

Conference

Variations and Arguments of Anti-Vaccine Movement Groups on Facebook

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Abstract. This study examined a social movement in the digitalized world along with its role in the public policy process. The research focused on how the social movement was accessed and spread, and how knowledge was formed on Facebook so that it could influence the success or failure of a certain policy. It is essential to further explore how knowledge is mobilized through social movements in the digitalized world so as to enrich the theories of governance and public policies. In this study, content analysis was used. The results showed that the group of main actors who criticized the vaccine's safety was heterogeneous. In terms of vaccine criticism, there were the anti-vaccine movements, the marginally anti-vaccine movements, and the occasionally vaccine-critical movements. This heterogeneity could be found in the type of arguments mobilized to question the vaccine's safety and in these actors' likelihood of being involved in any vaccine-related controversies. The religion and conspiracy theory discourses were the two most used discourses to reject the vaccine delivery program in Indonesia. By mobilizing knowledge through a social movement in the digitalized world, the anti-vaccine movement actors had a wider network and had the potential to influence the success of the government program.

Keywords: social movement, anti-vaccine, health policy, social media

1. Introduction

Why did the anti-vaccine movement emerge? This question has been widely discussed by policymakers and various academic literature. The general explanation which we have encountered so far is that the anti-vaccine movement has contextual determinants (external influences, such as communication and media, religious values, social norms, health policies), organizational determinants (related to access and quality of vaccination services), and individual determinants (such as knowledge of the community), parental attitudes and beliefs or sociodemographic characteristics) (1). Although this view contributes to the way we see the reasons behind people's involvement in vaccine rejection, it does not provide much insight into the anti-vaccine movement as a comprehensive

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Published 15 March 2022

Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the IAPA Conference Committee.

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social movement concept. The existing literature tends to see that the anti-vaccine movement has uniform motives and agendas as well as to mobilize resistance for purely vaccine reasons. Ward criticized this by saying that we need to broaden our view of the different motives and agendas of the anti-vaccine movement actors. This study suggests that the anti-vaccine movement carried out in the effort to reject the 2015 Avian Flu vaccine in France has been politicized and emerged as an evolutionary movement (2). This raises doubts about the concept of collective identity as an aspect of social movements. Are they mobilizing resistance to vaccines with a common collective identity that can be identified through cultural uniformity and motives? Or do they have different politics and agendas and use the vaccine issue only as a means of mobilizing their interests?

To understand the motives and agenda of the anti-vaccine movement, actors are an important part to be studied. In the digital world, anti-vaccine movement actors have an important role in processing information and knowledge to reject vaccines, thereby reducing trust in vaccines (3, 4, 5). These actors and their production discourse are the keys to the spread of misunderstanding about vaccines (6, 7). These actors and their production discourse are the keys to the spread of misunderstanding about vaccines (6, 7). Several studies have revealed the discourses and arguments used to reject vaccines (8, 6, 7, 4, 9). However, there are not many studies that explain the actors behind the anti-vaccine movement in the digital world (2). Therefore, the phenomenon of the anti-vaccine movement which will be explained in this article is about the actors of the anti-vaccine movement based on the discourse they used on Facebook in 2017-2019.

“The Anti-Vaccine Movement” is a group causing the decrease in the coverage level of vaccination with all the public controversial issues surrounding it. To that, most analysts refer to organized groups or activist networks which propagate critical arguments against vaccination (10, 11, 12). It means that the concept of the “Anti-Vaccine Movement” can be interpreted as an organization holding a role in the spreading or narration or arguments as well as to convey messages related to the vaccine which influenced by the action of a serial of certain actors who become the cause of it. The anti-vaccine movement in the digital world has a different form compared to the anti-vaccine movement in the early 19th century (Bertrand dan Torny, 2004; Fressoz, 2007, 2012; Polandia dan Jacobson, 2011; Wolfe dan Sharp, 2002). During this era and similar to other social movements in general, they rely on mass mobilization and demonstrative ways in urging their interests (Koopmans, 2003). The anti-vaccine movement in the digital world recently utilizes the discourse and mobilizing knowledge as their weapon on the battlefield (13, 6, 14). The power of narration and argumentation has become

the essential resource in winning the debate compared to the opposition with different opinions (15, 16).

The anti-vaccine movement, especially in the digital world, now has gained an attention of the scientific community (7, 4, 5, 9, 17, 2, 15). Studies on the anti-vaccine movement in the digital world mainly observe the arguments used by the actors during the debates of the vaccination and the strategies they use (3, 8, 19, 20, 21, 22, 23, 24, 6, 25, 9, 26). Other aspects which are the concern of the previous scientists are, among others, the communication method (27), the mapping of issues surrounding the narration, and information on the disrepute of vaccine spreading by the anti-vaccine movement actors (6, 4, 26), and the debate among the community of the online media online (4, 28, 29) and to identify the relation between the search of vaccine information and the anti-vaccine movement in the digital world about the decrease in the coverage of immunization (5).

In the digital world, the attitude of the anti-vaccine is represented through the discourse they spread about the vaccine. In the last few years, the research in the attitude towards the vaccine has major progress. Mostly it is because there are efforts to re-understanding theoretically the main concept of the anti-vaccine movement. Social scientists have shifted from analysis based on the traditional concept of “vaccine resistance” (or “vaccine refusal”) to analysis based on the concept of “vaccine doubt” (1, 30). This shift allows for a wider spectrum of actors to categorize vaccine-related attitudes.

