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Increasing Public Knowledge About the Phenomenon of Happy Hypoxia in the Era of the COVID-19 Pandemic Through Health Education

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Abstract

Coronavirus 2019, COVID-19, is an acute respiratory illness caused by the droplet-borne virus SARS-CoV-2. This disease has caused a pandemic and a crisis that is very challenging for health systems worldwide. One of the symptoms exhibited by this infection is the occurrence of happy hypoxia. Happy hypoxia, or silent hypoxia, is when a person's oxygen saturation drops below normal but does not show any symptoms. This causes COVID-19 patients to be unaware that their bodies are experiencing hypoxaemia, which can lead to death. This community service activity aims to increase public knowledge about the phenomenon of happy hypoxia amidst the COVID-19 pandemic and how to address it. The method used was online outreach through the WEBEX application. This research was conducted on May 21, 2021, targeting the general public with 247 participants. To measure the success of this activity, a pretest and a post-test related to the material provided were conducted. The community service activities' results show that the community's knowledge of happy hypoxia has increased from a score of 59.84 to 92.71. Thus, there was an increase in knowledge of 54.93%.

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INTRODUCTION

The world has been shocked by the coronavirus pandemic, or COVID-19. This pandemic has halted many businesses and community activities. Coronavirus can cause mild to severe illnesses like the common cold or flu and serious diseases like MERS and SARS. According to the official WHO website, the total number of COVID-19 cases worldwide has reached 69,143,017 cases, with 1,576,516 deaths, and the current number of cases in Indonesia has reached 598,933 cases, with 88,622 people still under treatment and 18,336 people having died (Chen et al., 2020; Li et al., 2020). This number is likely to increase due to the difficulty in breaking the virus transmission chain and the lack of vaccination for the public (Wu et al., 2020; Samudro, 2020).

The term "happy hypoxia" has become more common lately and is associated with the ongoing global outbreak of the coronavirus. COVID-19 is dangerous for patients and can cause symptoms such as fever, cough, and cold. Therefore, it is very important to remain vigilant toward COVID-19 patients. In severe cases, this disease can cause shortness of breath and decreased consciousness due to a lack of oxygen (Shianata et al., 2021).

On the other hand, some COVID-19 patients do not show symptoms, known as asymptomatic individuals (OTG). However, a coronavirus infection can cause a gradual decrease in oxygen levels in the affected person's body. When the body's oxygen decreases without symptoms, it is called happy hypoxia (Widysanto et al., 2020). The body experiences a lack of oxygen when the oxygen levels in the blood drop below 95-100%, or 75-100% mmHg. Hypoxia or hypoxemia is the term for this condition (Velou & Ahila, 2020; Akoumianaki et al., 2021; Dhont et al., 2020).

Hypoxia, which often occurs without showing symptoms, can happen to COVID-19 patients. Many people underestimate happy hypoxia because most of the public is not familiar with the term. Several studies show that this can increase the risk of death in COVID-19 patients. Considering that the development of COVID-19 cases continues to increase and is currently dominated by asymptomatic patients, the public must recognize and be vigilant about the phenomenon of happy hypoxia. People who test positive for COVID-19, even if they do not show any symptoms, should still undergo laboratory examinations to prevent the negative effects of happy hypoxia. In this case, the readiness of medical laboratory personnel is required to address this phenomenon, considering that most cases of happy hypoxia occur in asymptomatic COVID-19 positive patients (OTG) (Maytra et al., 2024; Bepouka et al., 2022).

The government, through the Ministry of Research and Technology/National Research and Innovation Agency, has directed that the implementation of research and community service in 2020 should continue to ensure the safety of researchers, service providers, and the community or areas where the study or service is conducted, considering that research and community service must continue as part of the Tri Darma of Higher Education. Regarding community service, it was also conveyed that it should focus on COVID-19 so that it can become part of the efforts to solve the problem in the community, namely, the increasing cases of COVID-19 from day to day and the unnoticed decrease in oxygen saturation (hypoxia). Referring to that policy, the Medical Laboratory Technology Study Programme will conduct community service online via WEBEX to educate the public about the phenomenon of happy hypoxia and its dangers, as well as the readiness of medical laboratory personnel to face it. This community service activity aims to increase public knowledge about the phenomenon of happy hypoxia amidst the COVID-19 pandemic and how to address it.

