ICEMC 2021
International Conference on Emerging Media & Communication

VACCINATION-THEME-MISINFORMATION: A POLLUTION OF INFORMATION DURING COVID-19 PANDEMIC IN INDONESIA

Santi Indra Astuti (a), Nuril Hidayah (b)*, Cahya Suryani (c)
*Corresponding author

(a) The Faculty of Communication Science, Islamic University of Bandung (UNISBA), Bandung, West Java, Indonesia, santi@unisba.ac.id.
(b) STAI Miftahul 'Ula, Nganjuk, East Java, Indonesia, hidayah_nuril21@staimnglawak.ac.id
(c) Research and Development, MAFINDO, Jakarta, DKI Jakarta, Indonesia, cahyasuryani01@gmail.com

Abstract

The number of vaccination misinformation increased sharply around the launching of COVID-19 vaccination. It ranged from the misin Santi Indra Astuti formation on halal/haram issue to depopulation agenda. The latter was implied on misinformation about sickness, even death, that brought by the vaccine. The spread of vaccine misinformation has played a significant role in reducing the level of public confidence in the COVID-19 vaccine, which in turn increasing vaccine hesitancy and slowing down vaccine uptakes which reflected a shrunken vaccine acceptance. To comprehend more about the nature of the problem, this study intends to map and to analyze the misinformation on COVID-19 vaccination during the pandemic in Indonesia. The findings are expected to produce some recommendations for effective mitigation strategy. This research employs a quantitative content analysis and is applying a double loop analysis to develop and secure the categories of vaccination misinformation themes. Among the findings are:1) a sharp increase of vaccine misinformation during weeks approaching the launch of the COVID-19 vaccine in January 2021; 2) the predominance of vaccine side effect issues and conspiracy theme. Most of COVID-19 vaccine misinformation are targeted public in general. It is fabricated to erode public trust toward government and health authorities.

Keywords: COVID-19 Vaccination, misinformation, public health, Indonesia

1. Introduction

The world is still struggling to win over the COVID-19 pandemic. Among many strategies to control the infection, COVID-19 vaccination is regarded as one of the most effective. But it still a long way from being successful because vaccination hesitancy intensified while the launching of COVID-19 vaccination program is approaching. Vaccine hesitancy is a global problem. Even before the outbreak of COVID-19 pandemic, WHO declared it as the TOP 10 threats to global health in 2019 (MacPherson, 2020)

The major increase of vaccine hesitancy in the pandemic times is indicated by the decrease of COVID-19 vaccine acceptance throughout the world. Lin et al. (2021) reviewed US based international surveys of vaccine acceptance in 31 countries around March to October 2020. The review showed that vaccine acceptance was declining from 70% in March to 50% in October 2020. Some Asian countries have higher acceptance than the average, especially countries which reported to have high trust in government like China (88,6%) and South Korea (79,8%). According to a survey conducted around March and April 2020, Indonesia also had higher rate with 93% respondents were willing to get vaccination (Harapan et al., 2020). But according to the survey conducted by UNICEF on September 2020, the acceptance rate decreased to 64% (as cited in Survei Penerimaan Vaksin COVID-19 Di Indonesia, 2020), which then decreased to 56% on December 2020 according to SMRC survey (Nurdiana, n.d.).

Among the common factors affecting COVID-19 acceptance are perceived risk of COVID-19, concerns over vaccine safety and effectiveness, doctor's recommendation, and inoculation history. Impacts of regional infection rate, gender, and personal COVID-19 experience were reported as inconclusive factors, while political party orientation, doubts toward expedited development or approval process of vaccine, and perceived political interference were unique factors (Lin et al., 2021). Some of these factors are reflected in COVID-19 vaccine misinformation/disinformation, or popularly mentioned in Indonesia as 'misinformations', that spreading from the initial phase of the pandemic until today.

In Indonesia, the number of COVID-19 vaccine misinformation increased significantly during January 2021. This number is reported by MAFINDO, a community-based organization aimed to reduce misinformation through fact checking and digital literacy activities. Regarded as the leading civil organizations focusing on anti-misinformation movement in the country, MAFINDO express its concern toward the infodemic caused by excessive misleading information that disrupt public health initiatives on mitigating the crises of COVID-19. Some studies proved that vaccine misinformations greatly impact on vaccine intentions (Dharmastuti et al., 2020; Jolley & Douglas, 2014).

Effort to settle the misinformation should be started from understanding the nature of such misinformation surrounding the issue. Hence, this research is aimed at mapping the misinformation on COVID-19 vaccination during the COVID-19 pandemic that spread from January 2020 to the end of January 2021 and recorded in turnbackhoax.id. The mapping will be based on categories which was developed carefully in order to draw comprehensive portrayal of COVID-19 vaccine misinformations and the dynamic composition during the aforementioned period.