Starting from the beginning the attitude of the actors is simplified that the reason they refused the vaccine is pure because of the issues related to health, especially the vaccine only. This is reinforced by a study from Kerr (31) which confirms that the anti-vaccine movement, in a theoretical framework, has the same characteristics as one type of Health Social Movement, namely the Embodied Health Social Science type (32). According to Kerr, the theory from Brown provides the clear view that this movement is organized by actors with experience on illness or disability who believe the “truth” based on their feeling. However this fact is being criticized by Ward, stating that referring to the concept “vaccine hesitancy” of the actors, this attitude could emerge under different motives it could be because of the cultural agenda, politics, and other interests (2). Ward emphasizes that the theoretical understanding, which states that the anti-vaccine movement is a social movement, should lead to studies of the anti-vaccine movement, especially those on the internet as an “impure” social movement (2). The study from Kata confirms this, that anti-vaccine groups are not just a collection of skeptical people in a group, but they operate in an organized, deliberate, and even ideological manner

(7). Therefore, it can be said that the actors of the anti-vaccine movement are not actors who only move with homogeneous health motives and frameworks of thought. Anti-vaccine movement actors, whether organized and structured or not, are believed to have used issues outside the vaccine discourse as an effort to reduce one's intention to carry out vaccination (3, 20, 7, 25, 9,). Starting from the thoughts of Ward and Blume, we know that currently, we cannot see the phenomenon of the anti-vaccine movement as a movement that only involves health issues (33, 2).

Vaccine refusal actors have taken advantage of discourses outside of health issues to make the anti-vaccine movement a dynamic, fluid, and networked movement with issues outside the realm of health. Unfortunately, research using this perspective has not appeared in the literature much. Yet this is essential to be able to better understand who the actors behind the anti-vaccine movement are. However, when using Ward's argument further, we do not find many researchers who pay attention to the actors who drive the rejection of vaccines as a movement that has different agendas, ideologies, networks, actors, resources, and socio-political contexts. Therefore, this study tries to fill the gap by focusing on mapping the types of anti-vaccine movement actors based on discourses produced on Facebook in 2017-2019.

This study is based on the belief that the attitude of actors towards vaccines is not pure. Vaccine refusal actors have different motives and different strategies. Through the narratives and arguments they convey on social media, it is expected that they can map out the motives and types of the anti-vaccine movement on social media. Meanwhile the year 2017-2019 was chosen because at that time there was a surge in conversation about vaccine rejection in the digital world in Indonesia based on a google trend analysis.

With these data, it is expected that this study will obtain sufficient data for analysis because the discussion about anti-vaccine in Indonesia is generally not a theme that appears routinely and takes place all the time. On the other hand, this study chose Facebook as the platform to be studied. Facebook provides a unique platform in which debate and discussion can take place without intermediaries between the public and medical experts (Orr et al., 2016). Comments on social media, as well as socio-demographic profiles of actors, indicate that social media is the most active and versatile platform for debate and discussion facilitation in the context of vaccination.

2. Methods

Facebook was chosen it has high capabilities in social networking, content sharing, virtual world community, and highly collaborative work (34), making this type of social media more widely used by Indonesian anti-vaccine activists. The data collection began with identifying individual accounts, fan pages, and anti-vaccine groups. The first step was to crawl data with a certain date and backdate method, starting from December 31, 2019, to January 1, 2017. The data consisted of posts, comments, and reshares from accounts, fan pages, and groups that contain the related keywords. In this process, 4,535 posts relevant to the issue of vaccines were found. Based on the screening process, 30 personal accounts of anti-vaccine actors were obtained, and 6 anti-vaccine groups in Indonesia were accessible.

This study also conducted a content analysis of all posts for each account during the 2017-2019 period and semi-structured interviews with 15 participants consisting of 10 Facebook account owners, 1 head of AEFI victims handling, 1 social media expert, 2 observers of the anti-vaccine movement, and 1 pediatrician. The data collection was performed using the Facebook Graph API which provides public data.

3. Results

3.1. Actors of Anti-Vaccine Movement

Table 1 shows that the discourse on vaccination is not single and pure. From the observations of all posts to 30 accounts on Facebook, there are only three actors who campaign against vaccines specifically. The three actors build narratives and arguments against vaccines with information that is directly related to vaccines. Meanwhile, 27 other accounts are interested in expanding the argument against vaccines beyond health issues. These 27 actors, usually, reject vaccines by building arguments with narratives related to health, but then it is being integrated into other discourses. Discourse outside of vaccines following the interests and culture they are fighting for. Based on the arguments and discourses built by these actors, there will be divided into three groups.

Group 1: The Antivaccine Movement

This group consists of actors who consistently reject all types of vaccines with a special discourse on vaccines. This group consists of three actors. The first characteristic of the three actors who are classified in the first group (Group 1) is the consistent rejection of all types of vaccines. This can be seen on their respective Facebook walls in which

TABLE 1: List of Anti-Vaccine Movement Actors in Facebook During the Period of 2017 to 2019

