Prosiding Kesehatan
THE 5TH INTERNATIONAL VIRTUAL NURSING CONFERENCE

Factor Affecting COVID-19 Vaccines Acceptance

A Literatur Review

Yuanita Panma
Medical Surgical Nursing Department, Akademi Keperawatan Pasar Rebo
Jl. Tanah Merdeka No.16-18, Pasar Rebo, East Jakarta, 13750
nersyuan@gmail.com

Abstract

The COVID-19 pandemic is spreading quickly worldwide and becoming a global problem. Vaccines have proven to be one effective way to overcome this pandemic. Various studies have been carried out. The COVID-19 vaccine was finally found and became one of the programs promoted by the governments of several countries to gain group immunity and reduce the severity of COVID-19 infections. Many factors influence an individual's acceptance of the COVID-19 vaccine. This study aims to review several factors affecting COVID-19 vaccines acceptance. This study was conducted in a literature review, which describes and discusses it by taking materials from various available literature in the Wiley online library, ClinicalKey, ProQuest, and EBSCO databases based on inclusion and exclusion criteria. There were twelve relevant pieces of literature, which came from various countries. Factor affecting COVID-19 vaccines acceptances were individual characteristics (age, level of education, employed, income, gender, profession, race, chronic disease), factors related to COVID-19 (perceived severity of COVID-19, worry/fear regarding COVID-19, COVID-19 knowledge, testing negative for COVID-19, believe COVID-19 exist, having a close relative/friend ever infected by COVID-19), factors related to vaccine (vaccines experience before, attitude towards the vaccine, belief vaccine is safe, willing to pay for vaccine, risk perception of vaccine), and other factors (social media use, personal medical advice, the perception is that the government's prevalence and death rate reports are real, and conspiracy belief).
Keywords: COVID-19, vaccines, acceptance

Introduction

Coronavirus disease 2019 (COVID-19) is defined as a disease caused by a coronavirus called acute respiratory syndrome coronavirus 2. It was first identified in Wuhan City, Hubei Province, China (CDC, 2020). On January 30, 2020, World Health Organization (WHO) declared the COVID-19 outbreak a global health emergency (Gallegos, 2020). COVID-19 can be transmitted mainly through droplets from the respiratory tract when individuals are within one meter of it (WHO, 2020). A person who uses objects or surfaces that have been in contact with an infected person or is in direct contact with a person infected with COVID-19 can easily become infected (WHO,2020). In 2020, the infectious COVID-19 had spread globally and affected individuals from all walks of life. According to the World Health Organization, as of June 22, 2021, the world's cumulative COVID-19 confirmed cases increased from 106,212,882 in February to

178,503,429 in June, and the total number of deaths thus far was 3.872.457 (WHO, 2021).

The rapid spread of COVID-19 has infected many people. Various countries worldwide have committed together by involving governments, biotechnology companies, scientists, and academics to create a COVID-19 vaccine (Prompetchara et al. 2020). Vaccines are considered the most time-consuming intervention (Chakraborty, 2020). A COVID-19 vaccine is a vaccine to provide acquired immunity against severe acute respiratory syndrome coronavirus, the virus that causes COVID-19. Hundreds of global agencies accelerate vaccine development (Habersaat,2020). Countries worldwide are committed to creating vaccines as protection against the spread of COVID-19. The manufacture of this vaccine generally takes many years.

However, due to the global emergency of the COVID-19 pandemic, new vaccines must be produced in a short period until the level of safety and immunogenicity has been standardized. To control the COVID-19 spread and establish herd immunity, vaccines safety and effectiveness are essential factors to reduce the possibility of an explosion of cases in the future (Hoffman et al., 2020). Several prophylactic COVID-19 vaccines are being developed, but the willingness of individuals to receive the COVID-19 vaccine is less known (Reiter et al., 2020). Public confidence in the vaccination program depends on the government. Public health programs need to be broader than vaccine technology delivery (Harrison & Wu, 2020). This study reviews literature about factors affecting COVID-19 vaccine acceptance in the general population.

