Abdimas Umtas: Jurnal Pengabdian Kepada Masyarakat
LPPM-Universitas Muhammadiyah Tasikmalaya
Volume: 5 Nomor: 2
E-ISSN: 2614 - 8544

Manufacture of Hand Sanitizer and Liquid Soap in Pinang Dalam and Pinang Luar Villages

Eva Pramuni Oktaviani Sitanggang[1)], Rinjani Ratih Rakasiwi[1)], Wivina Diah Ivontianti[1)], Lalak Tarbiyatun Nasyin Maleiva[1,a)], Zainal Abidin[2)]

[1]Jurusan Teknik Kimia, Fakultas Teknik, Universitas Tanjungpura, Pontianak, Indonesia
[2]Jurusan Teknik Elektro, Fakultas Teknik, Universitas Tanjungpura, Pontianak, Indonesia
[a)] Corresponding Author: lalaktnm@teknik.untan.ac.id

Abstract

The COVID-19 pandemic has hit the whole world, including Indonesia. Many attempts had been deftly conducted by the Government as a countermeasure so that this virus does not spread further and the cases can decrease. However, all the implemented efforts have not produced liquid soap and hand sanitizer. Therefore, the socialization for the production of liquid soap and hand sanitizers was carried out to the residents of Pinang Luar Village and Pinang Dalam Village, Kubu Raya Regency, West Kalimantan, as residents of remote villages who had difficulty accessing the health protocol necessaries. Through this project, the residents expectedly can have the skills to produce them independently and avoid the dangers of COVID-19.

Key words: COVID-19, hand sanitizer, liquid soap

INTRODUCTION

The pandemic started in Wuhan, Hubei province, China, and has brought many new challenges to public health in various countries. The world has experienced a global public health crisis in the last 20 years caused by infection with unknown viruses, such as HIV, Influenza A virus subtype H1N1, Influenza A virus subtype H5N1, SARS-CoV1, MERS-CoV, and Ebola. However, the epidemiological novelty of the Corona Virus Disease-2019 (COVID-19) caused by a type of coronavirus (SARS-CoV2) reveals our lack of preparedness due to its sudden and rapid spread, which has left many governments around the world unprepared (Djalante et al., 2020). The Chinese government itself has taken extreme measures to reduce the outbreak. On January 23, 2020, the Wuhan local government suspended all public traffic within the city and closed all incoming and outgoing transportation. Other cities in Hubei province also announced similar traffic control measures soon after Wuhan (Lin et al., 2020). Therefore, on January 27, 2020, Indonesia issued travel restrictions from Hubei province, which then became the epicenter of the global COVID-19, and evacuated 238 Indonesian citizens from Wuhan (Djalante et al., 2020).

In Indonesia, the first case was reported in early March 2020, and the number of confirmed infections continues to rise. Efforts continue to be made to contain the virus globally and in Indonesia. The cumulative results between 2 March – 2 August 2020 show 111,450 confirmed and reported cases in Indonesia. Of the confirmed cases, 67.79% (75,551/111,450) were declared cured and 4.83% (5,382/111,450) of them died. Most of the patients were men (50.52%; 56,300/111,450) and adults aged 31-45 years (29.73%; 33,132/111,450). The patient's overall symptoms of cough and fever, as well as chronic comorbidities, were in line with previously published data from elsewhere in Southeast Asia. Based on the data reported that from the detection of the first confirmed case and within a short period of 40 days, all provinces in Indonesia have been affected by COVID-19 (Aisyah et al., 2020).

COVID-19 also destroyed the foundations of the world economy in 2020. Worldometer, as of April 22, 2021, released data on daily positive cases of COVID-19, reaching more than 892,000 people. The cumulative number presents that no less than 145 million people worldwide were infected, and more than 3 million died. The COVID-19 pandemic has brought the world to the brink of the worst economic recession in the last 50 years of world economic history.

Meanwhile, Indonesia is one country that continues to fight against COVID-19 with various policies that combine countermeasures without compromising the economy. About 13 months after the discovery of the first COVID-19 case in Indonesia, the curve of infection cases, although fluctuating, continues to increase (Muhyidin & Nugroho, 2021).