No of actors	Topic Posting	Group
A1	In general, the posts are related to <i>hijrah</i> (migrating) and Islamic way of life, promotion to DNA rehabilitation and biochemistry for the prevention of Adverse Effects After Immunization (KIPI/Kejadian Ikutan Pasca Imunisasi)	Group 2
A2	Case of vaccine injury, in general posts, are related to suggesting the vaccine program, Islam has provided the guidelines on the <i>halal</i> and effective medication, Vaccine dangerous ingredients, the presidential election, conspiracy in the medical world, the critics to the government policies, medical therapy for the victims of vaccine, holistic health	Group 2
A3	Promotion of <i>bekam</i> because it is an Islamic medicine, activities in joining the presidential candidates and governor candidates campaigns, Islamic studies, articles on the vaccine, <i>haram</i> vaccine.	Group 2
A4	Vaccine ingredients, news on victims of Adverse Effects After Immunization, studies on Islam, research results and articles on the harmful ingredients in the vaccine, vaccine awareness, actively receiving reports on victims of Adverse Effects After Immunization	Group 1
A5	Vaccine dangerous ingredients, conspiracy, conspiracy to put the vaccine in a microchip to eliminate the Muslim, Islamic studies	Group 2
A6	Dominantly post the action to defend Islam and the struggle of Islam, that vaccine is <i>haram</i> /contain pork	Group 2
A7	Guidelines on daily lives based on Islam, natural immunization, herbs, holistic medication	Group 2
A8	Raw food, natural organic gardening, sustainable living, guidelines on daily life based on Islam	Group 2
A9	Counter of terrorist news, criticism of the government about injustice against Muslims, <i>haram</i> vaccine, the vaccine is the conspiracy tool of the pharmaceutical companies, Adverse Effect After Immunization, criticism to the economic policies of the government, superiority of one candidate and satire on the other candidate	Group 2
A10	Way of life-based on Islam, criticism to the government due to the injustice against Muslims, condemnation of conspiracies and media propaganda that corners Muslims	Group 2
A11	Herbal products according to Islamic teachings and <i>halal</i> , the economy according to Islamic rules, spreading the news about Adverse Effects After Immunization	Group 3
A12	Invitation to refuse vaccines, articles on victims of Adverse Effects After Immunization, dangers of vaccines, parenting, daily activities	Group 2
A13	Hazard components of vaccine materials, autism as a result of vaccines, indications of presidential election fraud, alternative medicine for cupping and probiotics, daily life based on Islamic rules	Group 2
A14	Daily life according to Islamic rules, Adverse Effects After Immunization, the chemical content of vaccines is dangerous, vaccines are against Islamic teachings	Group 2
A15	Criticism of the government for being unfair to Muslims, sharing articles related to Adverse Effects After Immunization and the dangers of vaccine content, vaccines are <i>haram</i>	Group 2
A16	Rules of husband and wife according to Islam, food, and medicine which are classified as natural, cupping methods, articles on mental illness	Group 2
A17	Writers, men, stories about Adverse Effects After Immunization victims, sharing articles about the dangers of vaccines	Group 2
A18	Men, the dangers of vaccines, news of Adverse Effects After Immunization victims, actively receiving reports of Adverse Effects After Immunization victims, daily life based on Islamic rules, criticism of some government policies	Group 1

TABLE 1: Table continued.

A19	Stories of daily life, Islamic studies	Group 3
A20	Islamic parenting, donations for sick children, dangers of vaccines, Adverse Effects After Immunization victims, Islamic daily living guidelines, criticism of government policies on vaccines	Group 2
A21	Parenting, daily life, halal products	Group 3
A22	Criticism of unfair government policies towards Muslims, the way of daily life in Islam	Group 2
A23	Islamic parenting, daily life, promotion of halal products	Group 3
A24	Islamic Lectures and Studies, Vaccines are <i>haram</i>	Group 2
A25	Parenting guide according to Islamic teachings, promotion of halal food products	Group 3
A26	Vaccines are not following Islamic rules, vaccines due to conspiracy, herbal and holistic treatment therapies, ways of living according to Islamic rules	Group 2
A27	Stories of daily life, Islamic studies, promotion of halal food products,	Group 3
A28	Dental health, news about Adverse Effects After Immunization victims, sharing articles about the vaccine business, conspiracies to destroy Muslims, articles on alternative vaccines, and immune enhancement	Group 2
A29	Guidelines to living according to Islamic rules, Islamic parenting, food and natural ingredients that increase immunity as a substitute for vaccines, conspiracy to destroy Muslims	Group 2
A30	Halal products according to Islamic teachings, criticism of the government that is unfair to Muslims, the prohibition of vaccines, alternatives to <i>halal</i> vaccines	Group 2

Source: Primary Data

has a limited space devoted to other topics. The second characteristic is the argument and discourse used is the principle of the vaccine itself. Vaccines have the main function of increasing immunity, but it is precisely this principle which this group attacks. They use narratives based on health sciences to support their arguments. Constantly issuing hypotheses explaining that vaccines are dangerous. Medical evidence is used to support the idea of an anti vaccine. The text which often appears from this group is that immunity can be obtained from certain foods or lifestyles. Vaccines are defined as entering a virus into the body and not everyone has sufficient strength so that it will cause the danger of Adverse Effects After Immunization and other serious diseases. Arguments related to the chemical content of vaccines resulting in blood clots, organ damage, autism, and brain damage are also used by this group. This narrative is a typical argument that is often mentioned in the literature dealing with vaccine refusal. Actors in Group 1 shared the jargon “fight for safe vaccines”. This is their main claim accompanied by literature on scientific controversies regarding the dangers of vaccination.

