https://doi.org/10.1590/1807-0337/e128636

Fake health news during the COVID-19 pandemic: between skepticism and cultural preference bias

Rahma Sugihartati[1]*

Siti Mas'udah[2]

Suko Widodo[3]

Ratna Azis Prasetyo[2]

Arya Wijaya Pramodha Wardhana[4]

Abstract

During the Covid-19 pandemic, it is observed that a lot disinformation or fake news regarding how the pandemic has been portrayed in electronic media. This article examines how the public gets and disseminates information about COVID-19 from and to WhatsApp groups, and how cultural background influences scepticism about COVID-19 information obtained from WhatsApp groups. Based on the outcomes of 200 respondents' interviews conducted in Surabaya and Malang, East Java, the results found that fake news about COVID-19, especially those related to health

[1]Universitas Airlangga, Faculty of Social and Political Sciences, Department of Information and Library Sciences, Surabaya, Indonesia.
[2]Universitas Airlangga, Faculty of Social and Political Sciences, Department of Sociology, Surabaya, Indonesia.
[3]Universitas Airlangga, Faculty of Social and Political Sciences, Department of Communication Science, Surabaya, Indonesia.
[4]Universitas Indonesia, Faculty of Humanities, Department of Library and Information Sciences, Depok, Indonesia.

*Correspondence: rahma.sugihartati@fisip.unair.ac.id

information and the benefits of sunbathing to fight COVID-19, got critical responses by more than half of the respondents. However, several respondents believed that fake news about COVID-19 were true because of the socio-cultural habit of consuming jamu and herbal medicine, which are considered part of a beneficial cultural heritage. Belief systems and cultural practices in an uncertain situation as the COVID-19 pandemic have made people easily influenced by the wrong understanding of the true benefits of jamu in the prevention of COVID-19. The community endorses disinformation or fake news when they accept information suggesting that spices ("jamu" and "empon-empon") can treat COVID-19 patients. People are inclined to seek direction within the framework of their traditional belief system when confronted with uncertain situations and severe anxiety, which can even reinforce and validate their belief.

Keywords: fake health news, COVID-19 pandemic, WhatsApp group, cultural belief.

Notícias falsas sobre saúde durante a pandemia de COVID-19: entre o ceticismo e o viés de preferência cultural

Resumo

Durante a pandemia da COVID-19, observou-se muita desinformação ou notícias falsas na forma como a pandemia era retratada na mídia eletrônica. Este artigo examina como o público obtém e dissemina informações sobre a COVID-19 de e para grupos do WhatsApp e como o contexto cultural influencia o ceticismo em relação às informações sobre a COVID-19 obtidas em grupos do WhatsApp. Com base nos resultados de entrevistas com 200 entrevistados realizadas em Surabaya e Malang, Java Oriental, os resultados revelaram que notícias falsas sobre a COVID-19, especialmente aquelas relacionadas a informações de saúde e aos benefícios do banho de sol para combater a COVID-19, foram criticadas por mais da metade dos entrevistados. No entanto, vários entrevistados acreditavam que as notícias falsas sobre a COVID-19 eram verdadeiras devido ao hábito sociocultural de consumir *jamu* e ervas medicinais, que são considerados parte de uma herança cultural benéfica. Os sistemas de crenças e práticas culturais, em uma situação incerta durante a pandemia da COVID-19, tornaram as pessoas facilmente influenciadas pela compreensão equivocada dos verdadeiros benefícios do *jamu* na prevenção da COVID-19. A comunidade está endossando desinformação ou notícias falsas ao aceitar informações que sugerem que especiarias (“*jamu*” e “*empon-empon*”) podem tratar pacientes com COVID-19. As pessoas tendem a buscar orientação dentro da estrutura de seu sistema tradicional de crenças quando confrontadas com situações incertas e ansiedade severa, o que pode até reforçar e validar sua crença.

Palavras-chave: notícias falsas sobre saúde, pandemia de COVID-19, grupo do WhatsApp, crença cultural.

1. Introduction

The COVID-19 pandemic is a threat to people's health and safety because of the dissemination of fake news about the virus, and it also causes problems with health crisis communication (Krause et al., 2020, Lara-Navarra et al., 2020, Patel et al., 2020). One could argue that two difficult-to-solve concerns are COVID-19 and fake news. Fake news has been used to refer to various forms of content, from reports with opportunistic frameworks, such as headlines, photos, and content, to draw readers in and increase click-through rates, advertising income, and ideological advantages, to political satires, news parodies, state propaganda and false advertising (Tandoc Junior et al., 2017, Baptista; Gradim, 2022). Fake news is also distinguished from other forms of disinformation by its attempt to mimic the traditional news format. Thus, fake news refers to a specific type of disinformation: It is false, it is intended to deceive people, and it does so by trying to look like real news. Wardle (2017) distinguishes between misinformation and disinformation: The former refers to "the inadvertent sharing of false information," while the latter refers to "the deliberate creation and sharing of information known to be false." Fake news is a form of disinformation. Misinformation is information that is wrong, but the person who spreads it believes that the information is true, while disinformation is information that is wrong, and the person who spreads it knows that the information is false but spreads it intentionally to deceive or manipulate others (Wardle; Derakhshan, 2017, Berger, 2018, Baptista; Gradim, 2022).

According to Elías and Catalan-Matamoros (2020) and Van der Meer and Jin (2020), fake news is difficult to suppress, especially when it comes from official or alternative sources using information counters on social media networks. As a result, the WHO declared that there is a large infodemic that made it impossible for individuals to receive accurate and credible information during the COVID-19 pandemic due to the oversupply of

information at the time. The WHO additionally emphasizes that the spread of misleading information during the COVID-19 pandemic, particularly on phony preventive measures or treatments, can threaten public health (World Health Organization, 2020).

During the COVID-19 pandemic, social media platforms provided an opportunity for the dissemination and provision of direct access to an unprecedented amount of information content. The propagation of rumors and fake news is facilitated by this possibility, which harms policymakers' efforts to stop the coronavirus from spreading. The implementation of lockdown policies in many nations across the world, where individuals are expected to stay at home, work from home, study, and worship at home, coincides with the transmission of fake news and misinformation more quickly and extensively than news based on facts. In these circumstances, those who spend most of their time at home will inevitably rely on internet-connected social media for information. However, it appears that there are risks associated with depending on information from the internet, as some of the content obtained there turns out to be fake news. (Rathore; Farooq, 2020). The perception of the risks regarding COVID-19 alone has made the public anxious and it is exacerbated by fake news, affecting public anxiety to increase (Dryhurst et al., 2020). Several studies state that stress and anxiety emerge when people read fake news about the spread of COVID-19, indicated by symptoms ranging from dizziness, sleep disturbances to loss of appetite and stomach disorders (Lee, 2020, Liu et al., 2020).

The public has access to unclear information in the post-truth era, notably during the COVID-19 pandemic (Aharony et al., 2017). This is information that is difficult to accept, believe to be true, or trust. Amid the COVID-19 pandemic, fake news is not only content that contains hoaxes; it is also intentionally created and shared by journalists, bloggers, or anyone else by capitalizing on public fear to attract attention and boost numbers of followers or ratings (Yusof et al., 2020). During the COVID-19 pandemic, it has been common to capitalize on public fear. Several incidents during

the COVID-19 epidemic show how scared and agitated individuals were even more likely to believe fake news that was disseminated and received through the mass media, especially news related to the prevention and treatment of COVID-19.