Methods

This literature review uses four online-based databases with electronic searches on the Wiley online library, ProQuest, EBSCO, and clinical key. The search is limited to documents according to the inclusion criteria, published in 2020 to 2021, articles in English, and the sample is the general public. Several terms or keywords were combined to obtain the appropriate document as a strategy in the search by typing factors affecting COVID-19, vaccines, and acceptance. Using the 'and' word between words increased the scope of the articles retrieved from the databases. Articles relevant to this study were

screened using their titles are abstracts. Publications with an article that lacked a combination of keywords such as factor affecting, COVID -19 vaccine, and acceptance were excluded from the pool of found articles.

Further in the abstract revealed that the paper involved factors affecting COVID-19 vaccine acceptance for review. After an article's title and abstract showed relevance to the study, the full text was retrieved from the journal for further screening. The methods section of the selected articles was explored to determine what the research entailed. Further, the results section of the article was also very useful in screening the article further to evaluate if the findings were in line with the topic.

Results

The results of the database search strategy obtained 1,216 articles, but there were 1,204 excluded because they were not relevant to the research question. According to the inclusion criteria, 12 articles meet these criteria.

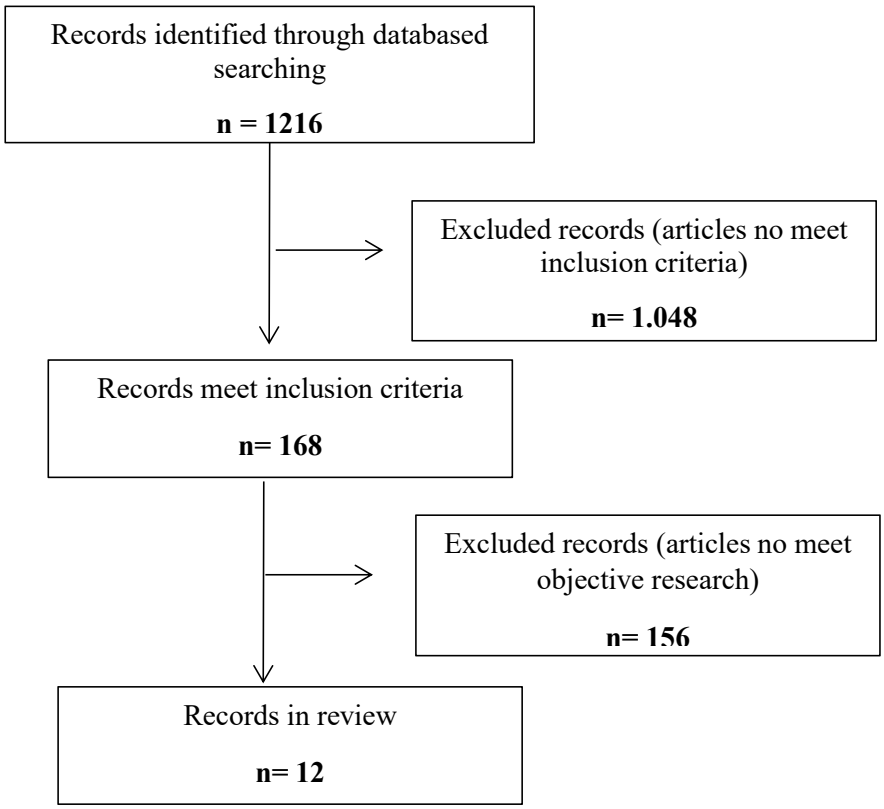

Figure 1.
The process of selecting articles included in the literature review

We use English articles published in 2020-2021. The selection process for articles included in the literature review is shown in Figure 1.

