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The Use of Herbal Medicine Among Sleman Residents during COVID-19 Pandemic

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Abstract— *Various treatment methods were still being researched around the world and led to find an alternative option to prevent COVID-19 infection. Herbal medicine was an alternative therapy to help increase immunity. This study explored the use of herbal medicines during the COVID-19 pandemic in DI Yogyakarta, especially in Sleman. An online survey was conducted via Google Form to respondents who lived in Sleman that aged 18 years and older. A total of 68 respondents participated in the survey. About 83.8% of participants had taken herbal medicines since before the COVID-19 pandemic to increase their immunity (67.6%). The most consumed herbs were ginger (83.6%), orange (61.8%), and turmeric (47.3%). Nearly 72.1% of participants knew that the consumption of herbal medicines and supplements alone was not enough to prevent the spread of COVID-19. In addition, people believed herbal medicines were safer than conventional medicine because herbal medicines had fewer side effects and come from nature.*

Keywords— *Herbal medicine, COVID-19, Sleman.*

I. INTRODUCTION

Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) is one of the causes of fatal respiratory disease. A new variant known as SARS-CoV-2 appeared in Wuhan in late 2019 and its rapid spread caused extraordinary events for the world to date. SARS-CoV-2 is a single-stranded RNA virus with a crown-shaped spike protein [1,2]. The disease caused by SARS-CoV-2 is called the Corona virus disease (Coronavirus Disease 2019 /COVID-19) [1,3]. The most common symptoms appearing in patients with SARS-CoV-2 infection are in the form of fever, cough, shortness of breath, myalgia, and fatigue; however, the uncommon symptoms include sputum production, headache, haemoptysis, abdominal pain, and diarrhea [4].

The case of COVID-19 in Indonesia was first reported on March 2, 2020 and is still increasing until now. Information on the spreading of COVID-19 cases can be accessed through the website (website) covid19.go.id. A total of 2,491,006 people were confirmed to have COVID-19 until July 10, 2021, with a total of 373,440 active cases. Efforts to prevent COVID-19 infection are recommended by using masks, social distancing, and washing hands. Currently, vaccines against SARS-CoV-2 have been found that are from weakened viruses, protein subunits, viral vectors, and mRNA. This vaccination aims to obtain artificial immunity and achieve herd immunity [5].

So far, no specific drug has been found to treat COVID-19 infection, therefore the therapy given is in the form of supportive therapy. The treatment of COVID-19 uses potential drugs that are still being studied for their safety and efficacy in treating SARS-CoV-2 infection [6]. Various ways are used, including the use of herbs in an effort to help maintain and increase the body's resistance. Based on Riskesdas 2018, the use of traditional medicine in Indonesia is still high at 98.5%. The use of traditional ingredients, especially in Sleman, DI Yogyakarta is quite high, namely 52.4% of finished ingredients and 19.5% of homemade ingredients [7,8].

Steeping herbs, herbs, standardized herbal medicines, and phytopharmaceuticals are the forms of herbal practice. Plants commonly used as herbs include turmeric (*Curcuma longa* L), ginger (*Zingiber officinale* Roscoe), curcuma (*Curcuma xanthorrhiza* Roxb), guava (*Psidium guajava* L.), sambiloto (*Andrographis paniculate* (Burm.f) Wall.ex Nees.) and, meniran (*Phyllanthus niruri* L.) [9]. Several herbal plants registered with WHO and EMA (European Medicine Agency) that have the potential to treat respiratory infections based on preclinical, clinical and safety evidence are garlic (*Allium sativum*), sambiloto (*Andrographis paniculate*), *Echinacea purpurea*, *Eucalyptus globulus*, anise (*Pimpinella anisum*) and ginger (*Zingiber officinale*) [10].

Herbal medicine is not included in the recommended COVID-19 therapy based on the COVID-19 management guidelines [11]. This is due to the lack of scientific research that supports the effectiveness of herbal medicine [12]. The main purpose of using natural medicine in the form of herbal medicine is as a promotive and preventive effort. These natural medicines continue to be developed in a curative and palliative efforts [13]. Although there is still a lack of scientific evidence from herbal medicines, many people consume them with the intention of avoiding the COVID-19 virus [(12)]. For this reason, in this study, we want to know the overview of the use of herbal medicines by the residents of Sleman during the COVID-19 pandemic.

II. MATERIAL AND METHOD

A descriptive study with a cross sectional design was conducted in DI Yogyakarta on 18 – 30 July 2021. This study used a questionnaire distributed via Google Form. The criteria for respondents in this study were over 18 years of age and lived in Sleman, DI Yogyakarta, Indonesia.

The questionnaire was divided into 3 parts (19 questions) which were adapted from previous studies. The first part contains questions regarding the characteristics of the respondents. The second part contains questions regarding public knowledge of the COVID-19 pandemic [14,15,16]. Each question has a score of 2 if the answer is correct and the total score is 10 (score 0 – 10). The third part contains

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questions regarding the description of the use of herbal medicines in respondents [14,16,17,18].