2. Problem Statement

Most of the COVID-19 vaccine misinformation studies were part of studies on the COVID-19 misinformation. Some studies focused on linguistic aspects (Rahardi, 2020; Rizky & Tarmizi, 2020; Yasendalika et al., 2021). Others focused on specific issues. Vaccination is a specific topic under the theme of COVID-19 misinformation. A study conducted by Angeline et al. (2020) at the beginning of the outbreak recorded only 10 COVID-19 vaccine misinformations. Aimed to capture the effect of vaccination misinformation during pandemic, Dharmastuti et al. (2020) distributed a questionnaire during 11-15 October 2020. The study conveyed that vaccination misinformations are ranging the ill-effect of the vaccine, the ingredients of COVID-19 vaccine-19, and government refusal to use the vaccine. Rahayu's study (2021) focused on the narrative of misinformations from November 2020 to January 2021. The result replicated the previous study. As the program of vaccination rolled out and intensified, a more thorough study reflecting the dynamic of vaccination misinformations is necessary. To gain a more comprehensive picture regarding the progress and the dynamic of COVID-19 issues, we would like to collect and analyze more by applying more detailed categorization in a wider spectrum of time.

3. Research Questions

- How many COVID-19 vaccine misinformation being debunked by MAFINDO's fact checkers from January 2020 to January 2021?
- What is the theme, misinformation type, targeted brand, channel, evidence used, and potential target of the COVID-19 vaccine misinformations during the period of January 2020 to January 2021?
- What is the recommendation that could be inferred for building effective strategy in reducing and fighting the misinformation of COVID-19 vaccine?

4. Purpose of the Study

This study is examining the content of COVID-19 vaccine misinformations in order to obtain a more detailed and comprehensive picture. The study seeks to draw the dynamic nature of COVID-19 vaccine misinformations in terms of the number and the issue. It is expected that some recommendations can be drawn to help design proper mitigation.

5. Research Methods

This study used a quantitative content analysis method and multiple loop analysis. The major source of the object analysis is the archive of vaccination collected by MAFINDO fact checker in turnbackhoax.id. For this study, we have selected the misinformations by using 'COVID-19 vaccine' keyword as selection criteria, and January 2020 until January 2021 as time period. The selected misinformations posted in the website were then treated as units of analysis. 6 categories of COVID-19 vaccine misinformations are applied, namely theme, brand, type of misinformation, evidence used, channels of distribution, and potential target of misinformations.

Though started from a content analysis, the whole process of research reflected a double loop analysis aimed to explore the initial result based on emerging theme (Altheide & Schneider, 2013). The first loop here is the content analysis based on emerging category of the issue. The second loop is reflected on the next step which involved further clarifying the general principles and then applying them to the search criteria for the various vaccine-19 misinformations. In this stage, the information is logically based and checked for some initial similarities which will facilitate the collection and specification of additional data.

6. Findings

Using 'vaccine' as keywords, we found 45 misinformations of COVID-19 theme over the course of the year 2020. Just one month after that, January 2021, the amount has nearly the same (43 misinformations). In this section, we would like to share findings based on data collected. There are 6 (six) categories displayed, i.e. theme of vaccination misinformation, vaccine brand as mentioned in the misinformation, type of vaccine misinformation, evidentially, channels of distribution, and potential target of misinformation and the order in which they are mentioned (see in Table 1,2, 3, 4, 5 and 6).

Table 1. Theme of Vaccination Misinformation

Theme	2020		Jan 2021		Total	
	F	%	F	%	f	%
1. Political Affair	9	20.00%	5	11.63%	14	15.91%
2. Religious Affair	3	6.67%	2	4.65%	5	5.68%
3. Sickness	7	15.56%	7	16.28%	14	15.91%
4. Death	3	6.67%	8	18.60%	11	12.50%
5. Distribution	3	6.67%	2	4.65%	5	5.68%
6. Conspiracy	6	13.33%	6	13.95%	12	13.64%
7. Economy Issue	2	4.44%	0	0.00%	2	2.27%
8. Ingredients	2	4.44%	6	13.95%	8	9.09%
9. Methods	5	11.11%	3	6.98%	8	9.09%
10. Policy	1	2.22%	1	2.33%	2	2.27%
11. Others	4	8.89%	3	6.98%	7	7.95%
TOTAL	45	100%	43	100%	88	100%