Table 1.
COVID-19 Vaccination Acceptance Articles

No	Author	Location, time, and participants	Design methods	Acceptance	Factor Affecting acceptance
1.	Tsai et al. (2021)	Taiwan, 2020, 1020 participants	Cross-sectional	52.7%	Vaccines experience before Age Education level Risk perception
2	Bono et al. (2021)	83 countries included Brazil, Bangladesh, Benin, Democratic Republic of Congo, Malawi, Malaysia, Thailand, Uganda, 10,491 participants	Cross-sectional	88.8%	Attitude to vaccines COVID-19 knowledge Worry/fear regarding COVID-19 Higher-income Age Testing negative for COVID-19 Chronic disease Gender reduced
3	Petravic et al. (2021)	Slovenia, 2020, 12042 online participants	A cross-sectional online survey	59%	Gender Age Profession Vaccines experience before Trust in experts, institutions, and vaccines.
4	Benis, Seidmann & Ashkenazi (2021)	US, 2020, 1644 survey participants	Cross sectional survey	81.5%	Age
5	Shmueli (2021)	Israel, 2020, 398 participants	Cross-sectional online survey	80%	Gender Education level Vaccines experience before
6	El-Elimat et al (2021)	Jordan, 3100 participants	Cross-sectional	37.4%	Gender Education level Believed that vaccines are generally safe Willing to pay for vaccines Aged Employed
7	Fisher et al. (2020)	The U.S., 2020, 991 participants	Cross-sectional online survey	57.6%	Age Race Education level Vaccines experiences before

8	Aloweidi et al. (2021)	Jordan, 2021, 646 participants	Cross-sectional	35%	Medical personnel advice Social media
9	Zewude & Habtegiorgis (2021)	Ethiopia, 2021, 319 participants	Cross-sectional	46.1%	Attitude towards the vaccine The belief that COVID-19 exists The perception that prevalence and death rate reports of the government are real Chronic diseases, Having a close relative/friend ever infected by COVID- 19.
10	Latkin et al. (2021)	The United States, 2020. 1,056 participants	Cross-sectional	53.6%	Race Gender Age who were more politically conservative.
11.	Wirawan et al. (2021)	Indonesia, 2020, 779 participants	Online survey Cross-sectional	60.8%	Conspiracy beliefs Trusts in conventional media and authoritative sources.
12	Stern et al. (2021)	In four states in Washington, California, Florida, and Texas, 2020, 5.110 participants	Online survey	44.9%	Race Aged

From the twelve articles had been reviewed, the highest vaccine acceptance was found in a study conducted by Bono et al. (2021) with 88.8% (95% effectiveness) in 83 countries, which included Brazil, Bangladesh, Benin, the Democratic Republic of Congo, Malawi, Malaysia, Thailand, Uganda, with 10,491 participants. Brazil had higher acceptance odds than Bangladesh, Thailand, Malaysia, Benin, the Democratic Republic of Congo, Mali, Malawi, and Uganda (90% effectiveness) (Bono et al., 2021). Meanwhile, the lowest vaccine acceptance rate was found in the study of Aloweidi et al. (2021). There were 226 of 616 participants (35%) in Jordan planning to take the vaccine once available, with a positive response from 131 (45.6%) medical field workers, compared to 94 (26.2%) non-medical individuals. Compared to other high-income countries, Taiwanese people have lower vaccine acceptance.

Vaccine refusal reasons included fear of side effects, lack of confidence in vaccine effectiveness, lack of adequate information, distrust of health care, correctional, or government personnel or institutions (Bono et al., 2021; Tsai et al., 2021; Stern et al., 2021; Zewude & Habtegiorgis et al., 2021). Reasons that make people hesitate about vaccines include vaccine efficacy or safety, concerns about vaccines, anti-vaccine attitudes or beliefs, need for more information, and lack of trust. (Fisher et al., 2020; Stern et al., 2021). Participants may be willing to be vaccinated if they report perceived benefits from the vaccine and the perceived severity of COVID-19 infection (Shmueli, 2021).

Table 2.