A more thorough analysis of the complex interactions between fake news and political discourse is required considering the dynamic and ambiguous information landscape created by the COVID-19 outbreak. According to Van der Linden et al. (2020), fake news is created or distributed with the intent to mislead and deceive. It is frequently employed as a tactical tool to further political agendas. Fake news becomes an effective instrument in the political sphere for influencing public opinion, damaging the reputations of opponents, and causing uncontrolled instability and unrest in society (Evans; Hargittai, 2020, Van der Linden et al., 2020).

WhatsApp is one of the social media platforms that has grown to be a major source of misleading news around COVID-19 (Elías; Catalan-Matamoros, 2020, Kaya, 2020). Not only do people panic buy food, face masks, face shields, and hand sanitizers in response to news about COVID-19's dangers on WhatsApp, but they also engage in excessive behavior when it comes to treating and preventing the virus (Naeem, 2021, Tasnim; Hossain; Mazumder, 2020). All of these behaviors are caused by extreme anxiety. Before the COVID-19 outbreak, fake news was widely disseminated through WhatsApp groups in Indonesia (Pangestika, 2018). Since misleading news about COVID-19 began to spread via WhatsApp during the pandemic, efforts to combat it have been ratcheted up (Nasir; Nurmansyah; Baequni, 2020, Pradana et al., 2020, Syakriah, 2020). This is not entirely unexpected considering that during the COVID-19 pandemic, individuals could regularly receive, share, and converse about COVID-19-related content via WhatsApp. This convenience matches with the deliberate objective behind spreading fake news, which is to deceive and distort the public's perception. Fake news is often produced to influence public opinion and further particular discourse points; its motivations are

frequently entwined with political propaganda and ideological objectives (Baptista; Gradim 2022). WhatsApp usage has increased and the amount of COVID-19-related content has escalated after the WHO proclaimed the pandemic (Tan et al., 2021).

COVID-19-related content disseminated via WhatsApp includes methods to avoid and treat COVID-19 that are derived from cultural, non-medical, and non-rationality-based beliefs. Shimizu (2020) uncovered a great deal of misleading information and news that was proliferating on Facebook and WhatsApp, including the claim that urine and cow dung may be utilized for treating the coronavirus. Online health material that the public believes to be accurate about treating COVID-19 suggests drinking a lot of alcohol, taking chloroquine phosphate, drinking water, and tanning (Brooks, 2020, Glatter, 2020, Kuwonu, 2020, Purohit, 2020). Apart from using herbs and vegetables as a cure-all for COVID-19, non-pharmacological treatments can also stimulate discussions on Twitter and contribute to a dialogue on the disease's prevention and treatment (Afolabi et al., 2020). People attend traditional markets and supermarkets in Indonesia in search of herbs and spices, known as "empon-empon" in Javanese because it is believed that they can prevent COVID-19 (Astari, 2020). This circumstance has presented a chance for those aiming for profit, such as through the sale of fraudulent COVID-19 testing kits, elixirs, and herbal remedies that promise to both prevent and treat the virus (Knight, 2020, Putro; Prijoto, 2020, Savitri, 2020). Government information sources state categorically that certain herbal substances do not cure COVID-19; rather, they merely boost immunity (Pangestika, 2020).

In addition to Indonesia, other nations are additionally employing countermeasures to stop the transmission of misleading health information about COVID-19 (Pennycook et al., 2020). Initiatives to raise public awareness of accessible, reliable websites have been purposefully developed in South Korea in reaction to the escalating dissemination of fake news regarding COVID-19 (Lee; Lee; Lee-Geiller, 2020). However,

the propagation of fake news regarding COVID-19 is significantly more pervasive when there is a social panic. Without first verifying the validity of the information, a lot of people keep spreading fake news around.

According to experts, news literacy can help consumers be more critical of media in the face of growing concerns about people's belief in fake news that circulates on social media (Luhtala; Whiting, 2018, Vraga; Tully, 2019). Skepticism regarding material published on social media and an individual's attitude and reaction when they receive and distribute news are examples of critical media consumption (Vraga; Tully, 2019). The ability to critically think is crucial for anyone consuming news on social media in the post-truth era. This necessitates that news consumers cultivate a skeptical mindset, recognize and value evidence-based information, and remain impartial when rendering reasonable decisions (Ku et al., 2019). Fake news has destroyed the truth so in the post-truth era, everyone needs to develop skepticism on all the news circulating on social media.

2. Objectives

The objective of this research is to gain a profound understanding of how communities acquire and disseminate health information about Covid-19 through WhatsApp Groups. First, how communities use the platform to obtain and exchange such information will be examined by the study. Researchers can discern common patterns of behavior and information sources within WhatsApp Groups by understanding this process. In addition, the study intends to investigate community cultural backgrounds that could impact a skeptical mindset regarding Covid-19 health information obtained via WhatsApp Groups. In order to understand how they affect how health information is interpreted and accepted, factors like values, beliefs, and cultural norms will be examined. This study is therefore anticipated to provide more light on the function of WhatsApp Groups in the dissemination of Covid-19-related public health information

and uncover cultural elements that can lead to a mistrust of the platform's ability to deliver health information. This objective is envisioned to lay the groundwork for the development of more effective communication strategies in addressing the challenges of health information dissemination amidst the pandemic.

3. Methods

This study was conducted in Surabaya and Malang, two of Indonesia's largest cities. The two cities were selected because they had the greatest percentage of COVID-19-positive patients among the cities in the East Java Province. Interviews were performed for this investigation with those who disseminated and consumed misleading information regarding the coronavirus. In this instance, a pre-prepared questionnaire and interview guide served as the guideline. To investigate the problematic circumstances that the public encounters and how they create, consume, and spread fake news about COVID-19 – including the degree to which they independently verify the information about the virus that is found on social media –, in-depth interviews conducted under the guidance of interview guides were required.

The purposive sampling strategy for this study included 200 respondents; 100 people from Malang and 100 from Surabaya represented the total number of respondents chosen. The participants who were selected and interviewed for this study fulfilled the following general criteria: (1) They had to be between the ages of 18 and 60; (2) They had to have been living in the research site; and (3) They had to have consumed erroneous information regarding COVID-19 within the previous three months.

A number of informants who had not only ingested but also distributed and even created disinformation or fake news on the coronavirus were interviewed in-depth for this study. Their motivations for spreading and creating disinformation or fake news regarding the coronavirus were investigated in in-depth interviews.

The respondents in this study were between the ages of 18 and 60, and 36.5 percent of the respondents were young adults, between the ages of 18 and 23 (see Table 1). They belong to the net generation, which is characterized by a constant curiosity about new information, ease using computers and the internet, and a propensity to create social networks using social media. Among the 200 participants in the research, 28.5% belonged to the 24-29 age group. In the meantime, 12% of those surveyed were between the ages of 30 and 35. Just 3.5 percent of those surveyed were in the 36–41 age range. 8.5% of the respondents were between the ages of 42 and 47, 7% were between the ages of 48 and 53, and 4% were between the ages of 54 and 60.

Table 1. Age of Respondents (Years)

Age of Respondents	F	%
1. 18-23	73	36,5
2. 24-29	57	28,5
3. 30-35	24	12
4. 36-41	7	3,5
5. 42-47	17	8,5
6. 48-53	14	7
7. 54-60	8	4
Total	200	100

4. Results

Thousands, if not hundreds, of hoaxes or fake news stories about COVID-19 are appearing in online forums and cyberspace in tandem with the virus's growing spread throughout Indonesia. Due to the lack of critical thinking skills and poor literacy, many people have fallen prey to fake news

regarding COVID-19. Spreading from one WhatsApp group to another, several false reports regarding COVID-19 continue to come up.

The dissemination of fake news, particularly disinformation concerning COVID-19, is becoming more and more difficult to control in urban areas like Surabaya and Malang, where this study was conducted. Publicly available and extensively circulated information is frequently ambiguous.

