

Workshop and Education on Making Hand Sanitizer, Handsoap, and Disinfectant Products as Steps to Prevent the Spread of Covid-19

Annisaa Siti Zulaicha¹, Indah Puspitasari¹, Angga Saputra Yasira¹, Iwan Syahjoko¹, M Alvien Ghifari¹

¹Institut Teknologi Sumatera

ARTICLE INFO

Article history:

Received: 5th February 2021

Accepted: 12th October 2021

Published: 1st December 2021

Keywords:

Covid-19, Hand Sanitizer, Disinfectant, Handsoap

ABSTRACT

Hand sanitizers, handsoaps, and disinfectants (H2D) have become necessities in a new normal during the Covid-19 pandemic. These three items are necessary to use in daily activities to prevent the spread of Covid-19. One of the efforts to successfully adopt a new normal is to educate the youth on preventing the spread of Covid-19. Workshop and education on making simple H2D at SMK Negeri 3 Kotabumi have been held through outreach activities and hands-on practice. The goal of this activity is to increase the student's knowledge of SMK Negeri 3 Kotabumi in living a new lifestyle to prevent the spread of Covid-19 in the North Lampung Regency. The result of this educational program is an increase in the knowledge of students of SMK Negeri 3 Kotabumi about H2D in terms of composition, making, and use. Besides, through the workshop program, students of SMK Negeri 3 Kotabumi also acquire skills in making simple H2D. Through presentation and direct practice, students of SMK Negeri 3 Kotabumi have been educated to become new lifestyle agents to prevent the spread of Covid-19 in the North Lampung Regency.

How to cite: Siti Zulaicha, A., Puspitasari, I., Saputra Yasir, A., Syahjoko, I., & Ghifari, M. A. (2021). Workshop and Education on Making Hand Sanitizer, Handsoap, and Disinfectant Products as Steps to Prevent the Spread of Covid-19. *Jurnal Pemberdayaan Masyarakat Madani (JPMM)*, 5(2), 320-334. <https://doi.org/10.21009/JPMM.005.2.11>

* Corresponding Author.
annisaa.zulaicha@km.itera.ac.id (Annisaa Siti Zulaicha)

1. INTRODUCTION

Health is very important for individuals and society in general. One of the health problems that are being experienced by Indonesia and the world is the SARS-Cov-2 virus pandemic which causes upper respiratory infections with the main symptoms being fever, dry cough, and fatigue (Wulandari A. et al, 2020). Kotabumi, which is the capital of North Lampung Regency, has recorded some positive cases of Coronavirus Disease 2019 (Covid-19) totaling 181 and were included in the moderate risk category according to data from the Lampung Provincial Health Office. One of the sub-districts included in the data distribution map is Rejosari Village. This can be caused by various factors such as low public knowledge, lack of awareness in the community about the importance of maintaining cleanliness, and minimal use of masks.

The high number of Covid-19 cases makes coverage on the topic of Covid-19 always an attraction to read. However, not a few news stories that are circulating have been false information (hoaxes) that can plague readers. As a result, the community has not applied health protocols and becomes a problem for the government, especially health workers who are at the forefront of handling the Covid-19 case. The absence of vaccines or drugs that have been clinically proven to cure Covid-19 has made people very vulnerable to contracting this disease so prevention is the main choice to deal with this pandemic situation. Some ways of prevention include understanding the dangers of covid and how it is transmitted, keeping your distance, washing your hands frequently with soap or using a hand sanitizer, and using a mask when in a crowd (Yanti E. et al, 2020).

Liquid soap, disinfectant, and hand sanitizer (HS) used as an effort to prevent the spread of Covid can be made at home to minimize the frequency in markets or other crowded places which can increase the risk of exposure to the SARS-Cov-2 virus (Damanik E. et al, 2020). The role and participation of the community, especially young people, as agents of change for the implementation of health protocols in the new normal, both in the family and in the community as well as as an antidote for hoax news related to Covid that has begun to mushroom on social media and the internet. So based on the description above, necessary to hold a workshop and education on the manufacture of H2D products.

2. LITERATURE REVIEW

Socialization is the process of how to introduce a system to someone. As well as how to introduce the system to someone. And how the person determines his response and reaction. Meanwhile education or also known as education is all efforts that are planned to influence other people, be it individuals, groups, or communities so that they do what is expected by the education actors (Notoadmojo, 2003).

Viruses are microscopic microorganisms that infect cells of biological organisms. Viruses can only reproduce in living material by invading and utilizing living cells because viruses do not have the cellular equipment to reproduce on their own. In the host cell, the virus is an obligate parasite and becomes defenseless outside the host. Usually, viruses contain a small amount of nucleic acid (DNA or RNA, but not a combination of the two) covered in some kind of protective material consisting of proteins, lipids, glycoproteins, or a combination of the three (Firtiyani I, 2019).