Factor.Affecting COVID-19 Vaccine Acceptance

Factor	Research
Age	Tsai et al. (2021), Bono et al. (2021), Petravic et al. (2021) , Shmueli (2021), Fisher et al. (2020), Latkin et al. (2021), El-Elimat et a. (2021), Benis, Seidmann &Ashkenazi (2021), Stern et al. (2021)
Level education	Tsai et al (2021), Shmueli (2021) Fisher et al (2020)
Vaccines experience before	Tsai et al (2021), Petravic et al (2021), Shmueli (2021), El-Elimat et al (2021), Fisher et al (2020)
COVID-19 knowledge	Bono et al. (2021)
Worry/fear regarding COVID-19	Bono et al. (2021)
Employed	El-Elimat et al. (2021), Tsai et al. (2021)
Higher-income	Bono et al. (2021)
Testing negative for COVID-19.	Bono et al. (2021)
Chronic disease	Bono et al (2021), Zewude & Habtegiorgis(2021)
Gender	Bono et al (2021), Petravic et al (2021), ElElimat et al (20 21), Latkin et al (2021), Shmueli (2021)
Profession	Petravic et al. (2021)
Race	Fisher et al. (2021), Latkin et al. (2021)
Social Media	Aloweidi et al. (2021).
Belief vaccine is safe	El-Elimat et al. (2021)
Medical personal advice	Aloweidi et al. (2021)
Social media use	Aloweidi et al. (2021)
Attitude towards the vaccine	Zewude & Habtegiorgis et al. (2021), Bono et al. (2021)
Believe COVID-19 exist	Zewude & Habtegiorgis et al. (2021)

Willing to pay for a vaccine	El-Elimat et al. (2021)
The perception that prevalence and death rate reports of the government are real	Zewude & Habtegiorgis et al. (2021)
Having a close relative/friend ever infected by COVID- 19	Zewude & Habtegiorgis et al. (2021)
Conspiracy belief	Wirawan et al. (2021), El-Elimat (2021)

Based on table 2, factors affecting COVID-19 vaccine acceptance were age, level education, vaccines experience before, risk perception, perceived severity of COVID-19, worry/fear regarding COVID-19, COVID-19 knowledge, employed, higher-income, testing negative for COVID-19, chronic disease, gender, health profession, race, belief vaccine is safe, personal medical advice, job, attitude towards the vaccine, believe COVID-19 exist, willing to pay, the perception is that the government's prevalence and death rate reports are real, having a close relative/friend ever infected by COVID-19, and conspiracy belief.

Discussion

Research conducted regarding the factors that affect the general population's acceptance of the COVID-19 vaccine suggests several factors in Tables 2 and 3 were individual characteristic, factors related to COVID-19, factor related to vaccine, factor related to government, social media use, personal medical advice. Individual characteristics including age, level of education, employed, income, gender, profession, race, and chronic disease. **Age.** Willingness to receive the COVID-19 vaccine is lower in the elderly who previously refused the vaccine (Tsai et al., 2021). Participants aged more than 35 years old had significantly unwilling to accept the COVID-19 vaccines. Participants more than 40 years old are less likely to receive this vaccine (Tsai et al., 2021; Bono et al., 2021, Benis, Seidmann & Ashkenazi., 2021, El Elimat et al., 2021, Fisher et al., 2020). In contrast study in Slovenia showed that older participants had a higher intention to be vaccinated than the younger participants (Petravic et al., 2021). Younger participants were associated with vaccination doubt and were less likely to be vaccinated, with participants aged 18– 29 years having the lowest willingness to be vaccinated (Fisher et al., 2020; Latkin et al., 2021; Stern et al., 2021).

