simple tools and materials. These chemicals are also easy to obtain and are natural ingredients in the surrounding environment. However, this insight is not widely known by the public, so education and training are needed on the steps to make hand sanitizers with natural ingredients that are readily available and at affordable prices. The Joint Real Work Lecture Team (KKN) Against Covid-19 (BMC) 1 Kudus State University of Semarang plays a role in the process of assisting the community, which is included in the community service program. With this activity, it is hoped that residents in Hamlet Jetak Rt 7 Rw 4, Kedungdowo Village, Kaliwungu District, Kudus Regency will understand more about the procedures for making hand sanitizers from natural ingredients that are readily available around the house.

METHOD

Community service activities carried out by KKN BMC 1 Kudus students, Semarang State University by gathering homemakers who live in the Hamlet Jetak Rt 7 Rw 4, Kedungdowo Village, Kaliwungu District, Kudus Regency, Central Java to attend training and assistance in making hand sanitizers.

The first stage of community service activities in Dukuh Jetak is the preparation stage. The preparation stage includes determining the training time, training materials, preparing training media, preparing the training venue, and preparing the training participants, namely Housewives in Dukuh Jetak, as many as eight people. The training in service activities is carried out by one student who lives in Dukuh Jetak.



Figure 1.

Flyer of Hand Sanitizer Manufacturing Procedures

After the preparation is complete, the second stage is implementation. The implementation stage was carried out as training, which began with explaining the procedures for making hand sanitizers made from natural ingredients, namely 70% alcohol, aloe vera gel, and lime. The explanation is supported by using a media flyer (Figure 1.) which is printed out and then distributed to the training participants so that participants can listen while reading the flyer and can be saved as a reference for making hand sanitizers in the future. After the explanation was completed, participants were invited to listen and pay attention to

the demonstration of hand sanitizers carried out by the presenter and were invited to ask questions if there were things that were not understood.



Figure 2.

Hand Sanitizer Packaging Design.

The tools used are measuring cups, knives, bowls, mixing spoons, orange squeezers, and small bottles for packing hand sanitizer. While the method of manufacture is, as much as 35 mL of 70% alcohol is mixed with 35 mL of aloe vera gel and then stirred, then add enough lime juice as a natural fragrance. After the three ingredients are mixed, stirred until smooth and put into a small bottle of hand sanitizer as shown in Figure 2.

RESULTS AND DISCUSSIONS

The training activity for making hand sanitizers made from natural ingredients was carried out by one of the students of KKN BMC 1 Kudus, Semarang State University, who is domiciled in Hamlet Jetak, Kedungdowo Village, Kaliwungu District, Kudus Regency. This activity was carried out face-to-face and was attended by 8 participants with a background as housewives while still applying the applicable health protocols. The training was held on Monday, August 16, 2021, at the house of one of the residents of Dukuh Jetak Rt 7 Rw 4. Before the hand sanitizer demonstration was carried out, participants were first given an explanation on how to prevent transmission of Covid-19 through 5M because there are still residents who ignore the protocol health. Then the activity was continued with material explanations regarding the procedures for making hand sanitizers using printed media flyers to educate the public and make their guidelines for making hand sanitizers independently in the future

The hand sanitizer preparation made from a mixture of 70% alcohol, aloe vera gel, and lime juice produces organoleptic characteristics in the form of a cloudy white solution, slightly thick textured, has a fresh aroma typical of lime, and is soft on the hands. When

applied to the palm, the solution does not feel sticky but still leaves a slightly wet and moist impression on the hands. The moist effect on the hands is caused because the lignin or cellulose content in aloe vera can penetrate the skin and resist evaporation of body fluids from the skin surface so that the skin can be kept moist and does not dry out quickly (Kathuria et al., 2011). In addition, aloe vera also has activity as an antiseptic because it contains active saponin compounds (Saeed et al., 2003).