After the initial infection reports, Indonesia began to realize the precarious situation and has since issued various policies and measures to deal with COVID-19, including designating 100 domestic public hospitals as Referral Hospitals (Referral Hospitals) on March 3, 2020. To cope with the number of patients, COVID-19 continues to increase, and the number of Referral Hospitals increased to 227 on March 18, 2020. However, despite these efforts, the number of victims continues to increase rapidly. At the end of March 2020, the Indonesian COVID-19 Task Force (the Task Force for the Acceleration of Handling COVID-19) published Guidelines for Rapid Medical Response and Public Health Aspects of COVID-19 in Indonesia. This guide targets medical professionals and the general public in terms of informing ways to reduce impacts and mortality rates. One of the most vulnerable groups in remote and disadvantaged communities. Areas in Indonesia where the health system and access to health services are still limited (Djalante et al., 2020).

Kubu District is one of nine sub-districts in Kubu Raya Regency, West Kalimantan. Kubu sub-district has 20 villages, two of which are Pinang Luar Village and Pinang Dalam Village. These two villages are known as transmigration locations with an area of about 22.24 km2 and 17.71 km2 of Pinang Luar and Pinang Dalam villages with a population of around 2,059 and 1,409 people (BPS Kubu Raya, 2020). To reach the location of these two villages, it is necessary to cross the Kapuas River through the Port of Rasau Jaya, followed by a road trip. Therefore, the government is asked to implement several specific recommendations, including (Djalante et al., 2020; Waluyo, 2022; Nurhadi et al, 2021; Nurdiana et al, 2021):

- Identifying and mapping each infected person, conducting large-scale rapid tests, socialization to stay at home, and physical distancing.
- Coordinate, collaborate, and utilize all PCR laboratories to support PCR-based diagnostics.
- Rapid detection tests (RDTs) using antibody detection (serology) based kits are found to be much less accurate than PCR-based tests using current techniques (e.g., microfluidic RT-PCR), which are much faster (approximately 45 minutes to results) than conventional methods (3-8 hours).
- Increasing the number of referral hospitals that are adequate and equipping hospitals, including setting up treatment facilities (e.g., respirators, isolation rooms), diagnostic facilities (e.g., PCR machines, diagnostic kits), medicine and pharmacy, management, doctors, specialists, nurses, health volunteers, and proper safety and protective equipment, as well as for front-line practitioners (e.g., safety glasses, protective masks, and hazardous materials clothing).
- Incentives should be given to those who voluntarily report their symptoms to the hotline/referral hospital.
- Mass spraying of disinfectants in streets, homes, parks, and schools should be reconsidered because it may slightly harm human respiration.
- Develop an appropriate health infrastructure, including a government health laboratory system that is not limited to the resources of private diagnostic laboratories, research institutes, and universities in all provinces, to enable local COVID-19 testing without delay.

However, from the overall recommendations and the activities that have been implemented, there have been no activities related to manufacturing hand sanitizers or liquid soap, even though these two things are required to prevent or break the chain of the spread of COVID-19. Therefore, this Community Service (PKM) activity was implemented by socializing the manufacture of hand sanitizers and liquid soap to the people of Pinang Luar and Pinang Dalam villages, considering that access to the city from these two villages was challenging. Thus, through this activity, it is expected that the community in the village will have skills in making liquid soap and hand sanitizers so that they can produce them independently and be safe and protected from COVID-19.

METHOD

The application of technology for making hand sanitizers and liquid soap to the people of Pinang Luar Village and Pinang Dalam Village, Kubu Subdistrict, Kubu Raya Regency has been going on for 3 (three) months with stages as presented in **Figure 1**.

Identify community necessities

This activity began with a discussion agenda with the Kubu sub-district head, village head, and the Pinang Luar and Pinang Dalam villagers regarding priority issues to be resolved and providing direction so that partners could participate and play an active role in this activity. In addition, data collection was also carried out through direct surveys to obtain information and data about the presence of hand washing locations and hand sanitizers in both public and private facilities.

The design of the tank for making liquid soap and hand sanitizer

This stage began with a sequence of processes for collecting relevant and reliable data and references from previous research regarding the manufacture and specifications of liquid soap tanks and hand sanitizers. The tank for making liquid soap and hand sanitizer is designed with simple operating technology to fit the partners' needs. The data and references collected are then realized in a design form, as exhibited in **Figure 2** below.