METHODS

As a routine activity in implementing one of the pillars of Higher Education Tridarma, namely community service, the Medical Laboratory Technology Study Programme at Bali International University held a virtual outreach activity through the WEBEX application. The method used in this community service activity is Participatory Action Research (PAR), specifically the thematic type (Rahmat & Mirnawati, 2020). This activity was conducted on May 21, 2021, with 247 participants. This community service activity began with identifying the problems faced by the community during the COVID-19 pandemic, which was carried out through direct field observations. After identifying the problems, the service team evaluated these issues to generate solutions, which included conducting health education activities through online lectures.

This counselling activity presents the phenomenon of happy hypoxia in the era of the COVID-19 pandemic and the readiness of healthcare workers to face it. It explains the definition, symptoms, and impacts of happy hypoxia, supporting examinations for diagnosing happy hypoxia in COVID-19 patients, and the readiness of medical laboratory personnel to face this phenomenon.

In this activity, a monitoring and evaluation process was conducted to assess the success of the community service program, which can be seen from how the participants acted during the counselling activities. The community service team provided feedback, which made the participants enthusiastic and active in asking and answering questions. In addition, participants were given a pretest and a post-test consisting of online questionnaires used to measure the participants' level of knowledge before and after the community service activities. The following is the flowchart for implementing community service activities, presented in Figure 1.

Figure 1 Flowchart of PKM activity implementation

RESULTS AND DISCUSSION

This community service was conducted at Bali International University, involving lecturers and students as the executors of the activities. The method used in this community service activity is slightly different from previous community service activities due to the adjustment to the COVID-19 pandemic conditions and the ongoing significant increase in case numbers in the community, so this outreach activity was conducted online through the WEBEX application. In this activity, two counselling sessions were conducted. The first counselling material is titled "Happy Hypoxia in COVID-19 (Pathophysiology and Laboratory Aspect)," presented in Figure 2.

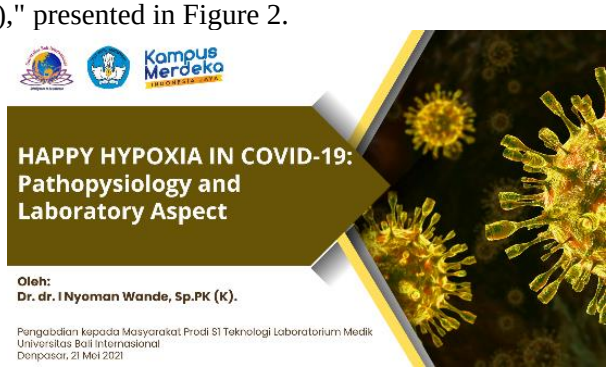

Figure 2 First counselling material

The second counselling material is titled "Universal Precautions and Pre-analytical Aspects in Laboratory Examination of COVID-19 Patients," and it is presented in Figure 3.

Figure 3 Second counselling material

This activity began with administering a pretest for the counselling session participants to gather initial knowledge about happy hypoxia during the pandemic era. This pretest activity was conducted by distributing questionnaires in Google Forms to the participants. The outreach activity as part of community service can be seen in Figure 4.

Figure 4 Online outreach activities through the WEBEX application

Participants included students, healthcare workers, and the general public. They enthusiastically followed this outreach activity, which involved 247 people. Of these, 42 were male, and 205 were female, as shown in Figure 5.

