

## Women Empowerment through Training of Face Shield Making from Unused Materials as COVID-19 Prevention Effort

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### Abstract

COVID-19 is a viral infectious disease with relatively high death rate, especially in Indonesia. The government program, the large-scale social restrictions impacts on all aspects of human life, including the economy, due to which, people's purchasing power decreases. This condition forces people to think creatively to protect themselves against COVID-19. This study aimed to describe the role of women's groups in the prevention effort of COVID-19 through training of face shields making, utilizing unused materials. This is an interventional study, describing a training programme for a group of women in Indonesia (n=15 women). Participants of the women empowerment program were women in Ngingas Village, Waru District, Sidoarjo. The programme took place from July to August 2020 for four weeks, and included evaluating knowledge levels, health education about COVID-19, and training of making face shields. The results showed that the participants' knowledge of COVID-19 significantly improved after training, in which the pre-test score was 57.67

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$\pm 13.07$ , and the post-test score was  $72 \pm 7.97$ . Although the participants appreciated this training, they were less enthusiastic about production management and marketing. The participants cared for their families and community health. In addition, they were able to think creatively to make face shields from unused materials to protect themselves and their families. Thus, women could be role models for their families and communities to maintain health protocols in the new adaptation era of the COVID-19.

**Keywords:** *COVID-19, face shield, unused materials, women groups, women empowerment*

## **1. Introduction**

The SARS-COV-2 virus has infected many people in the world since January 2020. Due to the significant increase in the number of COVID-19 sufferers in Indonesia, the government declared the pandemic in Indonesia in March 2020. This situation forced the government to issue and enforce Presidential Decree Number 11/2020 and Minister of Health Regulation No.9/2020 about the guidelines for large-scale social restrictions for COVID-19 management and emergency disasters management. The regulations require offices, schools, and public facilities to close down temporarily in order to stop and prevent the spread of COVID-19 infection (Ministry of Health, 2020).

However, the government policies and programs could not reduce the number of COVID-19 spreading and sufferers due to inadequate support in all aspects of Indonesia's human life. The prevalent and new cases significantly increased, especially in Surabaya and Sidoarjo areas, East Java Province (Provincial Government of East Java, 2020). These areas presented the highest morbidity rates in Indonesia. Nur Rohim Yunus and Annisa (2020) emphasized, "It is complicated to implement a lockdown policy for the world social communities, because humans are dynamic. They never stop their mobility and moving activities from one place to another. Therefore, the successful implementation of this policy requires stakeholders' involvement in a democratic and participatory manner." The government and communities need to work in synergy to implement these policies (Lim, 2020).

COVID-19 rapidly spread and infect people through droplets from an infected person when coughing, sneezing, or talking. Besides, droplets and airborne droplet nuclei containing viruses can attach to tools and objects and be transmitted to others when they touch them (Eikeberry, et al., 2020). These conditions complicate the prevention efforts of the COVID-19 transmission, moreover if the public is not well-informed of the prevention efforts and does not implement social/ physical distancing. These conditions were also reflected in the community of Ngingas Village, Sidoarjo, East Java Province.

Based on our observation, Sidoarjo was one of the areas contributing to the highest numbers of the COVID-19 sufferers in East Java Province, Indonesia. People of Ngingas Village, Sidoarjo, carried out daily activities as usual. Many still went out without masks and did not do physical distancing. Although Sidoarjo District Government enforced curfew, unfortunately, men still visited the small cafeteria or *warung* and kept doing *cangkruk* or to hang around to drink coffee and meet their friends and acquaintances without implementing health protocols, such as using personal protective equipment or doing social/ physical distancing.