Table 1. Design form

Properties	Specification
Condition	T =25-30^{o}C; P= 1 atm
Model/Material	Closed cylinder/ *stainless steel*
Volume	17 Liter
Cylinder dimension Base diameter Height	 0,30 m 0,25 m
Supporting component: Iron stirrer Motor	 2 blades 300Watt

Making a tank for making liquid soap and hand sanitizer

Making a tank for liquid soap and hand sanitizer began with preparing the required equipment. From the results of planning and calculations, it can be seen that the material specifications and the components' dimensions are needed to manufacture the tool. From the components obtained, the assembly of tools is carried out according to a predetermined design to produce a tank for making liquid soap and hand sanitizer to meet the partner community's needs.

Test the operation of the tank for making liquid soap and hand sanitizer

After the tool's design is complete, testing is carried out on the tool, and the test results are recorded to ensure the tool's performance can run well. If the tool does not work well, then repairs are made, and if the tool works well as expected, then the tool is ready for use.

Making liquid soap and hand sanitizer

The making of liquid soap and hand sanitizer was executed using a tank that had been made. Liquid soap was made using the main ingredients of alkali and oil. The alkali used was KOH (potassium hydroxide), and the oil used was coconut and olive oil. In addition, it was also necessary to add water and essential oils. Meanwhile, the manufacture of hand sanitizers refers to SURAT EDARAN NUMBER KP.11.01.2.83.03.20.14 concerning the Manufacture of Hand Sanitizers to Prevent Corona Virus by the Food and Drug Supervisory Agency (BPOM) guided by the World Health Organization (WHO). The main ingredients used are alcohol, hydrogen peroxide, and glycerol. In addition, water and essence were also added. The ingredients were mixed in the tank according to the calculations and plans regarding the composition of the mixture.

Operational assistance to partners

The implementation of operational accompaniment activities to partners is an activity of mentoring and training related to the use of liquid soap-making tanks and hand sanitizers so that residents can understand in detail the use of these tanks.

RESULTS And DISCUSSION

Community Service Activities (PKM) in Pinang Luar and Pinang Dalam villages were held on Tuesday, October 5, 2021. This activity involved village officials and representatives from the two villages' Family Welfare Trustees (PKK). The activity started at 09.00 WIB with an opening by representatives from the PKM team and the Secretaries of Pinang Luar and Pinang Dalam Villages.

After the opening activity was completed, it was continued with the socialization of making hand sanitizers and liquid soap. Residents listened to the quantity of materials and methods of manufacture through the distributed leaflets so they could be more easily understood.

Besides listening to the socialization, several residents were also involved and played an active role in making hand sanitizers and liquid soap. This aims to stimulate residents to be interested in implementing it in their respective homes.

Applying liquid soap and hand sanitizer technology attracted PKK women's and village officials' attention. The PKK women involved were enthusiastic about participating in the activities and asking questions about the manufacturing process and the products produced. This was triggered by the need for hand sanitizers, which had experienced scarcity and difficulty obtaining them amid the COVID-19 pandemic. In addition, the price of hand sanitizer per liter varies from 20,000 (IDR) to 50,000 (IDR), while producing 1 liter of hand sanitizer only costs around 10,000 (IDR) to 12,500 (IDR). This can certainly be profitable and become a business opportunity for PKK women in the areas of Pinang Luar and Pinang Dalam villages.

CONCLUSIONS And RECOMMENDATIONS

Community service in Pinang Luar and Pinang Dalam villages was carried out to overcome the difficulty in accessing residents' liquid soap and hand sanitizers during the COVID-19 pandemic. Activities were carried out in the form of socialization so that residents have the skills to make them independently, reduce the costs that must be incurred, and can be used as business opportunities to bounce back from the abyss of the economic recession that also befell residents in these two villages. Hopefully, this activity can be applied in other remote villages.

ACKNOWLEDGMENTS

An appreciation was highly dedicated to the community of Pinang Dalam Village and Pinang Luar Village, who have accepted the author team to carry out this activity. A great appreciation was also presented to the Faculty of Engineering, the University of Tanjungpura, which has provided funding for this Community Service activity through the Budget Implementation List (DIPA) scheme.

REFERENCES

Aisyah, D. N., Mayadewi, C. A., Diva, H., & Id, Z. K. (2020). *A spatial-temporal description of the SARS- CoV-2 infections in Indonesia during the first six months of outbreak*. 1–14.

Badan Pusat Statistik Kabupaten Kubu Raya. (2021). *Kecamatan Kubu dalam Angka Tahun 2020*. Kubu Raya.