The virus will not die just by rinsing the surface of the skin with water. This is because the layer covering the virus is like oil. In addition, the coronavirus molecule is also coated with protein and fat particles that protect it from water. However, when in contact with soap, the fat bandage will break down and the virus will be killed too. Water flow will flush out any remaining virus that is difficult to break down by soap.

Hand sanitizer is an antiseptic ingredient in the form of a gel that is often used by the public as a practical handwashing medium. The use of hand sanitizers has been more effective and efficient than using soap and water so that many people are interested in using them (Farahim A. N., 2018). The advantages of hand sanitizers can kill germs in a relatively fast time because they contain alcohol compounds (ethanol, propanol, isopropanol) with a concentration of \pm 60% to 80% and the phenol group (chlorhexidine, triclosan). The compounds contained in hand sanitizers have a working mechanism by denaturing and coagulating germ cell proteins (Aminah et al., 2018).

Disinfectants are chemicals used to prevent infection or contamination by microorganisms or drugs to eradicate disease germs. One of the active ingredients that can be used in disinfection is pine oil (2.5%) which is contained in Wipol Cemara Floor Cleaning (lipi.go.id). To make Wipol disinfectant, it takes 1 part in 9 parts of water. Apart from pine oil, other active ingredients such as Sodium hypochlorite 5.25% in Bayclin, Chloroxylenol in Dettol Antiseptic Liquid, Benzalkonium chloride (1%) in SOS Antibacterial Floor Cleaner can also be used as an active ingredient for disinfection purposes with a different composition of active substance and water different for the manufacture (Fajriputri H., 2014).

Soap is the result of the saponification process. Saponification is a saponification process that reacts a

fat or glyceride with a base (Fessenden and Fessenden, 1997). Based on its shape, soap is divided into two types, namely solid form soap, and liquid form. Liquid bath soap has advantages when compared to other forms of bath soap because it is easy to use and store, not easily damaged and dirty (Marzoeki, 1980).

3. MATERIALS AND METHOD

3.1. Stages of Activity Implementation

The stages of implementing community dedication activities carried out by the ITERA Cosmetics Technology Study Program are increasing motivation in understanding news of the SARS-Cov-2 virus and how to prevent its spread by implementing health protocols using self-protection cosmetic products, namely hand sanitizers, disinfectants, and hand soap (H2D).

1) Problem Formulation

The ITERA Cosmetics Technology Study Program lecturer team visited SMK Negeri 3 Kotabumi, North Lampung to discuss planning training activities for making H2D products. After obtaining permission, then formulating the problems obtained through the implementation of the pretest.

2) Material Design

Designing presentation slides related to the Smart Young Generation material to counter hoax news from Covid 19 and material related to the explanation of the materials used to make H2D products that have been prepared by the ITERA Cosmetics Technology Study Program lecturer team.

3) Education on Making Hand sanitizer, Handsoap, and Disinfectant Products

a) Socialization to students of SMK Negeri 3 Kotabumi begins by giving some questions that have been provided on the pretest sheet.

b) Delivery of socialization materials in this dedication includes:

i) Explanation of the importance of following health protocols according to the Covid-19 SOP, an explanation of how the spread of Covid-19, and how to respond to Covid-19 hoax news.

ii) Explanation and presentation of the material related to the product made, namely, Hand sanitizer, disinfectant, and hand soap.

iii) The dedication was continued with the direct practice of making hand sanitizers, disinfectants, and hand soap, this activity was a means of training and transfer of knowledge to student representatives.

3.2. Approach Method

In the implementation of this community dedication activity, the approach method used is to build a partnership network between the Sumatra Institute of Technology (ITERA) and SMK Negeri 3 Kotabumi. SMK Negeri 3 Kotabumi agreed to be ITERA's partner. In proposing the partnership, SMK Negeri 3 Kotabumi conveyed the problems faced by students in the new normal era of the Covid-19 pandemic. The ITERA Cosmetics Technology Study Program lecturer team is willing to solve various problems in an integrated manner.

3.3. Implementation Evaluation

Evaluation of activities was carried out in writing using post-test questions to analyze and measure the increase in knowledge and skills of students before and after participating in the “Workshop and Education for Making Hand sanitizer, Disinfectant, and Handsoap Products as a Step to Prevent the Spread of Covid-19.

4. RESULTS AND DISCUSSION

The number of respondents in this dedication is 17 people who represent students of SMK Negeri 3 Kotabumi, North Lampung Regency, Lampung Province. Table 1 is the result of dedication including knowledge of the SARS-Cov-2 virus or Covid 19 disease, knowledge related to ingredients, and the process of making H2D products.