Vaccination, for sure, is a health-related theme. However, under certain circumstances, vaccination theme in a piece of misinformation is incorporated with other theme and create a more complex plot story beyond health-related theme. As an imported good, vaccine is prone to capitalist industrial issue. In July 2020, a misinformation about Barack Obama, Anthony Fauci, and Melinda Gates visit to a Wuhan manufacture was circulated. The misinformation claimed the VIP's visit as a proof that COVID-19 is a global trade conspiracy (Syafitrah, 2020b). This misinformation is an example of vaccination related to political affair theme. During 2020, vaccination theme related to political affair dominated the list (20%), followed by religious affair (6.67%). In January 2021, there's a change of theme that dominated the list. Misinformation about sickness and death post vaccination in a month had replaced a one-year-political related theme of COVID-19 vaccination. The altered themes marked the upcoming vaccination. Before the vaccination due to arrive publicly, speculation on the politics of vaccination industry and conspiracy is

popular. After the vaccine arrive and plan for public vaccination are circulated, death-and-sick post vaccination misinformations were commonly found.

Table 2. Misinformed Vaccine Brand

Vaccine Brand	2020		Jan 2021		Total	
	F	%	F	%	f	%
1. Sinovac	2	4.44%	16	37.21%	18	20.45%
2. Pfizer	6	13.33%	1	2.33%	7	7.95%
3. Astra Zeneca	0	0.00%	1	2.33%	1	1.14%
4. Moderna	0	0.00%	1	2.33%	1	1.14%
5. Merah Putih	0	0.00%	0	0.00%	0	0.00%
6. No brand	35	77.78%	19	44.19%	54	61.36%
7. Mixed	1	2.22%	2	4.65%	3	3.41%
8. Others	1	2.22%	3	6.98%	4	4.55%
TOTAL	45	100%	43	100%	88	100%

In 2020, when the vaccine was still developed, Pfizer became the brand often mentioned in the misinformation regarding vaccine. In 2021, it became clear that Indonesia had chosen Sinovac to provide vaccination in large number. Misinformation on Sinovac is rising like a spike concurrently. The number of 'no brand vaccine', consequently, decreased. Several misinformations on Sinovac contained false information about the ingredient of Sinovac or some weird procedure to manufacture in lab. It was circulated that the vaccine was breed from 'green monkey cells', 'dangerous and toxic substance', even 'insufficient for human because it was produced originally for chicken.' Some misinformations regarding incidents post (Sinovac) vaccination were also spread, from sick, fainted, death, and other severe symptom. However, a laughable misinformation on vaccination was also captured. The misinformation claimed that the side effect of Sinovac is enlarging the penis! This misinformation is not only circulated in Indonesia. Other African countries reported similar misinformation.

It is important to note that misinformations on Sinovac bear some sort of political taint. Sinovac is claimed as a global trade conspiracy in which the government bodies, even WHO, have no power to resist it. After 3 clinical tests, the Indonesia Medical Association (IDI) has rejected the vaccine, but the president ignored the warnings and pushed his decision to use Sinovac. Such fabricated story was made up to establish a claim over how incompetent the government are, which at the end, reinforced the post-election polarization between the people.

Tracking the narration of vaccination misinformations, some misinformations are domestic (55 misinformations) or applies in the context of Indonesia only, others are imported from the existing misinformation circulated globally (38 misinformations). Domestic misinformations use plot or make claims which is only applies for Indonesian context. For example, impersonating some government officials or the country's health agency for making false claim. Many vaccination misinformations are related to the country's political affair, which aimed to reduce are also considered as part of the domestic misinformations.

To understand how each misinformation draw people under its spell, and what kind of 'strategy' employed by the vaccine misinformations, the following (Table 3) listed all type of vaccine misinformation collected.

Table 3. Type of Vaccine Misinformation

Type of Misinformation	2020		Jan 2021		Total	
	f	%	F	%	f	%
1. Satire/Parody	0	0.00%	2	4.65%	2	2.27%
2. Misleading Content	30	66.67%	32	74.42%	62	70.45%
3. Imposter Content	0	0.00%	1	2.33%	1	1.14%
4. Fabricated Content	6	13.33%	3	6.98%	9	10.23%
5. False Connection	1	2.22%	1	2.33%	2	2.27%
6. False Context	4	8.89%	3	6.98%	7	7.95%
7. Manipulated Content	4	8.89%	1	2.33%	5	5.68%
TOTAL	45	100%	43	100%	88	100%

Based on the list, misleading content is the highest type of misinformation (70.45%). It is found in many ways: reframing stories in headlines, using fragments of quotes to support a claim of truth, citing statistics in a way that aligns with a certain position, etc. (Wardle, 2019). The content is not 100 % untrue. Nevertheless, there are additional sentences or paragraph led to certain frame which potentially misinterpreted. In January 2021, a misinformation displayed a single package of Sinovac was spotted. The misinformation claimed that vaccine for national immunization program is not the final and the safest product. By vaccinated people with that kind of vaccine, people become part of irresponsible trial without their consent. The government carry the responsibility for such recklessness.