Djalante, R., Lassa, J., Setiamarga, D., Sudjatma, A., Indrawan, M., Haryanto, B., Mahfud, C., Sabaruddin, M., Djalante, S., Ra, I., Adi, L., Ayu, G., Surtiari, K., & Warsilah, H. (2020). *Progress in Disaster Science Review and analysis of current responses to COVID-19 in Indonesia : Period of January to March 2020 ☆*. *6*.

Lin, Q., Zhao, S., Gao, D., Lou, Y., Yang, S., Musa, S. S., Wang, M. H., Cai, Y., Wang, W., Yang, L., & He, D. (2020). *A conceptual model for the coronavirus disease 2019 (COVID-19)*

outbreak in Wuhan , China with individual reaction and governmental action. International Journal of Infectious Diseases, 93, 211–216.

Nugroho, H. (2021). *Indonesia Development Update A Year of Covid-19 : A Long Road to Recovery and Acceleration of Indonesia ' s Development.*. *V*(1), 1–19.

Nurdiana, A., Marlina, R., Adityasning, W., (2021). *Berantas Hoax Seputar Vaksin Covid 19 Melalui Kegiatan Edukasi dan Sosialisasi Vaksin Covid 19*, ABDIMAS: Jurnal Pengabdian Masyarakat, 4(1), 489–495.

Nurhadi, Z. F. ., Parentza, H. ., Munandar, A. ., Rachman, D. ., & Muldan, Y. D. . (2022). *Strategi Komunikasi Dan Edukasi Pencegahan Covid 19 Melalui Media Poster*. ABDIMAS: Jurnal Pengabdian Masyarakat, 4(1), 537–543.

Waluyo, E. M. (2022). *Healthy Community Movement (GERMAS) And Distance, Wearing Mask, And Washing Hands (3m) In the Elderly to Prevent the Spread of Covid 19*. ABDIMAS: Jurnal Pengabdian Masyarakat, 5(1), 2172–2176.

APPENDIX

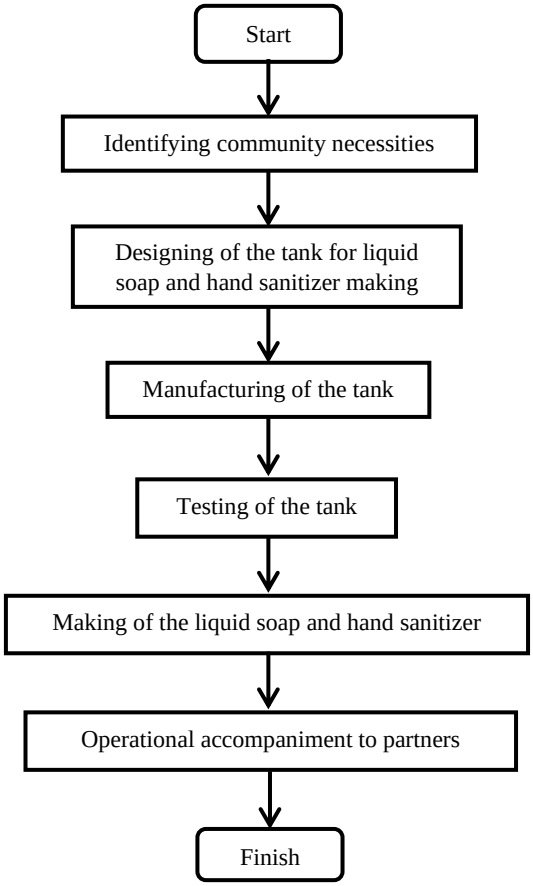

Figure 1. The stages for making hand sanitizer and liquid soap

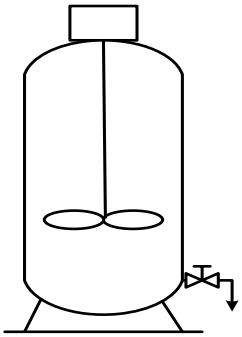

Figure 2. The design of the tank

Figure 3. The making of hand sanitizers in Pinang Luar Village

Figure 4. The making of liquid soap in Pinang Luar Village

Figure 5. Handing over tanks and liquid soap and hand sanitizer in Pinang Luar Village

Figure 6. The process of making hand sanitizers in Pinang Dalam Village

Figure 7. Unloading liquid soap in Pinang Dalam Village

Figure 8. Villagers of Pinang Village Listening to the socialization

Figure 9. Handing over of tanks and liquid soap and hand sanitizer in Pinang Dalam Village