Alcohol is a chemical compound consisting of elements used as the main ingredient for making hand sanitizers because of its good performance in destroying disease germs through protein breakdown and cell division into several parts, which result in lysis events in the body of germs where all material undergoes diffusion out of cells. Alcohol concentrations above 60% have been proven to kill various bacteria and viruses (Lusiana et al., 2020), so they are effectively used as primary ingredients for hand sanitizers.

Figure 2.



The Training Process for Making Hand Sanitizer



Figure 3.

Distribution of Free Hand Sanitizer to Each Training Participant

During the training activities, the participants seemed active and enthusiastic in paying attention to the demonstrations shown by the presenters. Participants also actively asked about things not understood in the training process. The training on making hand sanitizers using natural ingredients opened the eyes of participants that it was not difficult to make hand sanitizer media from materials that were familiar and easy to obtain. The selection of target participants in the form of homemakers is intended because homemakers have a

dominant role in making decisions regarding health products to be used in a household. Homemakers also have more time to pay attention to family health, so it is hoped that it can be implemented well in their respective family environments. The training participants welcomed the activities carried out by the KKN BMC 1 Semarang State University students because they were considered valuable and provided new insights on the procedures for making hand sanitizers that were easy and inexpensive.

The results of the training activities for making hand sanitizers from KKN BMC 1 Kudus students, Semarang State University to homemakers in Dukuh Jetak are considered quite good with the following indicators; 1) Participants' interest and enthusiasm in the process of training activities were very high 2) Participants' awareness increased about the need for insight into the manufacture of hand sanitizers because of their essential role in maintaining hand hygiene in order to avoid the spread of the Covid-19 virus.

CONCLUSION

Community understanding and insight into the importance of washing hands and using soap and hand sanitizers are increasing. Participants were enthusiastic about participating in the training activities for making hand sanitizers with natural ingredients that are simple and easy to find. Eight participants attended this activity. Based on the evaluation results, the overall activity went well and smoothly.

REFERENCES

- Kathuria, N., Manisha, N. G., Prasad, R. dan Nikita. (2011). Biologic Effects of Aloe Vera Gel. *The Internet Journal of Microbiology*.
- Lusiana, R. A., Widodo, D. S., Suyanti, L., Gunawan., Haris, A. (2020). Edukasi Pembuatan Hand Sanitizer Berbasis Lidah Buaya pada Masyarakat Desa Harjowinangun, Grobogan. *Jurnal Pengabdian Kepada Masyarakat Tabikpun*, 1(1), 47-54.
- Nurudin, J. A., Munir, R. S., & Setiabudi, R. J. (2012). Essential oil extract of citrus aurantifolia l. Has better antibacterial effect than sulfur towards Staphylococcus epidermidis. *Folia Medica Indonesiana*, 48(3), 115.
- Pratiwi, D., Suswati, I., & Abdullah, M. (2013). Efek Anti Bakteri Ekstrak Kulit Jeruk Nipis (Citrus Aurantifolia) Terhadap Salmonella Typhi Secara In Vitro. *Saintika Medika: Jurnal Ilmu Kesehatan dan Kedokteran Keluarga*, 9(2), 110-115.

- Ramadhinta, T. M., Nahzi, M. Y. I., & Budiarti, L. Y. (2016). Uji efektivitas antibakteri air perasan jeruk nipis (*Citrus aurantifolia*) sebagai bahan irigasi saluran akar alami terhadap pertumbuhan *Enterococcus faecalis* in vitro. *Dentino: Jurnal Kedokteran Gigi*, 1(2), 17-21.
- Razak, A., Djamal, A., & Revilla, G. (2013). Uji daya hambat air perasan buah jeruk nipis (*Citrus aurantifolia* s.) terhadap pertumbuhan bakteri *Staphylococcus Aureus* secara In Vitro. *Jurnal Kesehatan Andalas*, 2(1), 05-08.
- Saeed, M.A., dan Yaqub, I. A. U. (2003). Aloe vera: A Plant of Vital Significance. *Quarterly Science Vision*.
- Yuliana, Y. (2020). Corona virus diseases (Covid-19): Sebuah tinjauan literatur. *Wellness And Healthy Magazine*, 2(1), 187-192.