4.1 Reception and spread of fake health news about COVID-19

In the era of the internet and the increasingly widespread use of smartphones, the risk of the public being exposed to fake news, including fake health information about COVID-19, is much greater. People effortlessly discover articles and news online via a variety of sources, including social media posts, email newsletters, news portals, search engines, and direct broadcast links shared in WhatsApp groups. In addition to offering on-demand access to individual fragments produced by the citizen journalism system, the internet and cell phones have opened up new avenues for individuals to get news and information. The advent of citizen journalism, which is fueled by people posting personal pieces online, has given people the ability to actively participate in the vast informational landscape that is readily available to everyone. The digital era gave rise to citizen journalism, providing regular people a platform to express their opinions, experiences, and insights on a wide range of topics. Social media platforms have been instrumental in driving this phenomenon, generating an enormous amount of content that provides users with an almost infinite amount of information. Though the widespread and rapid use of WhatsApp groups has facilitated information sharing, it also increases the possibility for people to come across false or misleading information. Determining reliable and quality sources of information has become a major difficulty for everyone, particularly while learning about COVID-19. Joining and participating

in WhatsApp groups is simple, but it is difficult to verify the accuracy of the information shared because it travels quickly. It might be difficult to distinguish between false and reliable material in these communities due to the abundance of information, particularly on COVID-19. It is crucial to distinguish reliable sources from those that could be misleading in this case. People have to deal with sifting through a lot of information that is mixed up with false information and accurate facts. Comprehending the flow of information within WhatsApp groups is crucial. It aids in our understanding of how information flows, popular sources, and potential growth paths for misleading and fake news.

When the Large-Scale Social Restriction or LSSR policy (Indonesian: *Pembatasan Sosial Berskala Besar* or PSBB) was implemented, people stayed more at home. This had the effect of causing the public to primarily get knowledge on COVID-19 from social media, including WhatsApp groups. Even though people's mobility was severely restricted during the COVID-19 epidemic, they were still able to rely on online information because of the internet and information technology. The information that respondents frequently received about COVID-19 from different WhatsApp groups was typically about the precautions that needed to be taken to avoid contracting the virus. Approximately half of the participants acknowledged that they often received information regarding the advantages of sun exposure in preventing COVID-19, and a further 11.5% acknowledged that they received this information very regularly (see Table 2). Regarding the effectiveness of spices or *empon-empon* in preventing the spread of COVID-19, as many as 45% of respondents said they received information about it frequently, and 12% of respondents said they obtained information about it extremely frequently from WhatsApp groups. A variety of other information regarding the potential health benefits of gargling with vinegar and water (24.5%), gargling with salt (20.5%), and using eucalyptus-based "antivirus necklaces" (34%), which have been purported to prevent

Table 2. Type and Frequency of Health Information about COVID-19 received from WhatsApp Groups

Health Information about COVID-19 from WhatsApp Group	Very Frequently		Frequently		Rarely		Never		Total	
	F	%	F	%	F	%	F	%	F	%
1. Spices for the prevention of COVID-19	24	12	90	45	52	26	34	17	200	100
2. Garlic for the prevention of COVID-19	16	8	68	34	64	32	52	26	200	100
3. Eucalyptus-based anti-COVID-19 necklace	13	6.5	46	23	71	35.5	70	35	200	100
4. Sunbathing for the prevention of COVID-19	23	11.5	100	50	56	28	21	10.5	200	100
5. Gargling with water and vinegar	19	9.5	49	24.5	56	28	76	38	200	100
6. Gargling with water and salt	10	5.0	41	20.5	63	31.5	86	43.0	200	100

COVID-19 infections, was also frequently shared by respondents on WhatsApp groups.

This study discovered that respondents were not only consumers who only read information about COVID-19 they received from WhatsApp groups but also disseminators of the information to other WhatsApp groups. It indicates that despite the item being categorized as fake news, there was information-sharing activity. Fake news was frequently shared to other WhatsApp groups by respondents claiming that gargling with vinegar and water (58.1%) and salt and water (33.3%) would eradicate the coronavirus (see Table 3). Furthermore, respondents

Table 3. Health Information about COVID-19 Disseminated to WhatsApp Groups

Health Information about COVID-19 that were Disseminated	Very Frequently		Frequently		Rarely		Never		Total	
	F	%	F	%	F	%	F	%	F	%
1. Spices or *jamu* for the prevention of COVID-19	51	30.7	33	19.9	26	15.7	56	33.7	166	100
2. Garlic for the prevention of COVID-19	29	19.6	40	27.0	37	25.0	42	28.4	148	100
3. Eucalyptus-based anti-COVID-19 necklace	20	15.4	23	17.7	32	24.6	55	42.3	130	100
4. Sunbathing for the prevention of COVID-19	54	30.2	41	22.9	35	19.5	49	27.4	179	100
5. Gargling with water and vinegar	21	16.9	72	58.1	28	22.6	3	2.4	124	100
6. Gargling with water and salt	11	9.7	38	33.3	44	38.6	21	18.4	114	100

frequently disseminated information regarding the advantages of garlic (27%) and spices (26.7%) in preventing COVID-19. It was even acknowledged by 30.7% of respondents that they regularly shared information on the advantages of spices in preventing COVID-19 across WhatsApp groups. As many as 30.2% of respondents admitted that they very frequently circulated information about the benefit of sunbathing for the prevention of COVID-19 and 22.9% of respondents admitted that they frequently circulated the same information.

According to every interviewee, they shared information about COVID-19 on WhatsApp groups so that their friends would also be aware of it. Since most respondents were ignorant, they believed the information

to be significant and helpful for others, even though it was fake news. According to the findings of in-depth interviews, most respondents had good intentions – for instance, they were not disseminating fake news in pursuit of financial gain. Respondents' main intention in disseminating different COVID-19 information was to offer information they deemed significant and which they thought would lessen the likelihood of the virus spreading.

4.2 Trust in health information about COVID-19

Of the 200 respondents surveyed, 25% said that they did not immediately believe health information about COVID-19 they obtained from WhatsApp groups and that they even questioned the reliability of the material. Many respondents expressed their skepticism, highlighting what they perceived as too dramatic and questionable claims on the medicinal benefits of spices like garlic and ginger. These kinds of critical respondents typically declined to share COVID-19 material they obtained from WhatsApp groups with other WhatsApp groups immediately.

The respondents portrayed in the above table (Table 4) had a different perspective than the 55% of respondents who reported they trusted COVID-19-related health information, particularly information on the advantages of using spices or herbs to prevent the virus. According to this survey, a sizable portion of participants thought that different claims about the health benefits of sunbathing and the effectiveness of *jamu*, ginger, garlic, and other things were accurate. For instance, the cultural tradition of spices leads one to believe that their benefits are genuine. Some of the respondents also believed that herbs may treat COVID-19 due to their sociocultural backgrounds and the tradition of utilizing spices for medical purposes. Many respondents reported that they had seen on television a scholar explaining the properties of spices, so they assumed without hesitation the information was not fake news.