III. Data Analysis

The data on respondents' characteristics, knowledge about COVID-19 and the use of herbal medicines was analysed descriptively. Data was presented in the form of frequency and percentage (%) for each question variable.

IV. Result and Discussion

A total of 68 respondents were willing to take part in this research survey. More than half of the respondents were women (75%, n=51). The age of the most respondents was in the range of 18 – 24 years (45.6%, n = 31). A total of 49 respondents (72.1%) are university graduates. A total of 17.6% were private employees (n = 12) and 14.7% were health workers (n = 10). Most of the respondents had no history of chronic disease (91.2%, n = 62) and as many as 8 respondents had been infected with COVID-19 (11.8%). A summary of the characteristics of the respondents can be seen in Table 1.

TABLE 1. Demographic characteristics of respondents in the study

Respondents' Characteristics	Frequency	Percentage
Gender		
Female	51	75,0%
Male	17	25,0%
Age		
18 – 24 years	31	45,6%
25 – 39 years	22	32,4%
40 – 59 years	12	17,6%
≥ 60 years	3	4,4%
Education		
University	49	72,1%
Senior High School	17	25,0%
Junior High School	2	2,9%
Occupation		
Students	23	33,8%
Private Employee	12	17,6%
Medical Staff	10	14,7%
No Occupation	9	13,2%
Private Business	6	8,8%
Teachers	4	5,9%
Civil Servant/Soldier/Policeman	4	5,9%
Chronic Disease History		
No	62	91,2%
Yes	6	8,8%
Previously Infected COVID-19		
No	60	88,2%
Yes	8	11,8%

A. Respondent's Knowledge of COVID-19

The results of the assessment of respondents' knowledge about COVID-19 showed that almost all respondents knew that the transmission of COVID-19 came from a virus and could be transmitted if in close contact with patients. Respondents knew that the most common symptoms of COVID-19 were fever, cough, sore throat, and shortness of breath. The average score regarding knowledge about COVID-19, which is 9.62 ± 1.39, can be seen in Table 2. The level of community knowledge regarding COVID-19 can be considered as good. Almost all respondents have basic knowledge about COVID-19.

The COVID-19 pandemic is known to have originated from the Corona virus which is included in the category of severe acute respiratory syndrome, which was later known as SARS-CoV-2. COVID-19 infection spreads very quickly through close contact and is designated as a global pandemic by WHO [1,3]. The efforts to reduce the symptoms of COVID-19 through vaccination have been socialized by the government and almost all respondents in the study knew about it. Based on the results of a survey by the Ministry of Health (2020), 74% of the Indonesian population is aware of the existence of a vaccine program, but not all Indonesians want to be vaccinated. The reasons for refusing the COVID-19 vaccine are quite diverse, such as unsure of its safety, unsure of the effectiveness of the vaccine, fear of the side effects that will be felt, distrust of vaccines, and referring to religious beliefs. Another reason for refusal is fear of needles. Some respondents think that the COVID-19 pandemic is a conspiracy and do not believe in COVID-19 infection. This is a hindering factor in efforts to implement the vaccination program as a preventive measure against COVID-19 infection [19].

TABLE 1. Respondent's Knowledge of COVID-19 (n=68)

Knowledge	Frequency	Percentage (%)
Did you know that COVID-19 is an outbreak that occurs in 2020		
Yes	67*	98,5
No	1	1,5
COVID-19 is an infection caused by a virus		
True	67*	98,5
False	0	0
Do not know	1	1,5
COVID-19 is not contagious even if there is close contact with an infected person		
True	3	4,4
False	63*	92,6
Do not know	2	2,9
Fever, cough, sore throat and shortness of breath are possible symptoms of COVID 19		
True	63*	92,6
False	3	4,4
Do not know	2	2,9
COVID-19 vaccine is available		
True	67*	98,5
False	0	0
Do not know	1	1,5
Total Score		
Min-Max	0 – 10	
Average ± SD	9,62 ± 1,39	

*Correct Answer

Studies have shown that survivors of SARS-CoV-2 infection can achieve long-lasting immunity, in the form of high titters of immunoglobulin G (IgG) [5]. The vaccines used include CoronaVac (Sinovac), BioNTech (Pfizer), and Oxford-Astrazeneca which have shown good effectiveness in reducing COVID-19 symptoms [20,21]. The need for communication and socialization to the community to minimize misrepresentation in the community.