Level education. A higher percentage of participants with an undergraduate degree or above did not want to receive the COVID-19 vaccine (Tsai et al., 2021). In contrast, Shmueli (2021) showed that educated participants had higher intentions to receive the vaccine, while lower educational attainment was associated with vaccines hesitancy (Fisher et al., 2020). **Employed.** Currently, employed participants were higher among participants who were unwilling to receive a COVID-19 vaccine. Participants unwilling to receive COVID-19 vaccines were higher among those employed than those unemployed/retired (El-Elimat et al., 2021; Tsai et al., 2021). I**ncome.** Acceptance is positively associated with higher income (Bono et al., 2021). **Gender.** Participants unwilling to receive a COVID-19 vaccine are higher among women (50.17%) than among men (43.44%) (Shmueli, 2021). Men had higher intentions to get vaccinated while females reduced vaccine acceptance odds (Bono et al., 2021; El-Elimat, 2021; Latkin et al., 2021; Petravic et al., 2021; Shmueli., 2021). **Race.** The black race is associated with vaccines hesitancy (Fisher et al., 2021). Like Latkin et al. (2021), black and Hispanic participants were less likely intended to be vaccinated. **Profession.** Physicians and medical students had a higher intention to get vaccinated. In contrast, nurses and technicians were less likely to get vaccinated (Petravic et al., 2021).

Factors related to vaccine were vaccines experience before, attitude towards the vaccine, belief vaccine is safe, willing to pay for vaccine, and risk perception of vaccine. **Vaccines experience before.** Participants who refused previous vaccines or had not received the influenza vaccine in the prior year were also refused to receive COVID-19 vaccines and associated with vaccine hesitancy (Tsai et al., 2021; Fisher et al., 2020). On the other hand, participants who had received the influenza vaccine in the prior year had a higher willingness to receive the COVID-19 vaccine (El-Elimat, 2021; Petravic et al., 2021; Shmueli, 2021). **Risk perception of vaccine.** Risk perception of COVID-19 vaccines is negatively associated with vaccines acceptance (Tsai et al., 2021). **Belief vaccine is safe.** Participants who stated that vaccines are safe in general were nine times more likely to accept taking COVID-19 vaccines compared to those who stated that vaccines are not safe (El-Elimat, 2021). **Attitude towards the vaccine.** Attitude towards the vaccine is significantly associated with the willingness/hesitancy of participants (Zewude & Habtegiorgis et al., 2021). highest acceptance odds found in individuals who

perceived taking the vaccine as essential to protect themselves (Bono et al., 2021). **Willing to pay for vaccines.** Participants willing to pay for vaccines were likely to accept the COVID-19 vaccines.

Factors related to COVID-19 were perceived severity of COVID-19, worry/fear regarding COVID-19, COVID-19 knowledge, testing negative for COVID-19, believe COVID-19 exist, and having a close relative/friend ever infected by COVID-19. **Higher perceived severity of COVID-19.** The higher odds of vaccine rejection were significantly in participants with higher perceived COVID-19 severity. In comparison, lower odds of poor health-protective behavior were significant in participants who worried about infection (Tsai et al., 2021). **COVID-19 knowledge.** Acceptance increases with COVID-19 knowledge (Bono et al., 2021). **Worry/fear regarding COVID-19.** Acceptance increases with worry/fear regarding COVID-19 (Bono et al., 2021). **Testing negative for COVID-19.** Acceptance increased with testing negative for COVID-19 (Bono et al., 2021). **Believe COVID-19 exist.** Participants who believe in the existence of COVID-19 in the study area are 4.5 times more likely to get vaccinated (Zewude & Habtegiorgis et al., 2021). **Having a close relative/friend ever infected by COVID- 19.** Participants who have close relatives or friends ever infected by COVID-19 are 2.6 times more likely not to take the vaccine.