Table 4. Trust in Health Information about COVID-19 from WhatsApp Groups

Reaction after Receiving Information/News	F	%
1. Believing and trusting health information to be accurate and helpful, necessitating its social media sharing because:	97	55
- Spices (*empon-empon*), *jamu*, herbs, and garlic are old-time medicines which are highly believed to be effective.		
- Drinking *jamu* is a habit of the Javanese to treat illness, in addition to doing self-care and prevent disease.		
- It is family habit to drink *jamu* (traditional medicine).		
- People around consume spices and *jamu*.		
2. Developing critical thinking skills and questioning the validity of health information before completely trusting it:	50	25
- Spices (*empon-empon*), *jamu*, herbs, and garlic are not medicines. They only serve to boost the immune system.		
- Exaggerated and maybe untrue information regarding the benefits of spices or *jamu* and eucalyptus-based necklaces is spread, possibly to boost market sales of herbs and spices (as demonstrated by the fact that store spices were sold out).		
3. Only reading and doing nothing with the information. The important thing is to implement health protocols so as not to catch COVID-19.	37	18,5
4. Not posting the information on social media or taking any action with it due to the possibility of breaking the law pertaining to electronic information and transactions (ITE).	16	8
Total	200	100

Information regarding the advantages of using spices to combat COVID-19 was generally trusted by respondents whose families were used to consuming traditional herbal medicine. Not only did they believe it, but they also eagerly shared with their friends on other WhatsApp groups the health benefits of garlic, spices, and herbs. A significant proportion of the respondents (up to 25%) exhibited cultural bias, meaning that they were more likely to believe information regarding COVID-19 if it was perceived as coming from their ancestry.

A number of respondents said that in the village where they live, people distributed *wedang pokak*, which is a concoction drink made from spices that is believed to be the medicine for COVID-19. They were among those who

thought that spices had health benefits since they are regarded as an effective component of the rich cultural heritage of the area. According to several study participants, their families also made frantic purchases of spices to be consumed daily in an effort to combat COVID-19. In general, respondents thought that herbs and spices may be used as preventive medications, despite some of them acknowledging that they were not a cure-all for COVID-19. A number of respondents said that they often drank *wedang uwuh*, an herb drink originated from Yogyakarta, which was sent by their relatives from Yogyakarta because they believed it could prevent COVID-19.

A housewife who responded claimed that she frequently eats ginger under the pretense of avoiding the coronavirus because of the increased prevalence of COVID-19. She said that she continued to purchase ginger even after its market price increased because she thought it would help prevent her from getting COVID-19. It is said that some herbal mixtures or traditional *jamu,* prepared from ingredients like turmeric, ginger, Javanese ginger, and so on, can fend against the coronavirus. According to one responder, even though the price of ginger in the market had increased from forty thousand to sixty thousand rupiah per kilogram, the person continued to purchase ginger to stock their pantry. Respondents believed that regularly consuming *jamu* would increase physical endurance so they can avoid COVID-19. This study found that more than a few respondents claimed to make herbal concoctions for their family members every day so that they did not contract the coronavirus.

According to this study, some participants tended to believe information that is genuinely categorized as fake news with ease. Many of the responders thought that because sunshine is beneficial to health, it could prevent COVID-19. They said that to keep their newborns healthy, their parents would sunbathe them first thing in the morning. Many respondents also thought that acidic vinegar might destroy germs, which is why they followed their parents' practice of gargling with vinegar and water when they had a sore throat. According to a respondent, parents

would rinse their lips with salt and water when they had a cough or irritation because it is believed that this kills germs.

Among the 200 participants, 18.5% acknowledged that they had not taken any action upon learning about COVID-19 through the WhatsApp groups. They did not forward it to other WhatsApp groups; they just read it to themselves. The most crucial thing to them was learning how to adhere to health precautions to prevent COVID-19. Up to 8% of respondents said they decided not to share information about COVID-19 with other WhatsApp groups due to concerns about breaking the Electronic Information and Transaction (ITE) Law and the need to exercise skepticism (critical thinking) on the reliability of health information.

5. Discussion

During the COVID-19 pandemic, the public generally faced a situation of increasing uncertainty. However, there was very little likelihood that the community would be able to access reliable information. People who were supposed to stay at home more frequently turned to the internet for information rather than printed media or information from their social surroundings, as a result of the Large-Scale Social Restriction policy. People can now rely on Google, online news sources, and social media for information due to the internet and smartphones (Jensen; Mortensen, 2016, Qayyum; Williamson, 2014, Westlund, 2015, Westlund, 2015). The public can obtain information on COVID-19 through various social media platforms, including WhatsApp groups. From their research, Zeller et al. (2014) discovered that most of the online news sources accessed by people were social media. Meanwhile, of the 11 extensively accessed topics, health news is an interesting topic to follow.

5.1 Cultural preference bias

A noteworthy discovery of this research was that, in addition to the public's growing incapacity to assess the veracity of information, certain

demographics exhibited a higher propensity to accept fake news due to the impact of their convictions over this material. As this study discovered, those who readily believed fake news about COVID-19's health effects were not only the product of a lack of strong skepticism but also of a biased sociocultural habitus in their community. A person's views, ideas, and feelings are shaped by their habits, which are a system of mental dispositions that they have socially acquired (Bourdieu; Wacquant, 1992). Habitus is a system that is durable, of transposable disposition, a structured structure that tends to operate as a structuring structure, that is, as a principle that generates and regulates the practices in life (Bourdieu, 1984, p. 171). According to Cockerham (2005), a habit serves as a cognitive map or a set of perceptions that regularly direct and assess a person's decisions and offers a persistent propensity for behaviors that a person thinks suitable in particular circumstances and social contexts. A person's disposition is their typical style of acting when going about their daily activities and can be formed even without giving it much thought beforehand. According to Collyer et al. (2015), the decision to adopt healthy behaviors is habitually controlled by the interplay of different forms of capital, whereby an individual's actions align with those of their social group. Habitus, on the other hand, is "structured by the field dynamics," or the "mechanism by which different forms of capital are produced and distributed in society" (Collyer et al., 2015).

The people of Indonesia, particularly the Javanese, firmly believe that *jamu*, or traditional herbal medicine, is an effective COVID-19 remedy. This is demonstrated by the fact that 2,848 different types of medicinal herbs were consumed overall in 2019–2020 and utilized as the basis for numerous *jamu* varieties in Indonesia (Wulantresna et al., 2020). The public's perception of *jamu* as COVID-19 treatment is identical to their perception of complementary therapies for other life-threatening illnesses. This customary family practice, ingrained in Indonesian society (Utami et al., 2020, Wulantresna et al., 2020), has created a wrong perspective in

interpreting preventive action against COVID-19, and people think *jamu* is an anti-COVID-19 medicine (Nugraha et al., 2020; Utami et al., 2020). *Jamu* has become a culture in itself for people in Indonesia in facing various health situations (Wulantresna et al., 2020).

According to Bourdieu's theory, people who live in a sociocultural setting and are used to ingesting *jamu,* herbs, or spices have developed habits that influence how they behave in order to deal with COVID-19-related health issues. In actuality, using herbal medicine has become a medical option in addition to methods of behavior based on cultural history (Collyer et al., 2015). Habitus refers to a mental inclination towards behavior, so that there is a higher chance of perceptual bias towards claims that *jamu* can treat COVID-19. As such, it makes sense that some people would find it simpler to accept the idea that ingesting spices or herbs would help with COVID-19 treatment. Even other WhatsApp groups receive this information as therapy recommendations from them.

It is not only the socio-cultural environment that affects people's trust in consuming *jamu*. *Jamu* and the practice of consuming *jamu* itself have become a cultural identity and self-representation as Javanese (Rofil et al., 2015). In Javanese society, the custom of using *jamu* as medicine to prevent and cure illnesses has evolved into a deeply ingrained cultural concept. A customary healthcare system with cultural roots acts as a marker of cultural identity. When they eat *jamu*, they believe that their self-care and illness prevention/treatment practices – including COVID-19 treatment – are typical of Javanese people (Lim; Pranata, 2020, Smith-Hall et al., 2012). As a result, the reason why Javanese drink *jamu* is because they come from Java, and they consistently do so to keep their health or to help them recover from disease.