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B. Use of Herbal Medicines on Respondents

The results (Table 3) show that 83.8% of respondents (n = 57) have used herbal medicines since before the pandemic, while 8.8% of respondents (n = 6) have taken herbal medicines since the COVID-19 pandemic and 7.4% respondents (n=5) did not take herbal medicine. The reason for consuming herbal medicines during the COVID-19 pandemic was to increase endurance (67.6%, n= 46) and 8.8% of respondents (n=6) took herbal medicines for the reason of preventing COVID-19 infection. Some respondents (51.5%, n = 35) believe that herbal medicines are safer than modern medicine on the grounds that they do not experience side effects from using herbal medicines (45.6% n = 31). Sources of herbal medicines that come from nature (33.8%, n = 23) and have been used for generations (16.2%, n = 11) are also reasons for respondents to take herbal medicines. A total of 82.4% of respondents (n=56) did not experience side effects from the use of herbal medicines. However, there were some respondents who experienced side effects such as itching, nausea, and vomiting (2.9%, n = 2) and 5.9% of respondents (n = 4) experienced unexplained effects.

A total of 72.1% of respondents (n= 49) believe that only taking herbal medicines and supplements is not enough to prevent the spread of COVID-19. Efforts to prevent the transmission of COVID-19 infection are still being socialized. The application of health protocols to prevent the spread of SARS-CoV-2 infection in the form of maintaining distance, washing hands, and using masks continues to be disseminated to the public. Testing, tracing, and treatment practices as well as social restrictions are implemented as an effort to break the chain of transmission of COVID-19 [3,22].

People were familiar with herbal medicines long before the COVID-19 pandemic. The survey results show that the most common use of herbal medicines in the community is to treat colds (79.4%), diarrhea (36.8%), fever (33.8%) and constipation (29.4%). A total of 5.9% of respondents consume herbs to treat hypertension. There are some respondents who consume herbs for other indications such as coughs, canker sores, and gastric disorders and some who regularly consume herbs when they are healthy. Data from 55 respondents who consumed herbs showed that ginger (83.6%) was the most consumed herb followed by oranges (61.8%), turmeric (47.3%), and guava (30.9%).

Several herbal plants have begun to be researched for the purpose of handling COVID-19 infections. Recommendations for handling cases of SAR-Cov-2 infection consist of self-isolation, rest, hydration, use of NSAIDs in cases of high fever. Additional treatment using herbs is based on a risk-benefit assessment especially for herbs indicated for respiratory diseases. Allergic reactions and gastrointestinal disturbances are common side effects of all medications and apply to herbal remedies. Consumption of herbs should also be based on the recommended dose [10].

Ginger (*Zinger officinale*) and orange (*Citrus medica*) have phytochemical compounds that can reduce viral load and release of SARS-CoV-2 in the nasal passages in in silico testing [23]. Sambiloto (*Andrographis paniculate*) is one of the herbs studied for its activity against COVID-19 infection. Sambiloto has indications to treat diarrhea, fever, flu and viral infections [10,24]. In vitro assays of sambiloto extract and andrographolide showed strong anti-SARS-CoV-2 activity. These results encourage further development of sambiloto's extract and andrographolide as monotherapy or in combination with other drugs that are effective against SARS-CoV-2 infection [24].

TABLE 3. The use of herbal medicine by the respondents

Herbal Medicine Questions	Frequency	Percentage (%)
When did you start taking herbal medicine		
Since the COVID-19 pandemic	6	8,8
Since before the COVID-19 pandemic	57	83,8
No consumption	5	7,4
The reason why you take herbal medicine during the COVID-19 pandemic		
Increase body immunity	46	67,6
As a prevention of COVID-19 infection	6	8,8
No consumption	16	23,5
In your opinion, are traditional medicines safer than modern health services with chemical drugs?		
Yes	35	51,5
No	21	30,9
Possibly/ do not know	12	17,6
Why do you think herbal medicines are safe?		
Because it comes from nature	23	33,8
It's been used for generations	11	16,2
Few or almost no side effects	31	45,6
Do not know	3	4,4
What side effects have you experienced after taking herbal medicines?		
Safe, no side effects	56	82,4
Have experienced side effects such as itching, nausea, vomiting,	2	2,9
Have experienced unexplained side effects	4	5,9
Do not know	6	8,8
In your opinion, is taking nutritional and herbal supplements alone enough to prevent the spread of COVID-19?		
Yes	8	11,8
No	49	72,1
Possibly / Do not Know	11	16,2

Some herbs such as turmeric (*Curcuma longa* L), curcuma (*Curcuma xanthorrhiza* Roxb), guava (*Psidium guajava* L.), and meniran (*Phyllanthus niruri* L.), and garlic (*Allium sativum*) have potential as additional treatment for infections. SARS-CoV-2 [10,25,26,27]. Research to prove the effectiveness of herbs as anti-SARS-CoV-2 needs to be done so that herbs can be recommended as prevention and alternative therapies in the treatment of COVID-19 infection.

V. CONCLUSION

This study shows that public knowledge regarding the COVID-19 pandemic is very good. Herbal medicines are considered safe and have fewer side effects than conventional medicines. The most widely used herb is ginger that commonly used for colds. Prevention of COVID-19 infection with the use of herbal medicines is still not enough. The effectiveness and safety of herbal medicines need to be proven to ensure the efficacy and safety of herbal medicines, especially in the face of the COVID-19 pandemic.

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