Table 1 explains that the knowledge of respondents regarding the origin of the country where the SARS-Cov-2 virus spreads that is China has been answered 100% correctly before education was carried out. While information about the transmission of the Sars-Cov-2 virus was carried through bats before education, respondents did not know much, this was indicated by a true value of only 18%. After education, the correct answer increases to 100%. The socialization also explained the transmission process and initial symptoms when exposed to the Sars-Cov-2 virus, with the hope that respondents could take care of themselves and the wider community to avoid exposure to the Covid -19 disease. After the socialization there was an increase in knowledge, namely 79% and 50% of respondents had answered correctly regarding the information.

In Figure 1 is the provision of material related to “young people who are smart to prevent Covid-19 hoax news”. In this material, several reliable links are provided to access information related to Covid-19, including <https://covid19.go.id/>, <https://covid19.who.int/>, <https://www.cdc.gov/coronavirus/2019-ncov/index.html>, and ITERA links regarding SOP (Standard Operating Procedure) for New Normal behavior <https://www.itera.ac.id/sop-new-normal/>. The results of the

observation showed that only 41% had known access to valid information. Increased to 62% after being given socialization (Table 1 number 7). After having knowledge related to Covid-19, respondents are also expected to be able to make H2D products as personal protective cosmetic products.

Table 1.
Results of Workshop and Education observations

Number	Observed aspects	Percentage (%) Before the		Percentage (%) After the	
		Correct answer	Wrong answer	Correct answer	Wrong answer
1.	China is a country where the Sars-	100	0	100	0
2.	Sars-Cov-2 virus transmission is carried through bats	18	82	100	0
3.	Sars-Cov-2 virus transmission	41	59	79	21
4.	Media for the spread of the Sars-Cov-2 virus	83	17	94	6
5.	Criteria of a person Potential exposure to the Sars-Cov virus 2	53	47	56	44
6.	Initial symptoms of exposure to the	29	71	50	50
7.	Reliable sources for news about COVID-19	41	59	62	38
8.	Responses and actions that must be taken regarding hoax news about COVID-19 on social media	65	35	87	13
9.	The main ingredient in making Hands Sanitizer is alcohol	94	6	100	0
10.	Disinfectant ingredients	47	53	44	56
11.	Materials used to make handwashing soap	15	85	59	41
12.	The function of adding glycerin in	29	71	62	38
13.	The alcohol content in the hand's sanitizer	18	82	56	44
14.	The function of ethanol in a hand sanitizer	59	41	50	50



Figure 1.

Socialization of material for the smart young generation to prevent hoax news



Figure 2.

Socialization of materials for making hand sanitizer, disinfectant, and hand soap (H2D) products

In this activity, representatives of SMK Negeri 3 students were expected to be able to make H2D products by understanding the function of each ingredient used in the product manufacturing process. Therefore, there is a socialization of the materials for making hand sanitizer, disinfectant, and hand soap (H2D) products, this can be seen in Figure 2.



Figure 3.

The practice of making hand sanitizers

Students practice making hand sanitizers, accompanied by a team of lecturers. One of the lecturers explained how to measure the amount of 96% alcohol with aloe vera which is the basic material for making hand sanitizers with the dilution formula in Equation (1).

$$V1 \cdot M1 = V2 \cdot M2 \quad (1)$$

V1 means Volume of Alcohol (liter)

M1 means the concentration of alcohol (%)

V2 means Volume Hand Sanitizer (liter)

M2 means Concentration of Hand Sanitizer (%)

Based on Equation 1, 80 mL of 96% alcohol are used and 20 mL of aloe vera are mixed to produce 76% hand sanitizer. Then an appropriate product is produced from the United States Centers for Disease Control and Prevention (CDC) suggesting that the alcohol content that must be met in antiseptic products is above 60% (Isnaeni et al, 2014). Based on Table 1 number 13 as many as 82% of students did not know the standard before the community dedication activities were carried out, but after the activity, this figure decreased to 44%.

Disinfectant products during the Covid-19 pandemic have also become one of the products that are often used to be sprayed on surrounding objects so that they are protected from exposure to viruses. In Figure 4, it can be seen that the lecturer assisting the students to practice directly making disinfectants with a ratio of 1:10, namely 100 mL of household products and 1000 mL of mixed water.



Figure 4.
The practice of making disinfectants



Figure 5.