In the debunking article, the package being displayed by the misinformation is indeed a single Sinovac ampule labelled as 'clinical trial only'. Sure enough, this kind of vaccine is only for clinical trial purpose. For national immunization program, different package of Sinovac is provided. The latest product being used for immunization program is resulted from clinical trial and has been approved by health authorities. The whole plot of disinformation which use a fact (Sinovac ampule for clinical trial) but reframe it in certain manner (will be used for national immunization program) is an example of misleading content where a fact is being used for reframing other issue.

To produce a claim, misinformation or misinformation often use some items as 'evidence'. It ranged from attachment of link/URL, to employment of reasoning or testimonies from certain sources.

Table 4. Evidence Used

Evidentially	2020		Jan 2021		Total	
	F	%	f	%	F	%
1. First-hand experience	0	0.00%	0	0.00%	0	0.00%
2. Attachment of URL	3	6.67%	6	13.95%	9	10.23%
3. Quotation of person/organisation	0	0.00%	2	4.65%	2	2.27%
4. Quotation unverifiable source	1	2.22%	0	0.00%	1	1.14%
5. Attachment of picture / video	27	60.00%	26	60.47%	53	60.23%
6. Employment of reasoning	0	0.00%	1	2.33%	1	1.14%
7. No explanation	12	26.67%	4	9.30%	16	18.18%
8. Mixed	2	4.44%	4	9.30%	6	6.82%
TOTAL	45	100%	43	100%	88	100%

Of all possible evidentially being used for supporting claim of truth, photo/video are commonly found (53 misinformations of 88). Quoting 'a picture worth a thousand words', the use of photo/video give was believed as a strong proof—despite the fact how easy to fake and to edit the photo/video today.

Regarding the channels, Facebook become the favourite channel for distributing vaccine misinformation. However, this data doesn't reflect the actual landscape of vaccine misinformation. This data based on report by public. Nevertheless, some interesting insight might appear. For example, focusing the public advocacy to social media user such as Facebook. Though the number is small, special attention should pour to online chat application such as WhatsApp. Undetected due to its end to end encryption, it is envisaged that more vaccination misinformations exchanged freely on the dark social.

Table 5. Channels of Vaccine Misinformation

Channels	2020		Jan 2021		Total	
	F	%	F	%	F	%
1. Facebook	30	66.67%	30	69.77%	60	68.18%
2. Twitter	8	17.78%	3	6.98%	11	12.50%
3. Instagram	1	2.22%	1	2.33%	2	2.27%
4. YouTube	0	0.00%	3	6.98%	3	3.41%
5. WhatsApp	3	6.67%	5	11.63%	8	9.09%
6. Onlina media	2	4.44%	0	0.00%	2	2.27%
7. Portal (blogspot, web site)	0	0.00%	1	2.33%	1	1.14%
8. Tik Tok	0	0.00%	0	0.00%	0	0.00%
9. Mixed	1	2.22%	0	0.00%	1	1.14%
10. Others	0	0.00%	0	0.00%	0	0.00%
TOTAL	45	100%	43	100%	88	100%

The list hasn't recorded findings from Tik Tok. Considering the rising popularity of the platform, more attention should be paid for Tik Tok. It potentially serves as a new channel for spreading misinformation.

It is not complete to do the research without trying to identify who had been targeted, at least in the first place. We determine those targets by identified the impersonated actors, the scene, and the setting.

Table 6. Potential Target of the Misinformation

No	Potential Target	2020		Jan 2021		Total	
		F	%	F	%	F	%
	1. HCW	2	4.44%	3	6.98%	5	5.68%
	2. Public	41	91.11%	39	90.70%	80	90.91%
	3. Parents	0	0.00%	1	2.33%	1	1.14%
	4. Elderly	0	0.00%	0	0.00%	0	0.00%
	5. Others	2	4.44%	0	0.00%	2	2.27%
	TOTAL	45	100%	43	100%	88	100%

A misinformation about sickness among kids post vaccination clearly targeted parents in the first place. Meanwhile, a misinformation about Tiffany Dover, a nurse at CHI Memorial Hospital, Tennessee US, who pass out during an interview after taking a Pfizer-BioNTech vaccine in December 2020, has massively circulated in the social media. The misinformation, though clarified accordingly, has significantly affected healthcare workers and families. Reports on public perception and public attitude marked the increasing of vaccine hesitancy and the decreasing of vaccine acceptance due to the massive circulation of incidents post-vaccination which harms the people being vaccinated.

The misinformations reported here are based on data collected in the first month of 2021. Hence, the data is still limited. During that period, vaccination program is still in process, not yet released to public. Nevertheless, public discourse on the issue is growing larger. More vaccination misinformations, with variation of theme and narration, would emerge when the vaccination program is implemented among the people.

