

SHOULD VACCINE BE HALAL? BIBLIOGRAPHY STUDY IN SCOPUS INDEXED ACADEMIC PAPER

HARUSKAH VAKSIN HALAL? KAJIAN BIBLIOGRAFI DALAM MAKALAH AKADEMIK TERINDEKS SCOPUS

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ABSTRACT

Vaccine is the best way to tackle the virus outbreak, because vaccines could reprogram immunity systems to create their own antibodies. Muslims are obliged to consume only halal product. Vaccine needed to follow halal standardization to be used in Islamic countries. This study has a purpose to observe the connection between halal and vaccine in research. This study uses papers indexed in Scopus website as secondary data. There are two kinds of data, based on *the organization of co-authorship*, and *co-occurrence of authors' topic*. There are 46 numbers of data, include *the organization of co-authorship* or where the authors affiliated and 68 of *co-occurrence of authors' topic*. The data is analyzed using Vosviewer software. The result shows that topic of vaccine has connection to halal and fatwa/ or ulama council's statement. Thus, non muslim countries such as USA and Australia have more relevance point than Muslim countries. In can be concluded that halal and vaccine is intertwined each other, especially in Muslim countries.

Keywords: Connection, Halal, Muslim, Scopus, Vaccine.

ABSTRAK

Vaksin adalah cara terbaik untuk mengatasi wabah virus, dikarenakan vaksin dapat menambah proteksi sistem kekebalan untuk membuat antibodi sendiri. Setiap muslim diwajibkan hanya mengkonsumsi produk halal, termasuk vaksin. Vaksin dibutuhkan untuk mengikuti standarisasi halal untuk digunakan di negara dengan penduduk mayoritas muslim. Penelitian ini bertujuan untuk melihat keterkaitan antara halal dan vaksin dalam penelitian. Penelitian ini menggunakan data data paper yang terindeks di website Scopus sebagai data sekunder. Ada dua jenis data, berdasarkan afiliasi penulis berjumlah 46 bersama, dan 68 topik penulis. Data dianalisis menggunakan software Vosviewer. Hasil penelitian menunjukkan bahwa topik vaksin berkaitan dengan halal dan fatwa/pernyataan majelis ulama. Dengan demikian, negara non muslim seperti USA dan Australia memiliki titik relevansi yang lebih dibanding negara muslim. Dengan demikian dapat disimpulkan bahwa halal dan vaksin saling terkait, terutama di negara-negara Muslim.

Kata Kunci: Koneksi, Halal, Muslim, Scopus, Vaksin.

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INTRODUCTION

In 2019, global communities are shocked by the new outbreak which has been causing massive death until recently. Severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2 is a new type of virus which attacks the respiratory system created by coronavirus disease known as COVID-19. SARS-CoV- 2 is dangerous to people with weak immunity or chronic disease such as high blood pressure, diabetes, heart problem, and other organ problems. This type of virus is really contagious that the dissemination is really fast, infecting almost all countries in the world. SARS-CoV-2 has a shape like crown which has spikes to stick itself into the human cell and organ to start the infection (Shang *et al.*, 2020).

Governments of each country implement the regulation and treatment to stop the dissemination of the virus, such as implementing a new medical protocol in society. The United States of America, Russia, United Kingdom, and Japan do the research medicine which works as antiviral is needed for treating the infected such as Remdesivir, Dexamethasone, Avigan to speed up the recovery process. However, medicine cannot be used in a long time because of the side effects which are harmful to the human body. The alternative way is by doing observation in the pharmaceutical substance inside herbs and plants that could work as antiviral, anti-inflammation, or immunity booster (Rome and Avorn, 2020).

Many countries believe that vaccine is the key point in stopping the spread of SARS-CoV-2. Vaccine consists of a weakened virus to make the white blood cell predate it and create its own molecule known as antigen. But not all of the vaccines consist of weakened virus; there are also inactive vaccines which consist of particles or a dead virus for people with weak immune system. Antigen is a substance that can stimulate the immunity system to produce antibodies to create a defense system in preventing the same virus invading the body (Sienel *et al.*, 2004). Antibodies are produced by cells in the body's immune system called lymphocytes. But the problem of vaccines is it needs a long time to conduct preclinical and clinical stages. Those stages must be done in order to ensure safety before being sued for clinical trials into humans (Shoenfeld, 2020).