The practice of making hand soap

During the Covid-19 Pandemic, people were required to wash their hands frequently using soap. Hand soap is one of the personal protective cosmetic products that can be made simply as a home product. Responding to this, students were invited to practice directly simply making hand soap, namely mixing 250 mg of Sodium Lauryl Sulfate (SLS) and 100 g of sodium sulfate (Na_2SO_4) until it was homogeneous to form a mixture 1. Then add 1 liter of water to mixture 1 and stir until it thickens. After that, 250 mL of foam booster is added while stirring and 2 liters of water are added again. The next step is to add 100 mL of glycerin and 10 mL of fragrance and natural coloring to taste. Natural coloring is taken from the extract of beetroot (*beta Vulgaris*). The last time it was left to stand for 24 hours, 3 liters of hand soap was produced with a pH range according to the SNI, namely 6.5 (ASTM D1172-15, Standard Guide for pH of Aqueous Solutions of Soaps and Detergents, 2015). These steps were immediately practiced by the students, students looked enthusiastic and could follow the process and it was noted that 59% of students had understood the ingredients for making hand soap, this is shown in Table 1 number 11.



Figure 6.
Receipt of symbolic gratitude from SMK Negeri 3 Kotabumi to the
Cosmetic Technology Lecturer Team



Figure 7.

Group photo with workshop participants

4. CONCLUSIONS AND SUGGESTIONS

After the workshop and education were held, most of the students as dedicated participants knew about hoaxes and facts circulating in the media, the materials used to make hand sanitizers, disinfectants, and hand soap, as well as their manufacture. Based on the activities that have been carried out, students of SMK N 3 Kotabumi have been preparing to become agents of change in Kotabumi. The positive impact of community dedication activities on PkM participants has been having the ability and skills to make personal hygiene cosmetic products to be used in the new normal era. Similar activities should be good for other schools to increase knowledge and awareness of Covid-19 during the pandemic.

5. REFERENCES

- Aminah A, Aprilia BR, Nopitasari. 2018. Kualitas Gel Pembersih Tangan (Handsanitizer) dari Ekstrak Batang Pisang dengan Penambahan Alkohol, Triklosan dan Gliserin yang Berbeda Dosisnya. *Jurnal Bioeksperimen*. 4(2): 61-70.
- Damanik E, Yunida T. S., Dan Dicky Y. W. 2020. Pencegahan Corona Virus Disease 19 (Covid-19) Pada Pedagang Pasar Helvetia Kelurahan Helvetia Tengah. *Jurnal Abdimas Mutiara*. 1(2):8-11
- Farahim A. N. 2018. Pemanfaatan Daun Salam Sebagai Bahan Pembuatan Hand Sanitizer Dalam Bentuk Gel dengan Penambahan Alkohol dan Triklosan. *Skripsi*. Program Studi Pendidikan Biologi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Muhammadiyah Surakarta, Surakarta.
- ASTM D1172-15, *Standar Guide for pH of Aqueous Solutions of Soaps and Detergents*, 2015.
- Fessenden, R J. dan J S Fessenden. 1997. *Kimia Organik*. Erlangga: Jakarta.
- Fajriputri H. 2014. Uji Koefisien Fenol Produk Antiseptik dan Disinfektan yang Mengandung Senyawa Aktif Benzalkonium Klorida. *Skripsi*. Jurusan Biologi, Fakultas Sains dan Teknologi, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Firtiyani I. 2019. *Meningkatkan Keterampilan Literasi Informasi Siswa Melalui Penguasaan Konsep Materi Virus Pada Pembelajaran Biologi Berorientasi Wikipedia*. *Skripsi*. FKIP, UNPAS.
- <http://lipi.go.id/berita/Daftar-Sementara-Produk-Disinfektan-Rumah-Tangga-untuk-Disinfeksi-Coronavirus-Disease-2019-COVID-19-Per-Bulan-Juli-2020/22089>, diakses pada tanggal 20 November 2020, pukul 16.48 WIB.
- Isnaeni W, Bambang S, Sujono. 2014. Daya Bunuh Hand Sanitizer Berbahan Aktif Alkohol 59% Dalam Kemasan Setelah Penggunaan Berulang Terhadap Angka Lempeng Total (Alt). *Jurnal Teknologi Laboratorium*. 3(1): 1-6.
- Marzoeki, A. 1980. *Teknologi Pembuatan Sabun*. Kanisius: Ujung Pandang.
- Notoadmojo, Soekidjo, 2003, *Pengembangan Sumber Daya Manusia*, Jakarta: PT. Rineka Cipta.
- Wulandari A, Fauzie R., Nita P., Ayu R. S., Nur L., Lia A., Farid I. M., Agus M. R., Vina Y. A., Muhammad A., Diki B. P., 2020. Hubungan Karakteristik Individu dengan Pengetahuan tentang Pencegahan *Coronavirus Disease* 2019 pada Masyarakat di Kalimantan Selatan. *Jurnal Kesehatan Masyarakat Indonesia*, 15 (1): 42-46
- Yanti E., Nova F. Dan Harmawati. 2020. Mencegah Penularan Virus Corona. *Jurnal Abdimas Sainika*. 2(1): 33-39