Based on the data from turnbackhoax.id, there are four main themes of COVID-19 vaccination misinformations during 2020, namely health issue, religion, politics, and domestic policy. In many instances, health issues were incorporated with other theme and creating a complex narrative and content of COVID-19 vaccination misinformation. For example, a misinformation claimed that "China Has Recognized that A Vaccine Invented by a Palestinian Doctor is 100 Percent Effective" (Syafitrah, 2020a, par. 1). This misinformation was not only a health issue, but also has religious theme, and politicized in such a way by emphasizing information about the success of Palestinian serum as COVID-19 vaccine. The credit was given to Dr. Manar Saadi Al-Shenawi. Here, health issue is combined with politico-religion issue in international scope.

Another issue that conjoins with vaccination theme is politics. Vaccination issue itself is highly political, and with the COVID-19 outbreak as the global issue, the politicization become much more intense. For example, a misinformation accused that "Indonesia is the only country in the world where the government is happy to let its people become the experimental pigs to test the vaccine made by China". This political misinformation with a racial slur was widely circulating on social media in May 2020. The misinformation implied that only Indonesians undergo vaccine trials from China. In fact, a number of countries have also tested the Sinovac Vaccine, such as Brazil, Turkey, Bangladesh, and Chile. The term of 'experimental pigs' was provocatively demeaning Indonesians, and for many, enhance racial bias toward the Chinese community.

There's also misinformations utilized government policy, for example a misinformation regarding the mandatory of COVID-19 vaccine verification for any concert attendance organized by Ticketmaster—an event organizer. Started as a tweet, this misinformation generated 17,616 likes, and 8,633 retweeted. In fact, Ticketmaster officially denied that such policy did exist. It seemed that this misinformation is intended more to create harmful effect on Ticketmaster—a black campaign business strategy to disgrace certain competitors (MAFINDO, 2020).

The mapping of vaccine misinformations in 2021 are rather different from the previous year. In recent period, incidents of post vaccination misinformations predominate, perhaps related to the momentum of the vaccination roll out. The recent misinformations on vaccination also mentioned brands, ingredients, and playing with scientific terms such as levels of vaccine efficacy, procedures of clinical trials, label code, etc. Misinformations of COVID-19 vaccination now become more sophisticated and pose a harder challenge to debunk and to clarify among people.

Misinformations of post vaccine deaths wasn't solely a domestic affair. Lots of non-domestic misinformations under such theme are also circulated among people. For example, a misinformation about the death of a nurse after receiving the first shot of vaccination. This misinformation is globally circulated, and arrived in Indonesia around January 2021 (MAFINDO, 2021). Interestingly, the president of Indonesia also become the target of misinformation. He was declared experiencing a seizure and passing away after

being injected with a vaccine. Another misinformation claimed that the 'vaccine' being injected is not a COVID-19 vaccine. "It's merely a vitamin to boost the stamina," according to the misinformation that debunked on the second week of February 2021. There's also a misinformation that problematized the exact position of injection. Based on the so-called expert analysis, judging the position and assuming the needle trajectory only based on TV reports, the misinformation concluded that there's no injection at all. "What audience saw on TV is only a visual trick," the man who did the voice over confidently settled that matter. Those kinds of false claim were swept away through an official statement conveyed by the Head of the Presidential Staff Office (KSP) Moeldoko (Syafitrah, 2021a, 2021b).

Sinovac is the first brand of COVID-19 vaccine approved by health authority in Indonesia. Since the official announcement of choosing Sinovac for COVID-19 vaccination program, the brand has endured a lot of misinformation, far more than any other brand such Pfizer and Moderna. Of 43 misinformations on COVID-19 vaccination during January 2021, 37% of Sinovac misinformations (16 misinformations) had been identified. The content are ranging from misinformations about the (un)effectiveness of Sinovac, false report about Sinovac efficacy led to a claim that Sinovac is the weakest vaccine, false claim about how other countries rejected Sinovac but being an avid Chinese crony, the ruling government of Indonesia has approved the vaccine (Syafitrah, 2020a).

Conspiracy is a repeated theme appear in various vaccination misinformation, including COVID-19 vaccination during this pandemic. A UNICEF survey on vaccine acceptance in Indonesia captured the perception circulating in the community. Conspiracy perception is detected, when respondents expressed that the pandemic is a product of propaganda, conspiracy, misinformation, and/or a deliberate attempt to spread fear through the media for profit. The research also proves that the circulation of misinformation about COVID-19 affects people's perceptions of the vaccination process (as cited in Survei Penerimaan Vaksin COVID-19 Di Indonesia, 2020).