The Javanese community's unalterable trust in utilizing *jamu* as an antidote for COVID-19 is primarily due to their deep cultural belief in the drug. With its deep roots in Javanese culture, *jamu* has developed into more than just a nutritional supplement – rather, it has become a symbol

of self-representation and cultural identity. Astari (2020) highlights that the practice of consuming *jamu* is integral to the Javanese way of life, shaping their beliefs around health care and disease prevention. Consequently, when encountering the threat of COVID-19, the Javanese populace turns to *jamu* with a profound conviction that its consumption aligns with their cultural heritage, making it a trusted method for maintaining health and combating illnesses.

Nonetheless, it is essential to recognize that the promotion of *jamu* as a COVID-19 remedy is a sort of disinformation. Despite its cultural importance and potential health advantages, *jamu* has not yet been proven to be effective in treating, curing, or preventing COVID-19. The convergence of health ideas and cultural behaviors is responsible for the dissemination of this misinformation. Distinguishing between the propagation of unsubstantiated health claims and customary cultural practices, which are valuable in maintaining legacy, is crucial. Unfounded claims that *jamu* is a COVID-19 cure or antidote endanger public health since they may discourage people from seeking evidence-based treatments, making the fight against the pandemic more difficult overall.

This study discovered that people's self-perception and social identity are inextricably connected to their belief in the health advantages of *jamu*, which is thought to be able to prevent and cure COVID-19. In this context, the idea of social identity refers to the use of resources found in language, history, and culture, where each component of human experience can be recognized as self-representation. Thus, traditional medical care and healing methods that are part of a community's identity and are employed by its members to address their health requirements are symbols of certain aspects of that group. Therefore, when the public receives information about *jamu* as a medicine for COVID-19, as people with a Javanese identity, of course they will accept it as something that can be trusted even though it is actually fake news.

5.2 Between cultural beliefs and skepticism about fake health news about COVID-19

Indonesian traditional medicine is generally referred to as *jamu*, a name originating from the Javanese language. For generations, Indonesians have utilized *jamu*, an indigenous traditional medicine that has been passed down from generation to generation as a cultural legacy and effective for illness treatment (Hung, 2020). Traditional medicine is still being produced and utilized by numerous ethnic groups, particularly those on the island of Java, despite the disbelief of some. These cultures are dependent on the benefits and qualities of traditional medicine. People frequently use *jamu* as a preventative measure or even as a treatment for COVID-19 during pandemics. Consuming *jamu*, which is regarded as COVID-19 medication, has also become common in many communities, particularly in light of the dissemination of information regarding spices, or *empon-empon*, that can treat COVID-19 patients. The use of *jamu* is integral to culture in some Indonesian groups, and it's even thought to become part of a set of rites people perform as they go through each stage of life (Handayani et al., 2001). As members of a community, people inherit a set of implicit and explicit rules called culture that shape their behavior and worldview toward other members of the community as well as the natural world. Consuming *jamu* is viewed from a cultural perspective as a way of life that is conveyed by making reference to the rules or practices that have been transmitted down through language, symbols, and cultural rituals from generation to generation (Astari, 2020, Nurmajesty et al., 2022).

In the meanwhile, *jamu* becomes associated with the notion that it is a remedy or antidote for a number of illnesses, including COVID-19, when it is ingrained in a community's culture. According to this study, 55% of participants thought that information regarding *jamu* as a COVID-19 medication was accurate and helpful, necessitating its social media dissemination. They believed that garlic, herbs, *jamu,* and spices were

effective traditional treatments. Javanese people have a long-standing family custom of drinking *jamu*, or traditional medicine, to treat illnesses, maintain their health, and stave off sickness (Astari, 2020). Although some respondents did not believe that *jamu* can be an antidote to COVID-19, most respondents believed more in the culture of consuming *jamu* so they were not critical in assessing fake news.

The Javanese community's dependence on *jamu* as a COVID-19 cure has a significant connection to their financial circumstances. People's views on healthcare are frequently significantly shaped by the state of the economy. In this situation, the availability and cost-effectiveness of traditional medical care may have an impact on the use of traditional cures like *jamu*. People might search for less expensive options due to financial difficulties, and because *jamu* is so strongly rooted in the culture, it may seem like an appropriate choice.

Importantly, although many people accept *jamu* as a traditional cure, and it has cultural meaning, it is essential to exercise caution when using it, particularly in light of COVID-19. Evidence-based treatment is crucial, according to the World Health Organization and medical professionals globally. Public health may be in danger due to misplaced assumptions regarding *jamu*'s unique ability to combat COVID-19, which could cause delays in obtaining appropriate medical attention (World Health Organization, 2020). For the purpose of treating and preventing COVID-19, it is imperative that the community is aware of *jamu*'s limits and uses established scientific treatments.

Criticism and skepticism in many studies are believed to be a way to assess whether an information is fake news, disinformation, or misinformation (Haggar, 2020, Horn; Veermans, 2019, Luhtala; Whiting, 2018, De Paor; Heravi, 2020, Walton et al., 2018). It was additionally suggested in a number of studies that media and news literacy, which is predicated on critical thinking, has an impact on the ability to discriminate between real information, misinformation, and disinformation (Tully et al., 2020, Tully et al., 2022, Vraga; Tully, 2019). In this study, it was discovered

that certain individuals with culturally based views had trouble adopting a critical and inquiring mindset when they came across false material. Individuals who have made *jamu* consumption a cultural habit have formed beliefs about it that are hard to eradicate.

People have finally attempted to construct and come up with strategies to combat COVID-19 in an uncertain situation where the virus's progress has not been stopped. While the COVID-19 vaccine was still being developed and not yet prepared for widespread usage, it was reasonable that some individuals would look for and create alternative treatments that they thought would work to prevent or even cure the virus. Producers of original traditional herbal treatments and packaged dried herbal products stand to gain from such circumstances. The COVID-19 pandemic has led to a rise in the sales of herbal treatments in numerous Indonesian traditional markets and supermarkets. Even when the supply has not been replenished, many buyers end up running out of stock (Astari, 2020, Lim; Pranata, 2020).

Within certain groups, *jamu* is typically considered to be a component of a customary, organic mixture. Because *jamu* is natural and made from vegetable materials like leaves, roots, and fruit of plants – which are simpler for the body to digest – rather than synthetic chemical components prevalent in modern medications, which may not be safe to consume, it is thought to be safer. Individuals who already think that *jamu* is effective generally are not able to determine if the advantage of *jamu* is merely immune system stimulation or if it actually prevents and even has the potential to cure the COVID-19 virus (Dang, 2021). For community groups that have considered turning to traditional herbal medicine (*jamu*) as a treatment for COVID-19, the construction and belief system that has been established through generations not only form a strong perspective but also have the potential to reinforce the belief that knowledge about herbal remedies (herbs) acts as a "curing antidote" (Dang, 2021, Lim; Pranata, 2020).

It is true that herbal remedies made from plant ingredients can enhance the immune system. On the other hand, the community is endorsing

disinformation or fake news when they accept information suggesting that spices ("jamu" and "empon-empon") can treat COVID-19 patients. People are additionally inclined to seek direction within the framework of their traditional belief system when confronted with uncertain situations and severe anxiety, which can even reinforce and validate their beliefs (Cinelli et al., 2020). In this situation, people's propensity to search for information that supports their cultural and belief systems is impacted by cognitive bias (Zollo, 2019). Tully et al. (2020) assert that people's acceptance of news on social media is impacted by their perception of personally biased news, which means that individuals typically seek out and choose news sources that confirm their worldviews. As stated by Shao et al. (2018), confirmation bias is an explanation for people's tendency to believe and spread fake news if its content is information that supports them.