In addition, Group 1 also provides a strong argument about the government's impartiality towards the fighters for safe vaccines. Actors in Group 1 consistently convey that Adverse Effects After Immunization occurs a lot, but it is always denied by the local health authorities. Share news about Adverse Effects After Immunization victims is often found on their walls, accompanied by a chronology and impact of vaccinations which must be borne by the victims. The government's neglect and refusal of the government about the bad impact of vaccines on victims have become a discourse mobilized by this group. These actors believe that the victims of Adverse Effects After Immunization have been experienced, but the health authorities have always rejected these claims and stated that the victims were sick/passed away due to other diseases, not because of immunization. This group builds a controversial discourse on the two claims.

In some posts, they are also involved in other political struggles (against conspiracies, support alternative medicine and forms of Islamic spirituality, condemn injustice against Muslims, support the use of natural and *halal* products, and others). However, vaccination is their main focus. Most of their resources devoted to activism are allocated to combat vaccination campaigns. Given the view of the literature regarding the criticism of vaccines, all campaigns against vaccination are carried out by them. Because of their dedication to this cause, they devote the necessary resources to making use of all possible opportunities to criticize and reject vaccination in all its forms.

Group 2: Marginally Anti vaccine Movements

The actors in Group 2 are more heterogeneous and have the highest number of actors. All actors in this group and the group previously reject all types of vaccines. All actors presented the same arguments with the same arguments as the group of actors in Group 1. However, actors from Group 2 can be distinguished from Group 1 in one key aspect: vaccines are not their main concern.

The actors in Group 2 were less involved in vaccine criticism when there was no trigger. In general, Group 2 will post videos, share articles or statuses related to vaccines when there are important events. When the government launches a mass vaccine program and an Adverse Effects After Immunization incident is published, these two events usually trigger a wave of reaction in this group.

The incident which made this group put campaign against the negative aspects of vaccines was when their ideology was disturbed. The motivation for refusing vaccines comes from information about the illegality of vaccines. The context of *halal – haram* vaccines is the main debate and has the largest quantity of conversation in posts on Facebook. This issue is an important topic considering that Indonesia has a Muslim

majority population. Islamic values become one of the rules in the behavior of life in this country.

Another major issue that arises is that there is a trading conspiracy or political conspiracy behind the production and distribution of vaccines. The issue of this conspiracy has sparked a debate about vaccines on the walls of the Group 2 actors. For example, when there was an incident on the arrival of foreign workers from China in 2019, this turned out to have resulted in discussions about vaccines on several walls of Group 2 members. They spread the argument that the vaccine was manufactured by a Chinese company. The vaccine is injected into their children as an effort by the Chinese State to make Indonesian human resources damaged and weak. These human resources do not have adequate capacity and cannot compete, so they need workers from China.

This mobilization of conspiracy issues also emerged when there was an incident of “criminalization of *ulama*” as a result of political polarization due to the 2019 Presidential Election. The issue of vaccines was associated with attempts to destroy Muslim countries which hate Islam. The content of metals and chemicals in vaccines is a weapon to weaken Islam. Muslim children are a weakened brain and mentally with vaccines so that they are easily controlled by Islamic opposition countries. In this case, the incumbent government is also often associated with being involved in efforts to destroy Muslims through the vaccine program.

Group 2 is generally also actively involved in promoting a more natural and Islamic lifestyle. Lifestyle and alternative medicine based on religious practices. The fighting argument which appears on Facebook is a return to the Islamic lifestyle and support for alternative science and spirituality. For actors in Group 2, this important event related to vaccines (mass vaccine program, for example), is an opportunity to push the agenda of their ideological and cultural interests. For example, when the government or pro-vaccine campaigns for a vaccination program, then actors in this group will counter by mobilizing contradictory information. Furthermore, the discourse will be expanded with information that if you have already been vaccinated, then *bekam* treatment must be carried out. *Bekam* is promoted to eliminate vaccine toxins that are entered into the body. *Bekam* is further narrated as a health practice exemplified by the Prophet Muhammad. Promotion of a more natural lifestyle, alternative medicine, and spirituality is the most visible accompanying vaccine rejection campaign in this group.

Narratives that are not directly related to vaccines are often used to accompany or become the base of the argument against vaccines. When comparing to Group 1, the strongest example is that Group 1 is usually firm in rejecting “conspiracy theories” about vaccines as a supporting argument for vaccine rejection. They focus on the boundaries

of their social movement which defends arguments of a health-scientific nature. Group 1 does not frame the vaccine rejection campaign with other agendas other than logical and scientific arguments about the vaccine itself, and this is done continuously and consistently.

Here is the question: is the use of the term “anti-vaccine movement” appropriate for the actors in Group 2? When they reject every type of vaccine and actively involve themselves in campaigning through their social media, they can still be categorized as an “anti-vaccine” movement organization. However, if one looks at their activism pattern, they do not focus on just discussing vaccines, so it can be concluded that they are not pure. The consistency and intensity of campaigning against vaccines in this group cannot be compared with the actors in Group 1. There are other views or beliefs of the actors who frame their anti-vaccine campaign. They may have a bigger role and culture than being an anti-vaccine activist. So, it can be said that Group 2 is a group of activists of the Impure Anti-vaccine Movement.

Group 3: Occasionally Vaccine Critical Movements

“I am not an anti-vaccine, but I am just a safe and halal pro-vaccine”

6 actors adopt different attitudes towards vaccines. Their criticism of vaccines is conditional. Their attitude towards vaccination can best be described as vaccine skepticism rather than vaccine refusal. They do not reject all forms of vaccination and do not mobilize negative campaigns against all types of vaccines. They even claim that they are not anti-vaccine, but they are pro-vaccine with certain conditions. The phrase “I’m not anti-vaccine, but I’m just a safe and *halal* pro-vaccine” is often found in the uploads on Facebook pages of actors in this group.