Based on the phenomenon mentioned above, it was necessary to carry out education and training to prevent COVID-19 in women groups as the embodiment of women empowerment in Ngingas Village, Sidoarjo. Women groups are role models in the social community because they encourage their family, especially their kids. One of the training conducted was the manufacture and application of face shields. Although face shields did not significantly reduce the number of COVID-19 sufferers, at least they could prevent the transmission through droplets and airborne. Moreover, we expected that the training could support women empowerment activity so that they can provide self-protection equipment with low budgets, utilizing unused items from their home. This training was not only a prevention effort of COVID-19, but also a waste management effort.

## **2. Materials and Methods**

This study was an interventional. The intervention programme aimed at educating women in Ngingas Village, Sidoarjo, East Java Province, Indonesia, from July to August 2020. Ngingas Village is an urban area called Metal Village in East Java due to many metal producers. This village consists of 11 Neighbourhood Association. This study involved only one of the Neighbourhood Association due to the Pandemic condition. The selected participants were 15 residents in Neighbourhood Association 12.

The study methodology included field observations, interview, licensing, participant selection, pre-test, education, training, post-test, and evaluation. The field observation was aimed to describe the phenomenon that occurred in the community. Interviews were conducted to explore problems during the pandemic. Licensing with kinship approaches was to determine respondents/ training participants. The pre-test was to measure participants' prior knowledge. Meanwhile, the education and training programme was used for knowledge transfer about COVID-19 and a means to enhance soft skills. A post-test evaluation was used to measure knowledge enhancement after training among the participants. Finally, the evaluation was to find out the participants' impressions after the training. The pre and post-test questions were the same. The questionnaire consisted of 15 multiple-choice questions (choosing one of the correct answers from the four answer choices). The questions included 1) What is SARS Cov-2; 2) What are the specific symptoms of SARS Cov-2 infection; 3) how is the direct transmission of SARS Cov-2; 4) How is SARS Cov-2 indirectly transmitted; 5) How to prevent SARS Cov-2 infection; 6) Why should we use a mask/ face shield; 7) What is a rapid test; 8) What is a test swab; 9) Why should we do social/physical distancing; 10) How to wash hands properly; 11) How to wear a mask/ the face shield correctly; 12) What must we take when traveling during a pandemic; 13) What should we do after traveling; 14) How to dispose the mask correctly; and 15) How to clean the face shield.

The programme included education and training on the COVID-19 pandemic and infection control measures. Participants were taught about the COVID-19 virus, the spreading, the transmission, the signs and symptoms, aggravating factors, and prevention efforts. Therefore, the training materials were about washing hands, wearing the mask and face shield properly, and how to manufacture face shields at home using household items. These activities were carried out by three approaches: mentoring, training, and question and answer method. These approaches were chosen as they were more practical approaches to obtain two-way direct communication to evaluate participants' responses, stimulate the participant mindset, and explore participant problems and satisfaction.

Items used as materials in manufacturing homemade face shields were transparent bottles with a flat surface (without a pattern), plastic foam, rubber rope, double-sided tape, scissors, cutters, rulers, ballpoint pens, and paper hole punchers (Figure 1).



Figure 1: The materials for manufacturing homemade face shields

The data collected were the homemade face shield process, demographics data of participants, and pre-post test results.

### 3. Results

#### A. Observation

This study started with an observation/ survey to investigate communities' habits during the COVID-19 pandemic. The field observations found that communities still carried out their daily activities and still gathered in public places, such as markets and stalls without proper protection. Only a few people wore personal protective equipment, either a mask or a face shield. Moreover, the observations revealed that personal protective equipment prices skyrocketed, and the number of personal protective equipment in the market was limited. Besides, many residents did not implement health protocols and a healthy lifestyle in their daily activities. The evidence found during field observation exhibited that people did not practise physical distancing and did not wear either masks or face shields (Figure 2). Therefore, according to the interview, one of the participants stated that she felt worried about herself and her family's safety when doing activities outside because the others were still negligent about personal health protocols (Figure 3).