Other factors (social media use, personal medical advice, the perception is that the government's prevalence and death rate reports are real, and conspiracy belief). **Social media use.** Young social media users are mostly positive and willing to be vaccinated (Aloweidi et al., 2021). The reasons they are willing to be vaccinated are because they believe in health care providers (87.7%), vaccination as an act of civil responsibility (91.9%), and want to protect their families and relatives (96.7%) (Aloweidi et al., 2021). **personal medical advice.** Medical personnel advice was significantly associated with the willingness to take the COVID-19 vaccine (Aloweidi et al., 2021). **The perception is that the government's prevalence and death rate reports are real.** Participants who think that the government's prevalence and death rate reports were real 2.7 times more likely to take the vaccine (Zewude & Habtegiorgis et al., 2021). **Conspiracy belief.** Strong trust in conventional media was related to a higher acceptance, while strong

conspiracy beliefs were associated with lower vaccine acceptance (Wirawan et al., 2021). Participants who believed that COVID-19 was a conspiracy and did not trust any source of information on vaccines were less likely to accept vaccines (El-Elimat, 2021).

Conclusion

COVID-19 vaccines acceptances in the general population are influenced by several factors, including individual characteristics (age, level of education, employed, income, gender, profession, race, chronic disease), factors related to COVID-19 (perceived severity of COVID-19, worry/fear regarding COVID-19, COVID-19 knowledge, testing negative for COVID-19, believe COVID-19 exist, having a close relative/friend ever infected by COVID-19), factors related to vaccine (vaccines experience before, attitude towards the vaccine, belief vaccine is safe, willing to pay for vaccine, risk perception of vaccine), and other factors (social media use, personal medical advice, the perception is that the government's prevalence and death rate reports are real, and conspiracy belief).

From the twelve literature, factors increasing COVID-19 vaccines acceptance were younger age, receive vaccines before, COVID-19 knowledge, worry/fear, employed, uneducated, testing negative for COVID-19, men, health profession, social media use, personal medical advice, belief safety in vaccines, willing to pay for vaccines, the perception that prevalence and death rate reports of the government are real. Factor decreasing COVID-19 vaccine acceptances were elderly, unemployed, educated, women, chronic disease, black race, and a close relative/friend ever infected by COVID-19.

Acknowledgment

The authors would like to thank the colleague for their contribution and support to the research. Thanks to all the reviewers who gave their valuable inputs to the manuscript and helped complete the paper.

Conflict of Interest

The authors have no conflict of interest to declare

Reference

Aloweidi, A.; Bsisu, I.; Suleiman, A.; Abu-Halaweh, S.; Almustafa, M.; Aqel, M.; Amro, A.; Radwan, N.; Assaf, D.; Abdullah, M.Z.; et al. (2021). Hesitancy towards COVID-19 Vaccines: An Analytical Cross–Sectional Study. *International Journal of Environment Research Public Health. 18*, 5111. https://doi.org/10.3390/ijerph18105111.

Benis, A.; Seidmann, A.; Ashkenazi, S. (2021). Reasons for Taking the COVID-19 Vaccine by US Social Media Users. *Vaccines. 9* (315):1-17. https://doi.org/10.3390/vaccines 9040315.

Bono, S.A.; Faria de Moura Villela, E.; Siau, C.S.; Chen, W.S.; Pengpid, S.; Hasan, MT.; Sessou, P.; Ditekemena, J.D.; Amodan, B.O.; Hosseinipour, M.C.; et al. (2021). Factors Affecting COVID-19 Vaccine Acceptance: An International Survey among Low- and Middle-Income Countries. *Vaccines* . *9*, 515. https://doi.org/10.3390/vaccines9050515.

CDC. (2020). 2019 Novel Coronavirus, Wuhan, China. CDC. Available at https://www.cdc.gov/coronavirus/2019-ncov/about/index.html.

Chakraborty C, Sharma AR, Sharma G, Bhattacharya M, Saha RP, Lee -S-S. (2020). Extensivepartnership, collaboration, and teamwork is required to stop the COVID-19 outbreak. *Arch Med Res*. 51 (7):728–730. doi:10.1016/j.arcmed.2020.05.0215.

Fisher, K.A., et al (2020). Attitudes Toward a Potential SARS-CoV-2 Vaccine: A Survey of U.S. Adults. *Annals of Internal Medicine.* doi:10.7326/M20-3569.