In some posts, it is not uncommon for Group 3 to promote a type of vaccine, but in general, they always include several conditions when they will receive the vaccine. The most common requirement is that the vaccine must be safe. The actors in this group describe safe as the substances contained in the vaccine will not cause side effects in the short or long term. On the one hand, they admit that in principle they received the vaccine because they believed that the vaccine could help increase the body’s immunity against a certain type of disease. However, on the other hand, they criticize the presence of metal substances and harmful chemicals. They also seem to upload more articles and opinions about the dangers of substances contained in certain vaccines.

A strong characteristic that emerges from Group 3 is that they are not always present when a new vaccine administration program is launched. This is the main difference

between Groups 1 and 2. Group 3 is quite selective in uploading information related to vaccines. When they consider that a type of vaccine is safe, in general, this group will not participate in debates related to the controversy over a vaccine type. Group 3 is dominated by actors who often seek references and network with anti-vaccine groups, but they do not accept all the arguments from these groups outright. These 6 actors believe in scientific literature submitted by anti-vaccine activist groups, but it does not apply to all types of vaccines. Actors in Group 3 also quite ignore the conspiracy theories which are often raised by actors in groups 1 and 2 as a framework in negative campaigns against vaccines.

In addition, like most people who have concerns and criticize vaccines, actors in Group 3 also often upload aspects of life that contain elements of religiosity. Discourse on Islamic parenting, studies of Islamic law, and promotion of natural and *halal* products also dominate their Facebook posts. The strong belief in Islamic rules in their lives led the actors in Group 3 to require *halal* vaccines as one of the requirements for the vaccines they would receive. In one of the interviews conducted, one of the actors said that *halal* vaccines were an “absolute” requirement for them. These actors will not enter substances that are not permitted by their religious law into their children’s bodies. Although they believe that efforts should be made to provide more protection against infectious diseases, this condition is non-negotiable.

Other data also shows that there is a strong and mutually supportive relationship between the actors who criticize vaccines (Groups 1, 2, and 3), both in the digital world and in the real world. Support is done by providing support comments, in the form of support comments, resharing statuses, and holding regular meetings with each other, and sometimes acting together. Group 1 often initiates fundraising and assistance for Adverse Effects After Immunization victims. Apart from that, it also carries out administrative efforts by meeting with the power authorities, such as DPR, Ministry of Health, Ombudsman, Child Protection Commission, etc. This struggle is carried out to file complaints from Adverse Effects After Immunization victims as well as for legal efforts to increase awareness of the dangers of vaccines. In carrying out these activities, these actors work together with other vaccine critics even though they are not in the same group.

4. Discussion

Following the approach taken by (2) that to identify the actors of the anti-vaccine movement on social media, it can be done by understanding the narratives and discourses

they voice. In this study, status, comments, shares on Facebook become objects of attention and analysis because these texts are discourses conveyed by the actors.

The accounts accommodated in the research sample are mostly personal. Unlike a website or blog which has a consistent theme with specific content and is designed to have certain characteristics as an identity, posts on Facebook are generally random and unstructured. The accounts do not have a particular pattern in terms of themes. Topics and posting times are usually unstructured and sometimes just a reaction to an event or news which is going viral. Postings from accounts are generally driven by the account owner's reaction to the events he/she and his/her closest people have experienced or responding to events that are being talked about a lot.

The discourse on "anti-vaccine" from the results of this study does not appear to be a static concept, but it is constantly evolving (Ward, 2016b; Ward et al., 2016). This study reinforces the view that paying attention to the actors who publish anti-vaccine content and seeing how they mobilize the discourse on vaccines. The pattern of the anti-vaccine movement proved not to be a genuine movement. This study found that the anti-vaccine movement actors integrated anti-vaccine issues with struggle issues in the ideological and cultural contexts which became their point of struggle. Discourse on religiosity is the discourse that is most often used to frame the narrative of the anti-vaccine struggle in Indonesia.

This shift has allowed for recognition, broadening of understanding, and investigative efforts on the spectrum of attitudes regarding vaccines. The anti-vaccine movement is no longer seen as a collection of pure ideas which arise out of the simplistic and often highly personal attitude of "vaccine rejection" or "vaccine resistance" (2). Looking at a type of Health Social Movement from Brown (32) namely the Embodied Health Social Science type, the idea of the anti-vaccine movement is a movement created by people who have experienced illness or disability and who believe in the "truth" based on how they feel. This is not always wrong, but groups that take an anti-vaccine attitude for that reason are not the only actors in the anti-vaccine movement here. This study found that there are at least three types of anti-vaccine movements from actors which have different characteristics. Anti-vaccine actors are mapped into three groups: Group 1 The Anti-vaccine Movement Group, which moves purely to reject vaccines; Group 2 Marginally Anti-vaccine Movements, which is a group putting the issue of vaccine rejection as a side issue; and Group 3 Occasionally Vaccine Critical Movements, which is a group does not reject the vaccine as a whole, but there are conditions.

Following the premise presented by Ward, the actors in Group 1 can be seen as representatives of the Anti-vaccine Movement (2). They share the same culture and

views on vaccines. This culture can be classified as the “anti” category because its main characteristics are the “absolute rejection” of vaccination and systematic mobilization against all vaccination campaigns. Moreover, because these actors specialize in the subject of vaccination, their specific type of activism can be adequately described by a label containing the term “The Antivaccine Movement”.