Through certain narrative strategy, misinformation can influence people's mindsets and behaviour. The research found that misleading type of content predominates the narrative of misinformation since the start of the pandemic until now. Misleading content occurs when a content of original information is twisted by certain nuances to demonize a person or a group. This type of content is made on purpose and is expected to lead opinions according to the information maker. Misleading content is composed by utilizing original information, such as images, official statements, or statistics, but edited in such a way that it has no relation to the original context.

Potential targets of misinformation are the parties affected by the circulation of COVID-19 vaccination hoaxes. Misinformation of post vaccination incidents, be it death or ill, targeted public or certain figures aforementioned. The misinformation about fainted nurse after receiving the first shot targeted health workers who become the target of first batch of vaccine rollout. In Indonesia, a hoax about a teacher who fell paralyzed after vaccinated disrupt several vaccination program for teacher. Also gaining national spotlight and reduced vaccine acceptance among religious community is hoax/misinformation about post vaccination incidents in Islamic boarding schools. The students and the clerics in that place was reported fallen ill and experienced serious health problems from nausea, vomit, and collapsed.

Misinformation about the COVID-19 vaccine is very unsettling to the public and disrupt government policies to achieve target of vaccination uptake. Health issues themselves are specific issues which

requiring special expertise to answer or classify whether a piece of health information is true or vice versa. Communicating health information or the result of clarification upon health issue misinformation also pose a significant challenge. Making it as simple as possible requires not only communication skill, but also experience in community engagement. A misinformation can spread and multiply to ten levels in just 24 hours. Meanwhile, the clarification can't reach that level at the same time.

The COVID-19 pandemic has been going on for about a year since the beginning of the pandemic which coincided with the recognition of emergency misinformation by WHO, popularly termed as 'infodemic' coined officially by Tedros Adhanom Ghebreyesus (2020) . Ali (2020) said that misinformation is one of the obstacles in overcoming the COVID-19 outbreak. In line with this study, Zhong et al. (2020) said the biggest challenge in dealing with this outbreak is fighting rumours and myths related to the coronavirus. Changes in attitude can occur due to the influence of the mass media. But in the midst of uncertainty and failing standard of journalism quality nowadays, a credible source is needed to provide adequate information for safety reasons.

Social media is significantly contributing the massive effect of infodemic. Along with its power, social media also pose a challenge in managing the misinformation crises. Research from Pulido et al. (2020) said that COVID-19 is the dominant discussion of online discourse and where the content contains dangerous content, and contains personal opinions that might greatly affect the current situation. Research conducted by Brennen et al. (2020) shows that the form of COVID-19 misinformation generally repeats and reconfigures existing information by adding information bends, and misinformation generally uses annotated images or videos. Our results support the results of previous studies, based on the misinformation analysis of the contents of the COVID-19 vaccine, showing that incorrect information about this vaccine is circulating with various types of misinformation, narrative form, repeating old story with a new twist, or recycle from previous misinformation which is sometimes unrelated at all.

Research from Ritonga et al. (2021) based on algorithmic research on Twitter shows that negative sentiment towards vaccines is dominant in Twitter conversations at the beginning of the vaccination process in Indonesia. Pros and cons of vaccination do not only occur in Indonesia, research from Wang et al. (2021) shows that people in China are also worried about the safety of vaccines and choose to delay getting vaccines.

To convince its target, hoax or misinformation often utilize certain claims. The more convincing the claim of proof, the better. We found out that photo/video are predominating hoaxes on COVID-19 vaccination, despite the fact that photo/video are now easily modified even by layperson—thanks to the apps that facilitate this effort. However, there are hoaxes or misinformation without any claim at all, merely narration, but still convince certain people to believe it, even share it to other.

COVID-19 is a relatively new virus whose information about it dynamically change over time. In many instances, conflicting results are circulated among public, creating public confusion and reproduce misinformation. In this period of uncertainty, people need credible and trustworthy sources of information to reduce the various problems that exacerbate this pandemic. Nevertheless, clarify hoaxes or misinformation is not easy because people who believe in misinformation tend display ignorant attitudes for various reasons. Perhaps they feel that their source of information is credible enough. Sometimes, mental and physiological state are also at play. On the other hand, the existing polarization toward political

situation contribute for such attitude. Hence, to reduce uncertainty and people's ignorance of receiving vaccines, a collaboration of various parties is needed.