Muslims are restricted to follow the regulation instructed by The Holy Qur'an and Hadith. One of the regulations for Muslims is to use halal products which is being consumed or used in the body. This include vaccine as a medical product who need to be injected into human body to create own antibody against targeted virus. To cope with the problem, academicians around the world conduct research about the relation of halal such as standardization, regulation, ethical research method toward vaccine production and its process (Padmawati *et al.*, 2019). Scopus as one of the biggest international companies in measuring the standard of international paper has become the direction for academicians to publish their paper (Klapka and Slaby, 2018). Based on the background above, this study has an aim to observe the connection between halal and vaccine in research papers indexed by Scopus website.

METHODOLOGY

This study is classified as quantitative using data mining technique in gathering the data. This study only uses secondary data as the sample of the research. This study uses samples of meta-data from papers which are included in Scopus website. The data is saved in a CSV file and processed by Vosviewer software. Vosviewer is the software in mapping the data to create visualization and connection of each data. Vosviewer can analyze data from Scopus, web of science, Pubmed, and Thompson for bibliography data. Vosviewer can also analyze topic, abstract, and keyword from certain open analysis website, such as Google trends, Bloomberg, Osiris, Scival, etc. The data connection is visualized in a branch like neuron and represented as color (Polley, 2016).

There are two kinds of data, based on *the organization of co-authorship*, and *co-occurrence of authors' topic*. There are 46 numbers of data *the organization of co-authorship* and 68 of *co-occurrence of authors' topic*. The inclusion criteria of the sample are paper written by global academicians, included as social science subject, written in English, published by a journal indexed by Scopus, having a keyword *halal*, *vaccine*, and *Islam*. The data is gathered from 2016-to 2020 period. The location of sample is Indonesian universities written paper related to halal and vaccine (Jan *et al.*, 2019).

The result of *the co-occurrence of authors' topic* is then depicted into two types, the connection between each keyword portrayed in figures to show the strings connected in each keywords, and in table to show the relevance point of each keyword. The relevance point shows how strong a topic is related to the keywords *halal* and *vaccine*. The relevance point is measured from 0-15 based on the study by Batcha *et al.* the relevance point is limited to minimum 5 to max 15, according to a study written by Gaitán- Angulo *et al.* Data about *The organization of co-authorship* is depicted in the table only (Gaitán-Angulo *et al.*, 2018).