Actors who are classified into the category of The Anti-vaccine Movement fight against the administration of vaccines consistently and continuously. They are strong enough to be considered a trigger for controversy and polarization about vaccines. They reject and resist all types of vaccines through various forms of mobilization and methods. The arguments used to attack vaccines in this group appear to be similar to those of anti-vaccine groups in various countries as described by the literature (33, 35). Arguments based on biomedical discourse are the main discourse that is dominantly mobilized by this group. However, the discourse of religiosity is also strong in framing the mobilization of their ideas.

Marginally Anti-vaccine Movements has the highest number of actors. Conceptually, the Marginally Anti-vaccine Movements and also belongs to the “Anti-vaccine” group (1, 36, 30, 17, 2). For the discourse on vaccines, in general, the anti-vaccine narrative is not the main information they share on their social media pages. They rarely take the initiative to produce information related to vaccines from their original ideas. The actors in Group 2 are more active in resonating with the anti-vaccine discourse compared to The Antivaccine Movement. The actors in Group 2 also have a strong network with the actors in The Antivaccine Movement, which is indicated by the closeness of their communication circle.

Unlike the Antivaccine Movement Group, the discourse of religiosity has become the dominant discourse of this Marginally Anti-vaccine Movements. Even though their post outputs have various themes, such as parenting, business economics, humanity, promotion of goods, and so on, religious discourse is highly firm in “framing” these themes. Islam is an aspect of ideology and culture that strongly frames the arguments they convey. Almost all actors in this group use religious discourse as a tool to provoke emotional bonds and sympathy for followers. They are fully aware that the anti-vaccine discourse is related to the religious discourse when it is associated with the issue of *halal* vaccines. By using this religious approach, this group will at least not on the opposite with people who initially had doubts about the *halal* of vaccines. On the other hand, this religious approach provides an opportunity for this group to attract actors so that they are involved in their struggle. On the other hand, this religious approach provides an opportunity for this group to attract actors so that they are involved in their

struggle. This pattern has occurred in the 19th century in England. There are groups of critics of vaccination who link the issue of vaccination with broader political debates, such as regulating the rights of poor women (N. Durbach, 2000; Nadja Durbach, 2002, 2004). This assists them to attract various political actors involved in political struggles. By placing vaccination at the heart of the political debate, they succeeded in expanding their network and sympathizers with their group. Vaccination was the reason for the political struggle at that time (2).

The phenomenon of piety on social media which is now widely practiced by social media users becomes an opportunity to spread this anti-vaccine discourse. These groups can easily identify and attract people who share the same identity or ideology. Religious discourse provides a strong ideological bond to enter and network with them. This can help them attract a variety of actors who share the same ideology to participate in mobilizing their anti-vaccine discourse.

The actors in Group 2 do believe that vaccination is generally dangerous, but they do not try to consistently and continuously mobilize it. It appears that the main agenda spread by actors in Group 2 is strengthening the Islamic community on social media. The anti-vaccine discourse is one of the discourses which is close ideologically because of the issue of illegal vaccines. This made this group interested and took advantage of the anti-vaccine issue as a tool. The common argument associated with the rejection of vaccines has always been linked to religion. The issue of conspiracy, for example, is always narrated with the conspiracy of vaccine companies for business gain in other literature (21, 4, 5, 37, 9). However, this group brings the argument to a more ideological aspect. Vaccines are narrated as tools to destroy Muslims. Vaccines contain substances that are injected into the body to make Muslims submit to the destructive power of Islam. Discourses of religiosity are used because in general, they lack competency in scientific knowledge about immunization. This discourse also becomes a defense mechanism that is used when their arguments are attacked. This religious discourse helps them to build ideological closeness with people who share the same understanding.

Meanwhile, the Occasionally Vaccine Critical Movements do not show a strong attitude in anti-vaccine efforts. The actors do not reject all types of vaccines, but they implement safe and *halal* vaccines. Strong religious arguments are also used by the actors here. Although they do not have a strong political or social agenda, they also resonate with anti-vaccine discourses with a strong religious argumentation framework. Here is the important finding: there is a “social” concept related to culture and ideology which is practiced by the Occasionally Vaccine Critical Movements actors.

Although it seems that the Occasionally Vaccine Critical Movements seems to have a less strong argument and is more fluid in its attitude, conceptually, the actors in Group 3 can still be categorized as “social movement” actors. It is because they consistently campaign their ideas in the form of criticism of vaccines and increase awareness of safe and *halal* vaccines. This critical attitude is activism which is carried out consistently and continuously. The question is can this group be categorized as an “anti-vaccine movement”? Their attitude cannot be categorized as “anti” because the determinants which determine their mobilization are different from Group 1 and the Marginally Anti-vaccine Movements.

One of the special features of the anti-vaccine movement is that they reject all types of vaccines. Meanwhile, the Occasionally Vaccine Critical Movements tend that when a vaccine is launched, they do not immediately reject the vaccine. The actors of the group express criticism of a vaccine if it requires conditions to receive the vaccine. The view of the Occasionally Vaccine Critical Movements towards the anti- and pro-vaccine groups, in general, is also more proportional, and one does not wish to blame the other. The Occasionally Vaccine Critical Movements considers that both vaccine pros and cons have a choice based on principles they believe to be true. The Occasionally Vaccine Critical Movements feels it is not in a proper position to judge the two opposing groups. Therefore, they fall into the “vaccine doubters” group and are clearly distinguished from actors, such as those from Groups 1 and 2, because their determinants of mobilization are distinctly different. The Occasionally Vaccine Critical Movements can be said to be a vaccine doubter group because they take a critical stance under certain conditions.