7. Conclusion

Based on the above findings and discussion, it can be inferred that: 1) There is a sharp increase in the amount of vaccine misinformation surrounding the launch of the COVID-19 vaccine in the second week of January 2021; 2) COVID-19 vaccine misinformations are dominated by side effect issues, and conspiracy theory carried out in the narratives of COVID-19 vaccine misinformation before and after the launch of the COVID-19 vaccine; 3) the data on the potential target of COVID-19 vaccine misinformation shows that this misinformation is directed to erode public trust in government and health authorities which in turn can reduce the COVID-19 vaccine acceptance and increase the COVID-19 vaccine hesitancy. These findings can help identifying what messages which have to be prioritized as a part of the strategy to affect people's perception, raise awareness, and in turn increase vaccine acceptance in Indonesia. However toxic the misinformation of COVID-19 vaccine is, the content of the misinformation implied people concerns of the vaccine: safety and efficacy. Along with trust, those variables are should be incorporated in effort to mitigate the crises of pandemic caused by the massive circulation of infodemic.

References

Ali, S. (2020). Combatting against COVID-19 & misinformation: A systematic review. *Human Arenas*, 1-16. https://link.springer.com/article/10.1007/s42087-020-00139-1

Altheide, D. L., & Schneider, C. J. (2013). Plugged-in research. *Qualitative Media Analysis*, 1-22. https://methods.sagepub.com/book/qualitative-media-analysis-2e/i207.xml

Angeline, M., Safitri, Y., & Luthfia, A. (2020). Can the Damage be Undone? Analyzing Misinformation during COVID-19 Outbreak in Indonesia. *2020 International Conference on Information Management and Technology (ICIMTech)*, 360-364. https://ieeexplore.ieee.org/abstract/document/9211124

Brennen, S., Simon, F., Howard, P. N., & Nielsen, R. K. (2020). Types, sources, and claims of COVID-19 misinformation. *Reuters Institute*, *7,* 3–1. https://ora.ox.ac.uk/objects/uuid:178db677-fa8b-491d-beda-4bacdc9d7069

Dharmastuti, A., Apriliyanti, F., & Wahyuni, F. (2020). Exploring the Impact of COVID-19 Misinformation on the Mental Health of Millennial Moms. *KnE Social Sciences*, 408–429. https://knepublishing.com/index.php/KnE-Social/article/view/8230

Ghebreyesus, T. A. (2020). ww.who.int/dg/. *World Health Organization*. https://www.who.int/dg/

Harapan, H., Wagner, A. L., Yufika, A., Winardi, W., Anwar, S., Gan, A. K., Setiawan, A. M., Rajamoorthy, Y., Sofyan, H., & Mudatsir, M. (2020). Acceptance of a COVID-19 vaccine in southeast Asia: A cross-sectional study in Indonesia. *Frontiers in Public Health*, *8*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7372105/

Jolley, D., & Douglas, K. M. (2014). The effects of anti-vaccine conspiracy theories on vaccination intentions. *PloS One*, *9*(2), e89177. Retrieved from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0089177

Lin, C., Tu, P., & Beitsch, L. M. (2021). Confidence and Receptivity for COVID-19 Vaccines: A Rapid Systematic Review. *Vaccines*, *9*(1), 16. https://www.mdpi.com/2076-393X/9/1/16

MacPherson, Y. (2020). What Is the World Doing about COVID-19 Vaccine Acceptance? *Journal of Health Communication*, *25*(10), 757–760. https://www.tandfonline.com/doi/full/10.1080/10810730.2020.1868628

MAFINDO. (2020, November 27). [SALAH] Kebijakan Ticketmaster, Wajibkan Vaksin Covid-19

Sebelum Menghadiri Konser [Ticketmaster Policy, Require Covid-19 Vaccine Before Attending Concert]. *Turnbackhoax.id.* https://turnbackhoax.id/2020/11/27/salah-kebijakan-ticketmaster-wajibkan-vaksin-covid-19-sebelum-menghadiri-konser/

MAFINDO. (2021, January 9). [SALAH] Penerima Vaksin Perdana Meninggal Dunia Usai Disuntik Vaksin Pfizer [First Vaccine Recipient Dies After Pfizer Vaccine Inject]. *Turnbackhoax.id.* https://turnbackhoax.id/2021/01/09/salah-penerima-vaksin-perdana-meninggal-dunia-usai-disuntik-vaksin-pfizer/

Nurdiana, T. (n.d.). Survei SMRC: Hanya 56% masyarakat yang percaya vaksin corona aman bagi kesehatan [SMRC survey: Only 56% of people believe the corona vaccine is safe for health]. *National.Kontan.Co.Id.* https://nasional.kontan.co.id/news/survei-smrc-hanya-56-masyarakat-yang-percaya-vaksin-corona-aman-bagi-kesehatan

Pulido, C. M., Ruiz-Eugenio, L., Redondo-Sama, G., & Villarejo-Carballido, B. (2020). A new application of social impact in social media for overcoming fake news in health. *International journal of environmental research and public health*, *17*(7), 2430. https://www.mdpi.com/1660-4601/17/7/2430