FINDING AND DISCUSSION

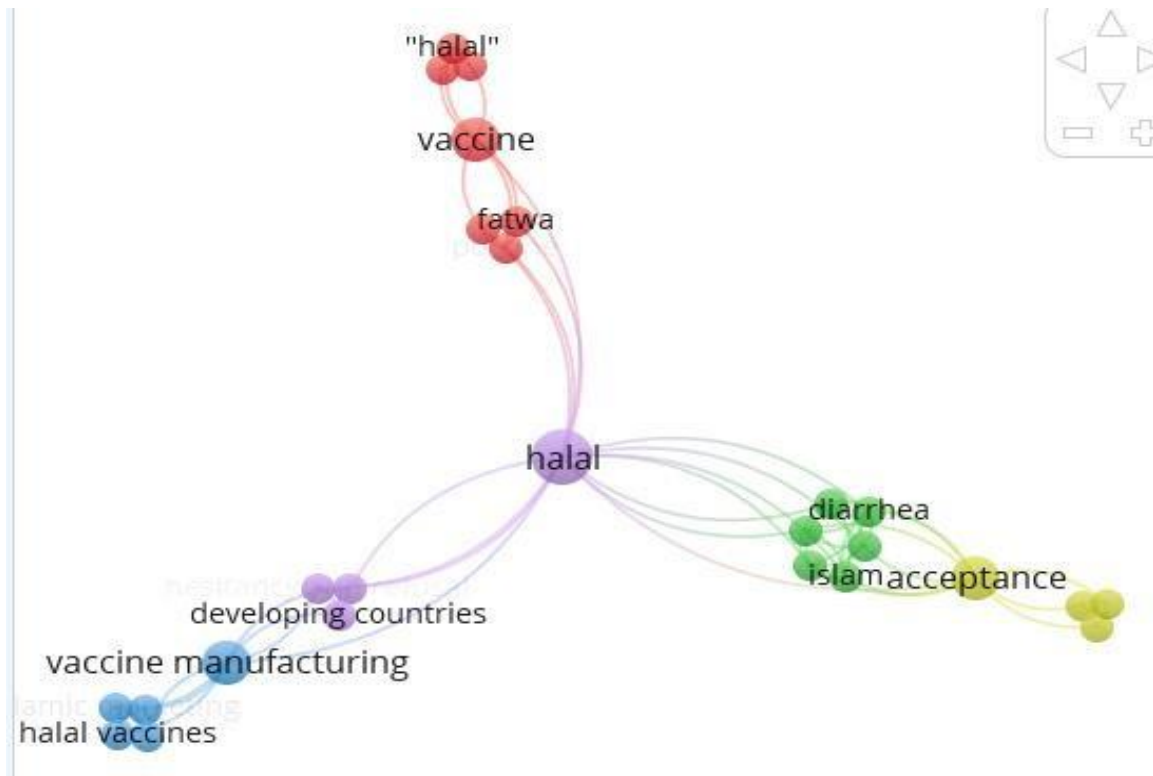


Figure 1. the connection between each topic related to Halal and Vaccine in Scopus Indexed Academic Paper

Figure above shows that the topic about halal itself is divided into three branches based on other related topics. There are branches of string about fatwa and vaccine manufacturing in dividing the topic of the research. But only two branches which have topics about halal and vaccines. Those are purple connected to blue strings and red strings, while green strings connected to yellow have not. Vosviewer distinguishes each main data represented in color, so that it won't get jumbled with each other and makes researchers easier to read the data (Yu *et al.*, 2020). Those who have stronger connection are depicted in red color branch to lesser one as Scopus is the database of papers from thousands of reputable journals around the world. one major of study could include many collaborations with other majors, for example pharmaceuticals with computational science, sociology, cultural studies, law, economy, etc. By doing collaborative research with other majors as a sub topic, a paper will be enriched in the novelty and could increase the reputation of the journal itself (Ence *et al.*, 2016).

Halal certification has an essential role for companies and manufactures to determine their brand awareness into society. Society in Muslim countries always keeps in check any product that they consume whether follow the ethic of halal standardization or not. As a result, all entities or business actors must pay attention of their product starting from raw materials to finished products before reaching consumers. Especially in Asia, the regulation of Asian Free Trade Area (AFTA) now has an impact on increasing circulation and distribution of food, beverage, and service product (Sun *et al.*, 2020). The implementation of halal products has a purpose to provide comfort, security, safety and certainty for Muslims to consume and targeted products. Moreover, label of halal could adds more value in product brands (Anggara, 2017).