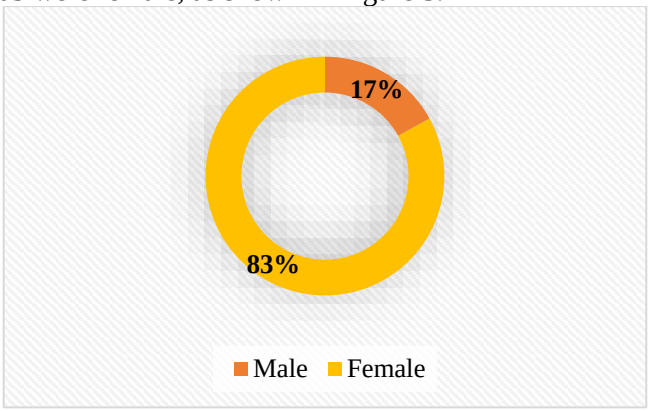

Figure 5 Comparison of the number of participants by gender

In this activity, an evaluation is conducted through a post-test given to participants after the counselling event. This aims to determine the success (achievement) of this community service. The pretest and post-test questions consist of 10 items related to the counselling material, including (1) what is meant by happy hypoxia; (2) why do patients with happy hypoxia feel fine even though their blood oxygen levels are low; (3) happy hypoxia most often occurs in infected patients; (4) what is the main sign that should be checked to detect happy hypoxia; (5) why is happy hypoxia dangerous; (6) in patients with happy hypoxia, a decrease in blood oxygen levels can cause; (7) what conditions can cause someone to experience happy hypoxia; (8) the symptoms that most often do not appear in patients with happy hypoxia even though their blood oxygen levels are low are; (9) what examination should be conducted to diagnose happy hypoxia in patients; (10) in COVID-19 patients, the cause of happy hypoxia is. The documentation of the online post-test activities conducted by the participants can be seen in Figure 6.

Figure 6 Online post-test activity

Based on the pretest results, the average knowledge level of the extension participants is still low, with an average score of only 59.84. However, after participating in this counselling activity, their level of knowledge increased to 92.71. Thus, there was an increase in knowledge of 54.93%. The pretest results are presented in Figure 7.

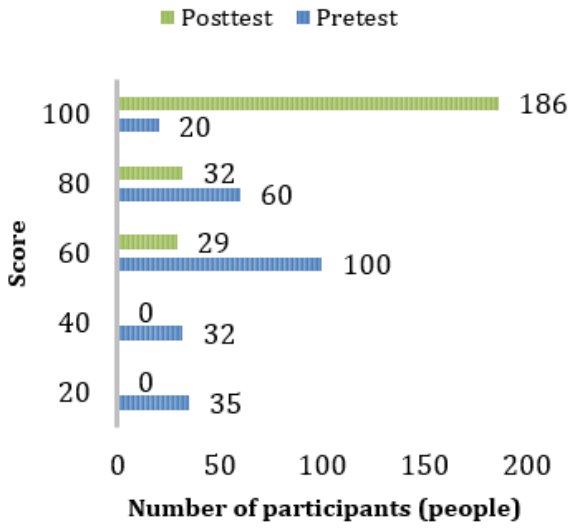

Figure 7 Comparison of pretest and post-test scores of the counselling participants

The increase in knowledge among extension participants is influenced by several factors, including educational activities using the extension method (Susanto et al., 2021). This is in line with previous research that states that extension activities can significantly increase public knowledge (Octavia et al., 2020; Surtimanah et al., 2020). The community greatly needs education regarding happy hypoxia because with this activity, the community will become more aware of the importance of knowing the symptoms of happy hypoxia, prevention, management, and the importance of measuring oxygen saturation with oximetry for participants who have family members infected with COVID-19 (Wilson-Baig, 2021). By obtaining information about happy hypoxia, participants can inform others about the importance of monitoring oxygen saturation, a form of public vigilance towards happy hypoxia (Sari & Nuari, 2021). The community that knows prevention strategies can help protect itself and its families. If someone has better knowledge, they will be more open to following existing rules or recommendations to prevent the transmission of diseases (Quyumi & Alimansur, 2020; Sari et al., 2021). Thus, they can provide safety and

protection to groups that are not well-informed or vulnerable, such as families with sick members (Gumelar & Ardyanto, 2018).

CONCLUSION

This community service activity concludes that health education about the phenomenon of happy hypoxia during the COVID-19 pandemic can increase public knowledge, as evidenced by a 54.93% improvement in pretest and post-test results.

AUTHOR CONTRIBUTIONS STATEMENT

Conceptualization, NPW; methodology, DPRVA; Collecting data, ASLW and YI; Analysis data, NPW and NPRA; Editing, IWTA.

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