6. Conclusion

This article showed that fake news about COVID-19, especially those related to the benefits of spices (*empon-empon*), *jamu*, or herbs to fight COVID-19, was not fully accepted by the public. However, because phony news concerning COVID-19 medicine was backed by sociocultural habitus, a sizable number of people thought it to be true. Based on the findings of the survey and in-depth interviews, it was determined that certain individuals maintain a biased attitude due to their cultural upbringing, which regards herbal medicine as a valuable cultural legacy. Conversely, those who were critical were logical and accustomed to exercising skepticism, thus they found it difficult to believe and did not spread misinformation and fake news regarding COVID-19. However, individuals from cultural backgrounds whose members regularly drink *jamu* and believe in its benefits continued to hold this belief. Additionally, they frequently spread misinformation, even if it qualifies as fake news, about the ability of *jamu* and other traditional treatments for fighting against COVID-19.

Acknowledgments

This article is based on the COVID-19 Mandate Grant research funded by Airlangga University, Surabaya, Indonesia (1056/UN3.14/PT/2020).

References

1. AFOLABI, Sulaimon *et al*. Social listening: a thematic analysis of COVID-19 discussion on social media. **MedRxiv**, 2020. Preprint. DOI: http://doi.org/10.1101/2020.07.25.20162040.

2. AHARONY, Noa *et al*. Information literacy in an era of information uncertainty. **Proceedings of the Association for Information Science and Technology**, v. 54, n. 1, p. 528-531, 2017. DOI: http://doi.org/10.1002/pra2.2017.14505401063.

3. ASTARI, Asanti. **Rush for "jamu" helps protect cultural heritage**, 2020. Available from: https://www.thejakartapost.com/academia/2020/04/18/rush-for-jamu-helps-protect-cultural-heritage.html. Access in: 18 Feb 2024.

4. BAPTISTA, João P.; GRADIM, Anabela. A working definition of fake news. **Encyclopedia**, v. 2, n. 1, p. 632-645, 2022. DOI: http://doi.org/10.3390/encyclopedia2010043.

5. BERGER, Guy. Forward. *In*: IRETON, Cherilyn; POSETTI, Julie (eds.). **Journalism, Fake News & Disinformation**: handbook for journalism education and training. Paris: Unesco, 2018. p. 7-13.

6. BOURDIEU, Pierre. **Distinction**: a critique of judgement of taste. London: Routledge, 1984.

7. BOURDIEU, Pierre; WACQUANT, Loïc. **An invitation to reflexive sociology**. Cambridge: Polity Press, 1992.

8. BROOKS. **Banner health experts warn against self-medicating to prevent or treat COVID-19**, 2020. Available from: https://www.covid-19archive.org/s/Australia/item/46742. Access in: 18 Feb 2024.

9. CINELLI, Matteo *et al*. The COVID-19 social media infodemic. **Scientific Reports**, v. 10, n. 1, p. 16598, 2020. PMid:33024152.

10. COCKERHAM, William C. Health lifestyle theory and the convergence of agency and structure. **Journal of Health and Social Behavior**, v. 46, n. 1, p. 51-67, 2005. DOI: http://doi.org/10.1177/002214650504600105. PMid:15869120.

11. COLLYER, Fran M. *et al*. Healthcare choice: Bourdieu's capital, habitus and field. **Current Sociology**, v. 63, n. 5, p. 685-699, 2015. DOI: http://doi.org/10.1177/0011392115590082.

12. DANG, Hoang Linh. Social media, fake news, and the COVID-19 pandemic: Sketching the case of Southeast Asia. **ASEAS – Austrian Journal of South-East Asian Studies**, v. 14, n. 1, p. 37-58, 2021. DOI: https://doi.org/10.14764/10.ASEAS-0054.

13. DE PAOR, Saoirse; HERAVI, Bahareh. Information literacy and fake news: how the field of librarianship can help combat the epidemic of fake news. **Journal of Academic Librarianship**, v. 46, n. 5, p. 102218, 2020. DOI: http://doi.org/10.1016/j.acalib.2020.102218.

14. DRYHURST, Sarah *et al*. Risk perceptions of COVID-19 around the world. **Journal of Risk Research**, v. 23, n. 7-8, p. 994-1006, 2020. DOI: http://doi.org/10.1080/13669877.2020.1758193.

15. ELÍAS, Carlos; CATALAN-MATAMOROS, Daniel. Coronavirus in Spain: fear of 'Official' fake news boosts WhatsApp and alternative sources. **Media and Communication**, v. 8, n. 2, p. 462-466, 2020. DOI: http://doi.org/10.17645/mac.v8i2.3217.

16. EVANS, John H.; HARGITTAI, Eszter. Who doesn't trust fauci? the public's belief in the expertise and shared values of scientists in the COVID-19 pandemic. **Socius: Sociological Research for a Dynamic World**, v. 6, 2020. DOI: http://doi.org/10.1177/2378023120947337.

17. GLATTER, Robert. **Calls to poison centers spike after the president's comments about using disinfectants to treat coronavirus**, 2020. Available from: https://www.forbes.com/sites/robertglatter/2020/04/25/calls-topoison-centers-spike%2D%2Dafter-the-presidents-comments-about-using-disinfectants-to-treatcoronavirus/#35d330821157. Access in: 18 Feb 2024.

18. HAGGAR, Ellen. Fighting fake news: exploring George Orwell's relationship to information literacy. **The Journal of Documentation**, v. 76, n. 5, p. 961-979, 2020. DOI: http://doi.org/10.1108/JD-11-2019-0223.

19. HANDAYANI, Lestari; SUPARTO, Haryadi; SUPRAPTO, Agus. Traditional system of medicine in Indonesia. *In*: CHAUDHURY, Ranjit Roy; RAFEI, Uton Muchtar (eds.). **Traditional medicine in Asia**. New Delhi: World Health Organization, 2001. p. 47-68.

20. HORN, Shane; VEERMANS, Koen. Critical thinking efficacy and transfer skills defend against 'fake news' at an international school in Finland. **Journal of Research in International Education**, v. 18, n. 1, p. 23-41, 2019. DOI: http://doi.org/10.1177/1475240919830003.

21. HUNG, Tsung Jen. Scientization of Jamu in Indonesia: reacting to fake Jamu, pressures of nationalism, and the preservation of local wisdom. **International Journal of Humanities and Social Science**, v. 2, n. 1, p. 105-137, 2020. DOI: https://doi.org/10.6936/NIJHSS.202006_2(1).0005.

22. JENSEN, Jakob Linaa; MORTENSEN, Mette. Introduction: emerging patterns of news production and consumption across media. *In*: JENSEN, Jakob Linaa; MORTENSEN, Mette; ØRMEN, Jacob (eds.). **News across media**. Abingdon: Routledge, 2016. p. 1-11.

23. KAYA, Tugberk. The changes in the effects of social media use of Cypriots due to COVID-19 pandemic. **Technology in Society**, v. 63, p. 101380, 2020. DOI: http://doi.org/10.1016/j.techsoc.2020.101380. PMid:33518848.

24. KNIGHT, Victoria. **Covid-19: Beware online tests and cures, experts say**, 2020. Available from: https://www.theguardian.com/world/2020/mar/31/coronavirus-covid-19-fake-tests-cures. Access in: 18 Feb 2024.

25. KRAUSE, Nicole M. *et al*. Fact-checking as risk communication: the multi-layered risk of misinformation in times of COVID-19. **Journal of Risk Research**, v. 23, n. 7-8, p. 1052-1059, 2020. DOI: http://doi.org/10.1080/13669877.2020.1756385.