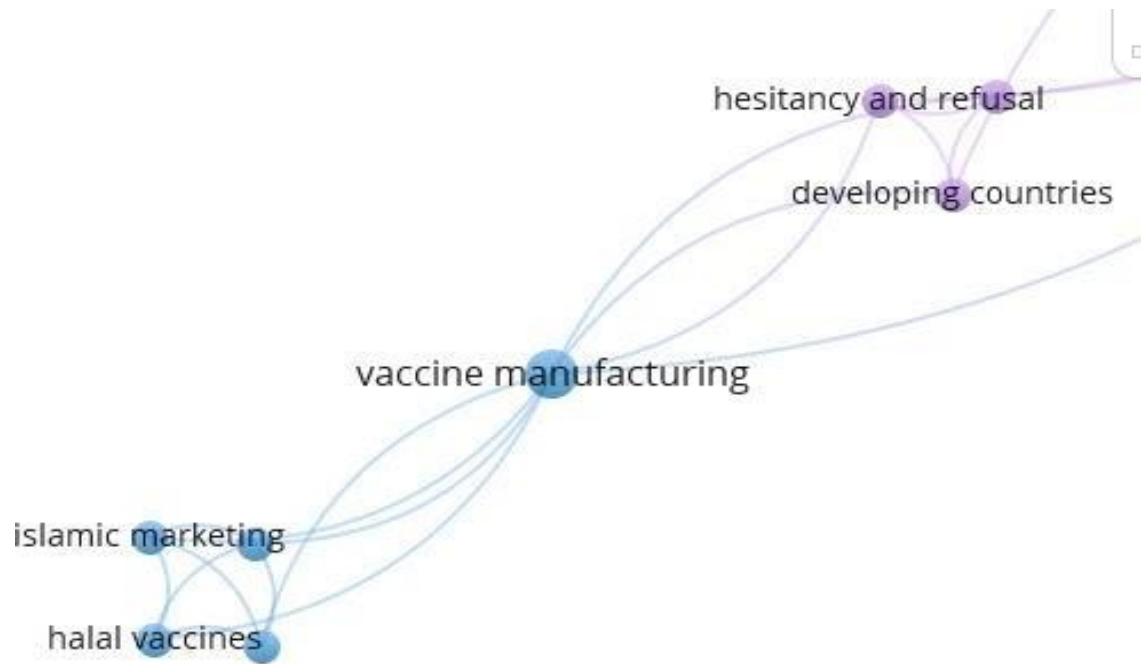


Figure 2. Branches of Topic Related to Halal

The figure above shows that there is a topic about Islamic marketing in halal vaccines. To educate society about the importance of halal standardization in vaccines, product marketing has to be emphasized to create brand awareness. There is also topic *vaccine manufacturing* connected to topics of *islamic marketing* and *halal vaccine*. Bin Abdullah states in his study that manufacturing proposed products have to be considered after researching the target market to know how well the proposed product will be well received in society. as the target market is good, the product will be manufactured and started to get promoted into society through the marketing team (Bin Abdullah, 2014).

Figure above also shows that there are two topics connected to *vaccine manufacturing* such as *hesitancy and refusal* and *developing countries*. Ayuniyyah et al on their study state that production process of vaccine have to undergo several inspection regarding of the regulation of Islamic or Ulama council developing countries, especially with high number of Muslim such as Indonesia (Ayuniyyah *et al.*, 2017). Every country has its own standardization of halal, according to their own Ulama council and government. the vaccine that is still have not received an approval is highly doubted by society and often causes refusal into target market Ulama Council in every country become the prominent marketer in gaining acceptance of new vaccine to be accepted in clinical trial (Sukardani *et al.*, 2018).

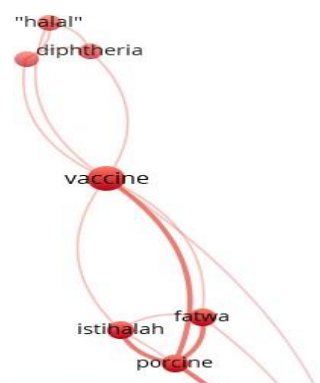


Figure 3 Branch of topic related to *vaccine*

Figure above shows that the topic *vaccine* is related to some Islamic regulation such as *fatwa* and *istihalah*. *Fatwa* means that the statement from Ulama council to determine whether a product or a lifestyle is prohibited or allowed in Islam. *Istihalah* means that the statement that determines the changing of regulation of proposed product or lifestyle from prohibited/haram into allowed/halal (Maison *et al.*, 2019). The example, alcohol is banned to be consumed by Muslims but vinegar which contains alcohol is allowed to be consumed as seasoning. Figure above shows that there is a topic of *porcine*, or products using the substance from pig (Wilkins *et al.*, 2019). It means that there are some studies which observe the statement of Ulama council whether the proposed vaccine uses porcine or not in the production process to become a reference to release a new *fatwa* based on the fact.

There is also topic *diphtheria* depicted on figure above means that a paper with the topic of halal also discuss about diphtheria vaccine. Diphtheria vaccine is commonly given to children and piqued many debates with the muslim globally, because the vaccine itself has been questioned as halal or haram. Any topic which is appeared in a figure above is the topic included in some of the paper written by Indonesian academician.

Table 1. List of Universities that Publish Paper about Halal and Vaccine Indexed by Scopus

Organization	Docu ments	Total Link Strength
Harvard School of Public Health, Boston, United States	1	6
Intermedia, Washington DC, United States	1	6
John F Kennedy School of Government, Cambridge, United States	1	6
Ministry of Public Health, Kabul, Afghanistan	1	6
Reston VA, United states	1	6
SSRS, Mediapa, United States	1	6
UNICEF, New York, United states	1	6
Ajman University, College of Pharmacy, Ajman, United Arab Emirates	1	5
Department of Pharmacy, State University of Bangladesh, Dhaka, Bangladesh	1	5
School of Pharmacy, School of Medicine, University of Tasmania, hobart, Australia	1	5
School of Pharmacy, KPJ Healthcare University College, Nilai, Negeri Sembilan, Malaysia	1	5
School of Pharmacy, Monash University, Bandar Sunway, Selangor, Malaysia	1	5
Vector-Borne Diseases Research Group (VERDI), Pharmaceutical and Life Sciences Core, Universiti Teknologi Mara, Shah Alam, Selangor, Malaysia	1	5

Table above shows that non Muslim countries such as United States and Australia are also interested in researching about *halal* and *vaccine* as subject. Moreover, it can be seen in the table above that papers published by universities in the United States have stronger relevance point than Islamic countries, except Afghanistan. Harvard as the first ranked university in the world by Webometric and QS World University also take a lead in the research about this topic too (Farashi *et al.*, 2020).