Rahardi, K. (2020). Building critical awareness of corona virus-related news: Cyber-pragmatic study of COVID-19 misinformations on social media. *International Journal of Advanced Science and Technology*, *29*(6), 5398–5409. https://repository.usd.ac.id/37114/1/6161_19608-Article%2BText-29433-1-10-20200530.pdf

Rahayu, R. N. (2021). Vaksin Covid 19 Di Indonesia: Analisis Berita Misinformation. *Jurnal Ekonomi, Sosial & Humaniora*, *20*(7), 39–49. https://www.jurnalintelektiva.com/index.php/jurnal/article/view/422

Ritonga, M., Al Ihsan, M. A., Anjar, A., & Rambe, F. H. (2021). Sentiment analysis of COVID-19 vaccine in Indonesia using Naïve Bayes Algorithm. *IOP Conference Series: Materials Science and Engineering*, *1088*(1), 012045. https://iopscience.iop.org/article/10.1088/1757-899X/1088/1/012045/meta

Rizky, I. M., & Tarmizi, H. (2020). Covid-19 and Misinformation on Social Media. *Proceedings of Indonesia Focus*, *1*(1). https://www.indonesiafocus.net/index.php/PIF/article/view/43

Syafitrah, A. (2020a). [SALAH] "China Akui Dokter Palestina Penemu Vaksin Corona yang Terbukti Ampuh 100 Persen" [China Admits Palestinian Doctors Inventor of Corona Vaccine Proven 100 Percent Effective]. *Turnbackhoax.id.* https://turnbackhoax.id/2020/03/16/salah-china-akui-dokter-palestina-penemu-vaksin-corona-yang-terbukti-ampuh-100-persen/

Syafitrah, A. (2020b). [SALAH] Foto "Barack Obama, Anthony Fauci dan Melinda Gates mengunjungi 'pabrik coronavirus' Laboratorium Cina Wuhan tahun 2015" [Photo "Barack Obama, Anthony Fauci and Melinda Gates visit the Wuhan Chinese Laboratory 'coronavirus' in 2015"]. *Turnbackhoax.id.* https://turnbackhoax.id/2020/07/16/salah-foto-barack-obama-anthony-fauci-dan-melinda-gates-mengunjungi-pabrik-coronavirus-laboratorium-cina-wuhan-tahun-2015/

Syafitrah, A. (2021a). [SALAH] "WHO menyatakan bahwa vaksin Sinovac adalah vaksin yang paling lemah" [WHO states that Sinovac vaccine is the weakest vaccine"]. *Turnbackhoax.id.* https://turnbackhoax.id/2021/01/01/salah-who-menyatakan-bahwa-vaksin-sinovac-adalah-vaksin-yang-paling-lemah/

Syafitrah, A. (2021b). [SALAH] "Ternyata VAKSIN Yg Akan Di Suntikan Ke Jokowi Berbeda" ["It turns out that the vaccine that will be injected into Jokowi is different"]. *Turnbackhoax.id.* https://turnbackhoax.id/2021/01/09/salah-ternyata-vaksin-yg-akan-di-suntikan-ke-jokowi-berbeda/

Survei Penerimaan Vaksin COVID-19 Di Indonesia. (2020). https://covid19.go.id/storage/app/media/Hasil%20Kajian/2020/November/vaccine-acceptance-survey-id-12-11-2020final.pdf

Wang, J., Lu, X., Lai, X., Lyu, Y., Zhang, H., Fenghuang, Y., Jing, R., Li, L., Yu, W., & Fang, H. (2021). The changing acceptance of COVID-19 vaccination in different epidemic phases in China: A longitudinal study. *Vaccines*, *9*(3), 191. https://www.mdpi.com/2076-393X/9/3/191

Wardle, C. (2019). *Understanding Information Disorder*. Firstdraft. https://firstdraftnews.org/long-form-article/understanding-information-disorder/

Yasendalika, R., Sawirman, S., & Marnita, R. (2021). The Transitivity Of Covid-19 Misinformation Discourse In Indonesian Media. *LINGUISTIK: Jurnal Bahasa Dan Sastra*, *5*(1), 187–199. http://jurnal.um-tapsel.ac.id/index.php/Linguistik/article/view/2840

Zhong, B. L., Luo, W., Li, H. M., Zhang, Q. Q., Liu, X. G., Li, W. T., & Li, Y. (2020). Knowledge, Attitudes, and Practices towards COVID-19 among Chinese Residents during the Rapid Rise Period of the COVID-19 Outbreak: A Quick Online Cross-Sectional Survey. *International Journal of Biological Sciences*, *16*(10), 1745–1752. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7098034/