5. Conclusion

To deepen the understanding of the Anti-Vaccine Movement, it is necessary to distinguish between actors who raise the issue of vaccination as the main cause of mobilization and those who pay little attention to it. Not all actors who participate in debates or promote vaccine rejection have a purely vaccine-rejecting agenda. In this study, actors have criticized vaccine safety with different discourses and approaches. Therefore, the actors and their roles in the anti-vaccine movement cannot be generalized. Some actors are purely fighting against vaccines with the main agenda of rejecting vaccines. However, some actors use the issue of vaccines and anti-vaccines to push political and cultural agendas beyond the vaccines themselves. By framing the issue of vaccines with identity politics, these actors can easily mobilize ideas and strengthen their networks. Most of them are only incidentally involved in vaccine refusal which is done because

there is a real political or cultural agenda beyond the vaccine issue. Therefore, this study maps the anti-vaccine movement on social media as follows. a) The Antivaccine Movement, b) Marginally Anti vaccine Movements and, and c) Occasionally Vaccine Critical Movements. By using this concept, observers of the Anti-vaccine Movement can understand the motives and agendas of the actors and take policies that are appropriate to the types of these groups.

This study has a limitation, such as only examining an anti-vaccine movement through the discourse that was rolled out through the media (i.e., Facebook). Meanwhile, there are many media used by the anti-vaccine actors as a medium of counterwork. Further study is expected to broaden its scope on the propaganda tools used by an anti-vaccine movement, especially in the digital world to be able to obtain a more comprehensive and varied depiction of the phenomenon of the anti-vaccine movement on social media.

References

- [1] Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger J. Vaccine hesitancy: An overview. *Human Vaccines and Immunotherapeutics*. 2013;9(8):1763–1773. <https://doi.org/10.4161/hv.24657>
- [2] Ward JK. Rethinking the anti vaccine movement concept: A case study of public criticism of the swine flu vaccine's safety in France. *Social Science and Medicine*. 2016;159:48–57. <https://doi.org/10.1016/j.socscimed.2016.05.003>
- [3] Broniatowski DA, Jamison AM, Qi SH, et al. Weaponized health communication: Twitter bots and Russian trolls amplify the vaccine debate. *American Journal of Public Health*. 2018;108(10):1378–1384. <https://doi.org/10.2105/AJPH.2018.304567>
- [4] Lutkenhaus RO, Jansz J, Bouman MPA. Mapping the Dutch vaccination debate on Twitter: Identifying communities, narratives, and interactions. *Vaccine*. 2019;10(1):100019. <https://doi.org/10.1016/J.JVACX.2019.100019>
- [5] Mavragani A, Ochoa G. The internet and the anti-vaccine movement: Tracking the 2017 EU measles outbreak. *Big Data and Cognitive Computing*. 2018;2(1):2. <https://doi.org/10.3390/bdcc2010002>
- [6] Kata A. A postmodern Pandora's box: Anti-vaccination misinformation on the Internet. *Vaccine*. 2010;28(7):1709–1716. <https://doi.org/10.1016/j.vaccine.2009.12.02>
- [7] Kata A. Anti-vaccine activists, Web 2.0, and the postmodern paradigm – An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine*. 2012;30(25):3778–3789. <https://doi.org/10.1016/j.vaccine.2011.11.112>

- [8] Bryan MA, Gunningham H, Moreno MA. Content and accuracy of vaccine information on pediatrician blogs. *Vaccine*. 2018;36(5):765–770. <https://doi.org/10.1016/j.vaccine.2017.11.088>
- [9] Schmidt AL, Zollo F, Scala A, Betsch C, Quattrocioni W. Polarization of the vaccination debate on Facebook. *Vaccine*. 2018;36(25):3606–3612. <https://doi.org/10.1016/j.vaccine.2018.05.040>
- [10] Betsch C, Ulshöfer C, Renkewitz F, Betsch T. The influence of narrative v. statistical information on perceiving vaccination risks. *Medical Decision Making*. 2011;31(5):742–753. <https://doi.org/10.1177/0272989X11400419>
- [11] Hussain, A., Ali, S., Ahmed, M., & Hussain, S. (2018). The Anti-vaccination Movement: A Regression in Modern Medicine. *Cureus*, 10, e2919. <https://doi.org/10.7759/cureus.2919>
- [12] Pérez-altable L. Social movements and network analysis. The case of Tunisia digital activism before and during the Arab Spring (2010-2011) [PhD thesis]. Barcelona: Universitat Pompeu Fabra; 2016.
- [13] Bromberg, N. R. (2013). Digital activism: passive participation and divergence of ideas in online social movements [Auckland University of Technology]. <http://aut.researchgateway.ac.nz/handle/10292/5328>
- [14] Sierra-Caballero F. Cyberactivism and social movements. The oppositional public space in contemporary technopolitics. *Revista Latina de Communication Social*. 2018;73:980–990. <https://doi.org/10.4185/RLCS-2018-1292>
- [15] Jansen F. Digital activism in the Middle East: Mapping issue networks in Egypt, Iran, Syria and Tunisia. *Knowledge Management for Development Journal*. 2010;6(1):37–52. <https://doi.org/10.1080/19474199.2010.493854>
- [16] Klimburg, A., & Mirtl, P. (2012). Cyberspace and Governance. September 2011, 1–35. http://www.oaip.ac.at/fileadmin/Unterlagen/Dateien/Publikationen/Cyberspace_and_Governance_-_Working_Paper_65_2.pdf
- [17] Smith, T. C. (2017). Vaccine rejection and hesitancy: A review and call to action. In *Open Forum Infectious Diseases* (Vol. 4, Issue 3, pp. 1–7). OFID. <https://doi.org/10.1093/ofid/ofx146>
- [18] Peretti-Watel P, Larson HJ, Ward JK, Schulz WS, Verger P. Vaccine hesitancy: Clarifying a theoretical framework for an ambiguous notion. *PLoS Currents*. 2015;7. <https://doi.org/10.1371/currents.outbreaks.6844c80ff9f5b273f34c91f71b7fc289>
- [19] Capurro G, Greenberg J, Dubé E, Driedger M. Measles, moral regulation and the social construction of risk: Media narratives of “anti-vaxxers” and the 2015 Disneyland outbreak. *Canadian Journal of Sociology*. 2018;43(1):25–47.