From Southeast Asia, there are three Malaysia universities with similar relevance points, 5. Malaysia has been actively promoting the sharia economy system in its own country along with the conventional banking system called *dual banking system* (Sukmana and Kassim, 2010). Malaysia realizes that the development of the halal industry will become more competitive with the involvement of the financial industry and Islamic banking sectors.as a result, Halal becomes a general indicator to ensure product quality and living standards (Henderson, 2016).

Thus, in 2016 Malaysia also planned to develop database of halal research. Deputy Minister,

Senator Datuk Asyraf Wajdi Dusuki suggested that Mara Technology University (UITM) to cooperate with regulator to develop the halal research database and cooperate with Malaysian regulators (Sulaiman *et al.*, 2018). The database of halal could increase halal literacy in society, because it is widely known that society only realize the halal standard of certain products by label. Moreover, the rise of e-commerce and online shop needs more supervision in observing whether the products are following ethical standard of halal or not. Thus, database of halal is important to compile the list of products, manufacturing process, and service whether are following halal standard or not to give insight for public and local government (Atan and Azram, 2019).

UNICEF also provides the academic paper about halal and vaccine which is a good information for children organizations around the world to implement the correct procedure in giving vaccine to the children. Burton *et al.* in their study state that UNICEF contribution now is broadened towards the maintenance to promote prosperous conditions for mothers and children, especially in developing countries and troubled area (Burton *et al.*, 2009). UNICEF's fundamental mission remains the same, namely to strive to provide humanitarian assistance in the fields of health and nutrition, water and environmental hygiene for the children welfare, despite various changes in situations and conditions at the international level (Snider and Hijazi, 2020).

Table 2. List of keywords related to topic of halal and vaccine

Keywords	Occurrences	Total Link Strength
vaccine manufacturing	2	8
diarrhea	1	7
immunization	1	7
Islam	1	7
religious	1	7
rotavirus	1	7
rotavirus vaccine	1	7
vaccine	2	7
association	1	6
attitude	1	6
attitudes to vaccines	1	6
knowledge	1	6
Malaysian	1	6
Muslim	1	6
perception	1	6
vaccine acceptance	1	6
vaccine confidence	1	6
vaccine hesitancy	1	6
coronavirus disease-2019	1	5
epidemic	1	5
halal food	1	5
Iran	1	5
pneumonia	1	5
SARS-COV-2	1	5

Table above shows that topics *halal* and *vaccine manufacturing* have stronger relevance points than other topics. It can be concluded that the topic of *vaccine manufacturing* is dominant to be discussed in Scopus academic papers. There are also topics related to COVID-19 which could give useful insight to medical experts to overcome the latest pandemic in 2020. There are several topics related to vaccine toward society such as *vaccine acceptance*, *hesitancy*, *confidence*, and *attitude to vaccine* which could inform the pharmaceutical companies and government to create better strategies

in manufacturing vaccine (Cohen, 2020).

There is also a topic *pneumonia* which has similar symptom to COVID-19. But there is a difference between pneumonia and COVID-19. Pneumonia causes inflammation of the air sacs in one or both lungs and filled with fluid. However, pneumonia could be disappeared by itself if the patients have strong immunity system (Lodding *et al.*, 2018). However, COVID-19 generally attacks the upper airway of respiration tract which could disseminate to the lungs. This virus could create blockages in these respiratory organs and can cause fatal damage to the lungs if there is no immediate medical treatment (Zhang *et al.*, 2020).

There are only two countries which are included in keywords based on the table above. Those countries are Malaysia and Iran. It can be inferred from table above that more papers observe the issue of halal standardization toward vaccine manufacturing in Malaysia and Iran. Both of those countries ensure that public hospital vaccines have halal certification. Muslims countries have additional standard regarding the acceptance of vaccine product before being implemented in clinical trial (Wong *et al.*, 2020).

CONCLUSION

Based on topic of vaccine has connection to halal and fatwa/ or ulama council's statement. Halal is not only related to vaccine based on the result above, but also has connection to other topic such as fatwa, Islamic marketing, developing countries, Islamic and acceptance. Halal and vaccine has vast varieties of sub topic to be developed in studies. Based on the keywords in the papers, non Muslim countries such as USA and Australia have more relevance point in the study about halal and vaccine. There are vaccine perceptions from society, things related to halal, as well as things related to COVID-19. It can be concluded that halal and vaccine has close relationship with each other in publishing paper indexed by Scopus.

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