Figure 2: The condition in the market where the visitors did not wear personal protective equipment properly



Figure 3: Interview with the participant and presentation about observation analysis

*B. Participant selection and program implementation*

This activity was carried out among women in Ngingas Village, Sidoarjo, East Java Province, from July to August 2020. This activity was originally planned to be carried out to all women groups in Ngingas Village. However, the new case incidence rate of COVID-19 significantly increased in the Surabaya-Sidoarjo areas (black zone) and therefore, we selected 15 residents of Neighbourhood Association 12, Ngingas Village, Sidoarjo (Table 1) to participate in our research.

Table 1 shows the characteristics of the participants. Most of the participants were women below 40 years old and were high school graduates. More than 75% of the participants were female workers, most of whom were freelancers and teachers. Besides, the majority of respondents were married. Based on the results of the questionnaire, most participants possessed a high level of knowledge. However, based on correlation analysis, there was no relationship between these variables.

Table 1: The demographic data of participants (n=15)

Variable	Number	Percentage (%)
<b>Age</b>		
Below 40 years	9	60
Above 40 years	6	40
<b>Education</b>		
Senior High School	9	60
College	6	40
<b>Occupation status</b>		
Working	13	86.7
Jobless	2	13.3
<b>Marital status</b>		
Married	9	60
Single	6	40
<b>Knowledge Level</b>		
High	8	53.3
Moderate	6	40
Low	1	6.7

*C. Training activities*

The program implementation was divided into five meeting sessions. The sessions were socialization program and pre-test; COVID-19 education; face shield manufacturing training 1; face shield manufacturing training; marketing training; and evaluation included post-test. The meeting was conducted every Saturday afternoon, according to the agreement with the participants.

In the education session, participants were taught about COVID-19, especially about the SARS-Cov-2 virus, symptoms and signs of infection, transmission, and prevention efforts. In the education sessions about infection control measures, we also taught the participants about a healthy lifestyle in adapting to a new era, including personal hygiene, regular exercise, adequate rest, and balanced nutritional intake. Besides, participants were trained to wash their hands, use the hand sanitizer, and wear a mask. During the training, the participants were very enthusiastic, which was shown by their engagement in the two-way communication.

In the next meeting, the training, participants were introduced to materials around their home for face shields manufacturing. The training activity was designed for five sessions, which was not as planned, considering the training location, which was narrow and did not allow physical distancing. 3 to 5 people attended each session. In the meetings, the participants were trained to choose the

items based on the quality (sorting step). All of the items, especially the bottles, were pre-treated before being used as a face shield. Items used as materials in the manufacture of homemade face shields were used bottles with a flat surface (without a pattern), plastic foam, rubber straps, double-sided tape, scissors, cutters, rulers, ballpoint pens, and paper punches (figure 1).

Before making a face shield, we had to choose a large bottle without a pattern. Then the bottle was cut in the back vertically from top to bottom. Besides, the bottle's top and bottom were cut about 5-7 cm from the end of the bottle horizontally. Sandpapers refined all edge parts of the cutting area not to injure when used. After that, the upper side (dark blue colour) was attached with double-sided tape and foam, while the outer side (red colour) was attached with double-sided tape and ribbon (figure 4 and 5).