Gallegos A. (2020). WHO Declares Public Health Emergency for Novel Coronavirus. Medscape Medical News. Available at https://www.medscape.com/viewarticle/924596.

Habersaat KB, Jackson C. (2020). Understanding vaccine acceptance and demand – and ways to increasethem.BundesgesundheitsblattGesundheitsforschung Gesundheitsschutz. 2020;63(1):32 39. doi:10.1007/s00103-019-03063-011.

Harrison EA, Wu JW. (2020). Vaccine confidence in the time of COVID-19. Eur J Epidemiol. 35(4):325–30. Available from: http://link.springer.com/10.1007/s10654-020-00634-3

Hoffmann M, Kleine-Weber H, Schroeder S, Krüger N, Herrler T, Erichsen S, et al. SARS CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor. Cell. 2020;181(2):271-280.e8.

Latkin CA, Dayton L, Yi G, Colon B, Kong X. (2021). Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US. *PLoS ONE.* 16(2): e0246970. https://doi.org/10.1371/journal.pone.0246970

Petravi´c, L.; Arh, R.; Gabrovec, T.; Jazbec, L.; Rup˘ci´c, N.; Starešini˘c, N.; Zorman, L.; Pretnar, A.; Srakar, A.; Zwitter, M.; et al. (2021). Factors Affecting Attitudes towards COVID-19 Vaccination: An Online Survey in Slovenia. *Vaccines. 9 (*247):1-15. https://doi.org/10.3390/vaccines9030247

Prompetchara, E., Ketloy, C. and Palaga, T. (2020) _Immune responses in COVID- 19 and potential vaccines: Lessons learned from SARS and MERS epidemic ', *Asian Pacific journal of allergy and immunology*, 38(1), pp. 1–9. doi: 10.12932/AP-200220-0772.

Reiter PL, Pennell ML, Katz ML. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? *Vaccine*. 38(42):6500–7. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0264410X20310847

Seale, H., et al. (2021). Examining Australian public perceptions and behaviors towards a future COVID-19 vaccine.*BMC Infectious Diseases*. 21:120. https://doi.org/10.1186/s12879-021-05833-1

Shmueli, L. (2021). Predicting intention to receive COVID-19 vaccine among the general population using the health belief model and the theory of planned behavior model. *BMC Public Health*. 21 (804):1-13. https://doi.org/10.1186/s12889-021-10816-7.

Stern, M.E. et al. (2021). Willingness to Receive a COVID-19 Vaccination Among Incarcerated or Detained Persons in Correctional and Detention Facilities — Four States, September–December 2020. Morbidity and Mortality Weekly Report. 70 (13):473-477.

Tsai, F.-J.; Yang, H.-W.; Lin, C.-P.; Liu, J.Z. (2021). Acceptability of COVID-19 Vaccines and Protective Behavior among Adults in Taiwan: Associations between Risk Perception and Willingness to Vaccinate against COVID-19. *International Journal of Environment Research Public Health. 18*, 5579. https://doi.org/10.3390/ijerph18115579

Wirawan, G.B.S., Mahardani, P.N.T.Y., Cahyani, M.R.K., Laksmi, N.L.P.S.P., Januraga, P.P. (2021). Conspiracy beliefs and trust as determinants of COVID-19 vaccine acceptance in Bali, Indonesia: Cross-sectional study. *Personality and Individual Differences.*180 (2021) 110995.

World Health Organization (WHO). (2020). Coronavirus Disease (COVID-19). Retrieved from: https://www.who.int/health-topics/coronavirus#tab=tab_1

World Health Organization (WHO). (2021). WHO Coronavirus Disease 2019 (COVID-19) Dashboard. Retrieved from: https://covid19.who.int/

Zewude, B & Habtegiorgis, T. (2021). Willingness to Take COVID-19 Vaccine Among People Most at Risk of Exposure in Southern Ethiopia. *Pragmatic and Observational Research*. 12:37–47.