- [20] Fadda M, Allam A, Schulz PJ. Arguments and sources on Italian online forums on childhood vaccinations: Results of a content analysis. *Vaccine*. 2015;33(51):7152–7159. <https://doi.org/10.1016/j.vaccine.2015.11.007>
- [21] Hornsey MJ, Harris EA, Fielding KS. The psychological roots of anti-vaccination attitudes: A 24-nation investigation. *Health Psychology*. 2018;37(4):307–315. <https://doi.org/10.1037/hea0000586>
- [22] Izzati, A. N., Utomo, B., & Indarwati, R. (2020). Factors Related to Vaccine Hesitancy in Anti-vaccine Group on Facebook. *Jurnal Ners*, 15(2), 40–44.
- [23] Johnson NF, Velásquez N, Restrepo NJ, et al. The online competition between pro- and anti-vaccination views. *Nature*. 2020;582(7811):230–233. <https://doi.org/10.1038/s41586-020-2281-1>
- [24] Jolley D, Douglas KM. The effects of anti-vaccine conspiracy theories on vaccination intentions. *PLOS ONE*. 2014;9(2):e89177. <https://doi.org/10.1371/journal.pone.0089177>
- [25] Olive JK, Hotez PJ, Damania A, Nolan MS. The state of the anti vaccine movement in the United States: A focused examination of non-medical exemptions in states and counties. *PLoS Medicine*. 2018;15(6):1–10. <https://doi.org/10.1371/journal.pmed.1002578>
- [26] Tafuri S, Gallone MS, Cappelli MG, Martinelli D, Prato R, Germinario C. Addressing the anti-vaccination movement and the role of HCWs. *Vaccine*. 2014;32(38):4860–4865. <https://doi.org/10.1016/j.vaccine.2013.11.006>
- [27] Bessi, A., Zollo, F., Del Vicario, M., Puliga, M., Scala, A., Caldarelli, G., Uzzi, B., & Quattrociocchi, W. (2016). Users polarization on Facebook and Youtube. *PLoS ONE*, 11(8). <https://doi.org/10.1371/journal.pone.0159641>
- [28] Moorley CR, Chinn T. Nursing and Twitter: Creating an online community using hashtags. *Collegian*. 2014;21(2):103–109. <https://doi.org/10.1016/j.colegn.2014.03.003>
- [29] Snelson, C. L. (2016). Qualitative and Mixed Methods Social Media Research?: A Review of the Literature. *International Journal of Qualitative MMethods*, Jan-Dec(Special Issue), 1–15. <https://doi.org/10.1177/1609406915624574>
- [30] Ward JK, Peretti-Watel P, Larson HJ, Raude J, Verger P. Vaccine-criticism on the internet: New insights based on French-speaking websites. *Vaccine*. 2015;33(8):1063–1070. <https://doi.org/10.1016/j.vaccine.2014.12.064>
- [31] Kerr MA. The autism spectrum disorders. Vaccine link debate: A health social movement. University of Pittsburgh; 2009. <https://doi.org/10.1017/CBO9781107415324.004>
- [32] Brown P, Zavestoski S, McCormick S, et al. Embodied health movements: New approaches to social movements in health. *Sociology of Health and Illness*. 2004;26(1):50–80. <https://doi.org/10.1111/j.1467-9566.2004.00378.x>

- [33] Blume S. Anti-vaccination movements and their interpretations. *Social Science and Medicine*. 2006;62(3):628–642. <https://doi.org/10.1016/j.socscimed.2005.06.020>
- [34] Kaplan A, Haenlein M. Science direct rulers of the world, unite! The challenges and opportunities of artificial intelligence. *Business Horizons*. 2020;63(1):37–50. <https://doi.org/10.1016/j.bushor.2019.09.003>
- [35] Leach M, Fairhead J. *Vaccine anxieties: Global science, child health and society*, London:Earthscan, 2007.
- [36] Meyer SB, Violette R, Aggarwal R, Simeoni M, MacDougall H, Waite N. Vaccine hesitancy and Web 2.0: Exploring how attitudes and beliefs about influenza vaccination are exchanged in online threaded user comments. *Vaccine*. 2019;37(13):1769–1774. <https://doi.org/10.1016/j.vaccine.2019.02.028>
- [37] Mitra T, Counts S, Pennebaker JW. Understanding anti-vaccination attitudes in social media. Paper presented at: 10th International Conference on Web and Social Media (ICWSM); March 31,2016.