26. KU, Kelly Y. L. *et al*. What predicts adolescents' critical thinking about real-life news? The roles of social media news consumption and news media literacy. **Thinking Skills and Creativity**, v. 33, p. 100570, 2019. DOI: http://doi.org/10.1016/j.tsc.2019.05.004.

27. KUWONU, Franck. **UN, news organizations and artists fight against COVID-19 fake news**, 2020. Available from: https://www.un.org/africarenewal/magazine/july-2020/un-news-organizations-and-artists-against-fakenews-covid-19. Access in: 18 Feb 2024.

28. LARA-NAVARRA, Pablo *et al*. Information management in healthcare and environment: towards an automatic system for fake news detection. **International Journal of Environmental Research and Public Health**, v. 17, n. 3, p. 1066, 2020. DOI: http://doi.org/10.3390/ijerph17031066. PMid:32046238.

29. LEE, Sherman A. Coronavirus anxiety scale: a brief mental health screener for COVID-19 related anxiety. **Death Studies**, v. 44, n. 7, p. 393-401, 2020. DOI: http://doi.org/10.1080/07481187.2020.1748481. PMid:32299304.

30. LEE, Taejun; LEE, Byung-Kwan; LEE-GEILLER, Seulki. The effects of information literacy on trust in government websites: Evidence from an online experiment. **International Journal of Information Management**, v. 52, p. 102098, 2020. DOI: http://doi.org/10.1016/j.ijinfomgt.2020.102098.

31. LIM, Michael Anthonius; PRANATA, Raymond. The insidious threat of jamu and unregulated traditional medicines in the COVID-19 era. **Diabetes & Metabolic Syndrome: Clinical Research & Reviews**, v. 14, n. 5, p. 895-896, 2020. DOI: https://doi.org/10.1016/j.dsx.2020.06.022.

32. LIU, Shuai *et al*. Online mental health services in China during the COVID-19 outbreak. **The Lancet. Psychiatry**, v. 7, n. 4, p. e17-e18, 2020. DOI: http://doi.org/10.1016/S2215-0366(20)30077-8. PMid:32085841.

33. LUHTALA, Michelle; WHITING, Jacquelyn. **News Literacy**: the key to combating fake news. California: Libraries Unlimited, 2018. DOI: http://doi.org/10.5040/9798400691423.

34. NAEEM, Muhammad. Do social media platforms develop consumer panic buying during the fear of Covid-19 pandemic. **Journal of Retailing and Consumer Services**, v. 58, p. 102226, 2021. DOI: http://doi.org/10.1016/j.jretconser.2020.102226.

35. NASIR, Narila Mutia; NURMANSYAH, Mochamad Iqbal; BAEQUNI, Baequni. Misinformation related to Covid-19 in Indonesia. **Jurnal Administrasi Kesehatan Indonesia**, v. 8, n. 2, p. 51-59, 2020. DOI: http://doi.org/10.20473/jaki.v8i2.2020.51-59.

36. NUGRAHA, Rhea Veda *et al*. Traditional herbal medicine candidates as complementary treatments for COVID-19: A review of their mechanisms, pros and cons. **Evidence-Based Complementary and Alternative Medicine**, v. 2020, n. 1, p. 2560645, 2020. DOI: http://doi.org/10.1155/2020/2560645. PMid:33101440.

37. NURMAJESTY, Hakiki *et al*. Symbolic and material valuation of Jamu: economic sociology of Indonesian Jamu market. **Asian Journal of Business Research**, v. 12, n. 1, p. 99-123, 2022. DOI: http://doi.org/10.14707/ajbr.220122.

38. PANGESTIKA, Dyaning. **Herbal medicine, drinks can't cure COVID-19**: Ministry, 2020. Available from: https://www.thejakartapost.com/life/2020/08/06/herbal-medicine-drinks-cant-cure-covid-19-ministry.html. Access in: 18 Feb 2024.

39. PANGESTIKA, Dyaning. **Time to leave? Hoaxes thrive in WhatsApp group chats**, 2018. Available from: https://www.thejakartapost.com/news/2018/11/19/time-leave-hoaxes-fake-news-thrive-whatsapp-group-chats.html. Access in: 18 Feb 2024.

40. PATEL, Sonny *et al*. The landscape of disinformation on health crisis communication during the COVID-19 pandemic in Ukraine: Hybrid warfare tactics, fake media news and review of evidence. **Journal of Science Communication**, v. 19, n. 5, p. A02, 2020. DOI: http://doi.org/10.22323/2.19050202. PMid:34504624.

41. PENNYCOOK, Gordon *et al*. Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy nudge intervention. **Psychological Science**, v. 31, n. 7, p. 770-780, 2020. DOI: https://doi.org/10.1177/0956797620939054.

42. PRADANA, Mahir *et al*. Indonesia' s fight against COVID-19: the roles of local government units and community organisations. **Local Environment**, v. 25, n. 9, p. 741-743, 2020. DOI: http://doi.org/10.1080/13549839.2020.1811960.

43. PUROHIT, Kunal. **Misinformation, fake news spark India coronavirus fears**: a wave of misinformation and rumour on COVID-19 floods phones, forcing the government to issue an advisory, 2020. Available from: https://www.aljazeera.com/news/2020/03/misinformation-fake-news-spark-india-coronavirus-fears-200309051731540.html. Access in: 10 Mar 2024.

44. PUTRO, Gunawan Madyono; PRIJOTO, Prijoto. Increased productivity of empon-empon jamu to meet demand due to the Covid-19 pandemic (case study in Dronco Hamlet, Girirejo Village, Imogiri District, Bantul Yogyakarta Regency). **Proceeding on Engineering and Science Series**, v. 1, n. 1, p. 340-346, 2020.

45. QAYYUM, M. Asim; WILLIAMSON, Kirsty. The online information experiences of news-seeking young adults. **Information Research**, v. 19, n. 2, 2014.

46. RATHORE, Farooq Azam; FAROOQ, Fareeha. Information overload and infodemic in the COVID-19 pandemic. **The Journal of the Pakistan Medical Association**, v. 70, n. 5, p. S162-S165, 2020. DOI: http://doi.org/10.5455/JPMA.38. PMid:32515403.

47. ROFIL, Lily El Ferawati; HAMZAH, Azizah; SYED, Azalanshah Md. The practices of traditional healthcare among malay women of javanese descent in malaysia:

jamu, cultural identity and sense of belonging. **New Zealand Journal of Asian Studies**, v. 17, n. 2, p. 61-74, 2015.

48. SAVITRI, Yulia. COVID-19: Scientists in South Sumatra claim glucose-based snack "cures" coronavirus, 2020. Available from: https://www.thejakartapost.com/life/2020/04/22/covid-19-scientists-in-south-sumatra-claim-glucose-based-snack-cures-coronavirus.html. Access in: 10 Mar 2024.

49. SHAO, Chengcheng *et al*. Anatomy of an online misinformation network. **PLoS One**, v. 13, n. 4, p. e0196087, 2018. DOI: http://doi.org/10.1371/journal.pone.0196087. PMid:29702657.

50. SHIMIZU, Kazuki. CoV, fake news, and racism. **Lancet**, v. 395, n. 10225, p. 685-686, 2020. DOI: http://doi.org/10.1016/S0140-6736(20)30357-3. PMid:32059801.

51. SMITH-HALL, Carsten; LARSEN, Helle Overgaard; POULIOT, Marième. People, plants and health: a conceptual framework for assessing changes in medicinal plant consumption. **Journal of Ethnobiology and Ethnomedicine**, v. 8, p. 43, 2012. DOI: http://doi.org/10.1186/1746-4269-8-43.