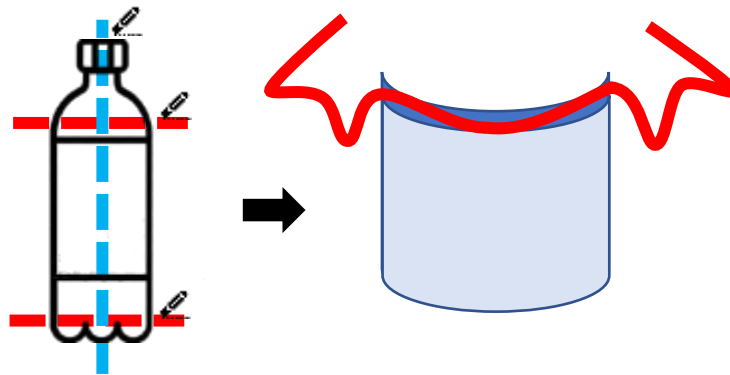


Figure 4: Schematic Face shield manufacturing



Figure 5: The manufacturing of a homemade face shield

*D. The Program Evaluation*

The evaluation aimed to explore the success rate in the implementation program that the team wanted to achieve. In this meeting, the team provided a post-test questionnaire and interview about the implementation of the program. The participants' post-test scores showed that there was a significant increase in the participants' knowledge of COVID-19 (Figure 6). The average of the participants' questionnaire score before the education and training program was  $57.67 \pm 13.07$ , and after the program, the average increased to  $72 \pm 7.97$ . Therefore, the interviews indicated that all participants were satisfied, and the training program helped them enhance their knowledge about COVID-19 and prevention effort.

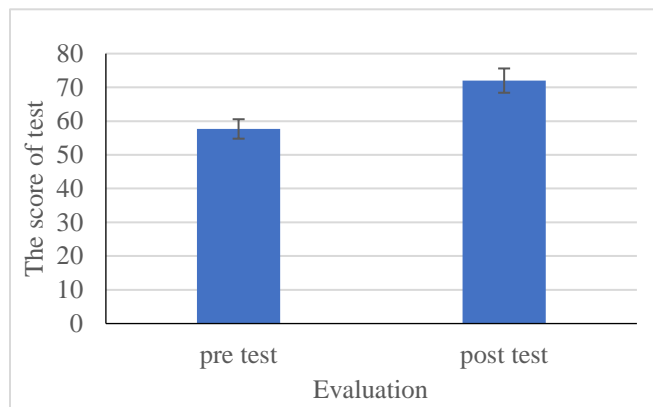


Figure 6: The pre and post-test score of participant data presented in average of questionnaire score and standard of error

**4. Discussion**

The community service implementation produced COVID-19 knowledgeable women who cared about their health and the health of the people around them. In the conditions of the COVID-19 pandemic, they became role models in their family and community. They contributed towards maintaining their own and family health, lifestyle, healthy diet habit, exercise habit, and social/physical distancing (Ashidiqie, 2020; Majid, 2020).

The homemade face shield training programme addressed the community’s concern on the environment by utilizing waste or unused items and turned them into useful things. Although not the primary protective device, the face shield can be used as a complementary protective device to avoid droplet splashes when physical and social distancing efforts are challenging. Face shields can be useful as a single intervention/mitigation strategy for reducing COVID-19 transmission risk, but the application still needs other health protocols (Nugroho, et al, 2020; Wu et al, 2020).

Moreover, this homemade face shield had not been standardized because the face shield could not seal the face entirely. The face shield must provide a simple structure and cover the entire face and



part of the neck to protect the airborne droplet nuclei and respiratory droplets from all directions, easy to clean and disinfect (Theopilus et al 2020).

The implementation of this program was successful because participants showed good responses during training. The training program's success could not be achieved without the women group's care for their environment, although not all of them participated in this program due to their fear and preoccupation. However, the participants could be a pioneer for others to implement health protocols and healthy lifestyles. Even though they are not the head of the family, they are the core of their family life and are the motivator for their family members (Ashidiqie, 2020; Majid, 2020; Faslih et al, 2020).

However, in the training program, the participants refused when the team offered marketing management as they did not have time to produce the shield in large quantities. During this pandemic, they had to carry out domestic duties and assist their children with their studies. Therefore, the participants were only interested to make enough for their family.

## 5. Conclusions

The implementation of an education and training programme on COVID-19 and a homemade face shield training programme is effective in imparting knowledge to women in the community. It also addressed the concern of wastage by utilizing waste or unused household items to be useful, especially during the pandemic. This program became one of the embodiments of women empowerment in the pandemic situation. Women play a major role in their family and community. More community programmes such as this should be conducted to educate the community on COVID-19 and assist in the prevention effort of the COVID-19 spreading, especially in the community.

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