52. SYAKRIAH, Ardila. **Privacy breach, fake news take mental toll on Indonesia's first COVID-19 cases**, 2020. Available from: https://www.thejakartapost.com/news/2020/03/04/privacy-breach-fake-news-takes-mental-toll-on-indonesias-first-covid-19-cases.html. Access in: 10 Mar 2024.

53. TAN, Edina Y. Q. *et al*. Tracking WhatsApp behaviours during a crisis: A longitudinal observation of messaging activities during the COVID-19 pandemic. **Journal of Medical Internet Research**, v. 23, n. 12, p. e34218, 2021. DOI: https://doi.org/10.2196/34218.

54. TANDOC JUNIOR, Edson C.; LIM, Zheng Wei; LING, Richard. Defining "fake news:" a typology of scholarly definitions. **Digital Journalism**, v. 6, n. 2, p. 137-153, 2017. DOI: http://doi.org/10.1080/21670811.2017.1360143.

55. TASNIM, Samia; HOSSAIN, Mahbub; MAZUMDER, Hoimonty. Impact of rumors and misinformation on COVID-19 in social media. **Journal of Preventive Medicine and Public Health**, v. 53, n. 3, p. 171-174, 2020. DOI: http://doi.org/10.3961/jpmph.20.094. PMid:32498140.

56. TULLY, Melissa *et al*. Defining and conceptualizing news literacy. **Journalism**, v. 23, n. 8, p. 1589-1606, 2022. DOI: http://doi.org/10.1177/14648849211005888.

57. TULLY, Melissa; VRAGA, Emily K.; SMITHSON, Anne-Bennett. News media literacy, perceptions of bias, and interpretation of news. **Journalism**, v. 21, n. 2, p. 209-226, 2020. DOI: http://doi.org/10.1177/1464884918805262.

58. UTAMI, Ressa Andriyani; MOSE, Ria Efkelin; MARTINI, Martini. Pengetahuan, sikap dan keterampilan masyarakat dalam pencegahan COVID-19 di DKI Jakarta. **Jurnal Kesehatan Holistic**, v. 4, n. 2, p. 68-77, 2020. DOI: http://doi.org/10.33377/jkh.v4i2.85.

59. VAN DER LINDEN, Sander; PANAGOPOULOS, Costas; ROOZENBEEK, Jon. You are fake news: political bias in perceptions of fake news. **Media Culture & Society**, v. 42, n. 3, p. 460-470, 2020. DOI: http://doi.org/10.1177/0163443720906992.

60. VAN DER MEER, Toni G. L. A.; JIN, Yan. Seeking formula for misinformation treatment in public health crises: The effects of corrective information type and source. **Health Communication**, v. 35, n. 5, p. 560-575, 2020. DOI: http://doi.org/10.1080/10410236.2019.1573295. PMid:30761917.

61. VRAGA, Emily K.; TULLY, Melissa. News literacy, social media behaviors, and skepticism toward information on social media. **Information Communication and Society**, v. 24, n. 2, p. 150-166, 2019. DOI: http://doi.org/10.1080/1369118X.2019.1637445.

62. WALTON, Geoff; PICKARD, Alison Jane; DODD, Lara. Information discernment, mis-information and pro-active scepticism. **Journal of Librarianship and Information Science**, v. 50, n. 3, p. 296-309, 2018. DOI: http://doi.org/10.1177/0961000618769980.

63. WARDLE, Claire. **Fake news. It's complicated**, 2017. Available from: https://medium.com/1st-draft/fake-news-its-complicated-d0f773766c79. Access in: 10 Mar 2024.

64. WARDLE, Claire; DERAKHSHAN, Hossein. Thinking about "information disorder". *In*: IRETON, Cherilyn; POSETTI, Julie (eds.). **Journalism, Fake News & Disinformation**: handbook for journalism education and training. Paris: Unesco, 2017. p. 43-54.

65. WESTLUND, Oscar. News consumption in an age of mobile media: patterns, people, place, and participation. **Mobile Media & Communication**, v. 3, n. 2, p. 151-159, 2015. DOI: http://doi.org/10.1177/2050157914563369.

66. WORLD HEALTH ORGANIZATION. **Novel Coronavirus (2019-nCoV)**. Geneva: WHO, 2020. Situation Report, 13. Available from: https://www.who.int/docs/

default-source/coronaviruse/situation-reports/20200202-sitrep-13-ncov-v3.pdf. Access in: 10 Mar 2024.

67. WULANTRESNA, Dewi; ZUHROTUN, Ade; CHAERUNISA, Anis Yohana. Herbal potential in Indonesia for adjuvant therapy to Corona Virus-19 disease. **European Journal of Molecular & Clinical Medicine**, v. 7, n. 10, p. 1696-1707, 2020.

68. YUSOF, Aimi Nadia Mohd *et al*. Sharing Information on COVID-19: the ethical challenges in the Malaysian setting. **Asian Bioethics Review**, v. 12, n. 3, p. 349-361, 2020. DOI: http://doi.org/10.1007/s41649-020-00132-4. PMid:32837556.

69. ZELLER, Frauke *et al*. A subjective user-typology of online news consumption. **Digital Journalism**, v. 2, n. 2, p. 214-231, 2014. DOI: http://doi.org/10.1080/21670811.2013.801686.

70. ZOLLO, Fabiana. Dealing with digital misinformation: a polarised context of narratives and tribes. **EFSA Journal**, v. 17, n. S1, p. e170720, 2019. DOI: http://doi.org/10.2903/j.efsa.2019.e170720. PMid:32626457.

Financial support: This research was funded by COVID-19 Mandate Research Grant, Universitas Airlangga, Surabaya, Indonesia (1056/UN3.14/PT/2020).

Conflict of interest: None.

Authors' Contributions: Rahma Sugihartati: conceptualization or design of the manuscript, critical revision of the manuscript. Siti Mas'udah: drafting the manuscript, final approval of the version to be submitted and revisited. Suko Widodo: data analysis and interpretation. Ratna Azis Prasetyo: data collection, critical revision of the manuscript. Arya Wijaya Pramodha Wardhana: data curation, critical revision of the manuscript.

Ethics Committee Approval: All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee.

Data Availability: Research data is only available upon request

Editor: Marilia Luz David.

Rahma Sugihartati is a professor of Information Science at the Department of Information and Library Sciences at Universitas Airlangga, Surabaya, Indonesia. Her research interests include information behavior, information society, information & culture and digital literacy. rahma.sugihartati@fisip.unair.ac.id

Siti Mas'udah is a professor of Sociology at the Department of Sociology at Universitas Airlangga, Surabaya, Indonesia. She is an expert in Indonesian socio-cultural system and sociology of family. siti.masudah@fisip.unair.ac.id

Suko Widodo is a senior lecturer at the Department of Communication at Universitas Airlangga, Surabaya, Indonesia. His work centers on risk communication, crisis communication and social trust. suko.widodo@fisip.unair.ac.id

Ratna Azis Prasetyo is lecturer at the Department of Sociology at Universitas Airlangga, Surabaya, Indonesia. Her research focuses on sociology of development and community empowerment. ratna.azis.prasetyo@fisip.unair.ac.id

Arya Wijaya Pramodha Wardhana is a assistant lecturer at Department of Information and Library Sciences at Universitas Airlangga, Surabaya, Indonesia. His research focuses on information studies, information society, modern cultural studies, and media literacy. arya.wijaya31@ui.ac.id

Received: Nov. 25th 2022.
Accepted: June 5th 2024.