

Letter to editor**Vaccine hesitancy and considerations for vaccination campaigns against COVID-19****Shyh Poh, Teo****Department of Internal Medicine, Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital, Bandar Seri Begawan, Brunei Darussalam*

Many countries are eagerly waiting for the availability of coronavirus disease 2019 (COVID-19) vaccines, with the hope that a large-scale immunization program would provide a reprieve from the current pandemic. Vaccine effectiveness requires a high population uptake and the development of herd immunity, while vaccine hesitancy threatens the likelihood of successfully containing the infection through vaccination. COVID-19 vaccine hesitancy has been reported even in areas severely affected by the pandemic, ranging from as low as 2.0% in China up to 44.0% in Turkey. ⁽¹⁾ Selected studies of COVID-19 vaccine hesitancy are discussed to emphasize important considerations for COVID-19 vaccination campaigns. These studies were identified through Google Scholar for the search terms 'COVID-19' and 'vaccine hesitancy' performed on 15th January 2021.

In the United States, an online survey found 69.0% of the participants were willing to receive a COVID-19 vaccine. Willingness to get vaccinated was associated with perceived likelihood of contracting a COVID-19 infection, perceived severity of infection and perceived effectiveness of the vaccine. ⁽²⁾ This is consistent with the health belief model for predicting vaccine intention, where predictors of vaccine uptake include high-perceived benefits and lower perceived barriers to receiving the vaccine. Interventions to improve vaccine uptake should target these constructs to increase vaccine demand. ⁽³⁾

An Australian online survey found 85.8% of their respondents were willing to receive a COVID-19

vaccine. Those less likely to be vaccinated believed that the threat of COVID-19 was exaggerated. ⁽⁴⁾ This raises the possibility that vaccine uptake may wane when the perceived threat from the pandemic diminishes, particularly during times of reduced restrictions. Inadequate health literacy and lower education levels were also associated with vaccine hesitancy, indicating more effort is required to target these groups for vaccine education. ⁽⁴⁾

An Italian study found that although older people were more susceptible to COVID-19 related complications and were a priority for immunization, they did not express more willingness to get vaccinated compared to younger, healthier people. ⁽⁵⁾ In addition to older people, COVID-19 also disproportionately affects certain vulnerable groups, including migrants, minority groups, those with lower socioeconomic status and living in densely populated areas. These groups also have a higher rate of comorbid chronic conditions, high risk of COVID-19 infections, severe disease consequences, poor access to healthcare and likely poor outcomes. Therefore, engagement and collaboration specifically targeting these groups should be emphasized to improve vaccine education and acceptance. ⁽⁶⁾

Another study identified a one in ten rate of vaccine hesitancy among university students in Italy. While healthcare curricula should result in higher health literacy in healthcare students, there were no differences in vaccine hesitancy when healthcare and non-healthcare student responses were compared. ⁽⁷⁾ This should be a cause for concern, as vaccination of healthcare workers is crucial, due to close contact with patients who are at high-risk of complications from COVID-19 infections. Thus, health promotion activities should also be carried out at educational institutions to improve vaccine uptake.

A French study found a high rate of vaccine hesitancy, where 26.0% of the respondents were unwilling to receive a COVID-19 vaccine. This was

*Correspondence to: Shyh Poh, TEO. Department of Internal Medicine, Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital, Jalan Putera Al-Muhtadee Billah, Bandar Seri Begawan, BA1710, Brunei Darussalam.

Email: shyhpoh.teo@moh.gov.bn

Received: January 20, 2021

Revised: April 7, 2021

Accepted: May 18, 2021

despite a recent national outbreak, with frequent media coverage of high death tolls and full intensive care wards.⁽⁸⁾ There was an association between the political views of respondents and vaccine acceptance, suggesting that political interests and opinions of public authorities may play a part in vaccine hesitancy. Political figures and governments should be aware of their influence on vaccine uptake, contribute to vaccine-related discussions in a balanced manner; build public trust in the information given and the steps taken by authorities to manage the pandemic.⁽⁹⁾

A Spanish study found that the public were averse to ambiguity, such that communicating scientific uncertainty reduced vaccine interest, affected their perception of vaccine effectiveness and reduced trust in health officials. Participants with higher literacy levels had greater expectations of certainty in health information, with an aversion towards uncertainty. While further work is required to improve public acceptance of scientific uncertainty, it is useful to recognize that the unknown may diminish the effectiveness of COVID-19 vaccine-related public health communications.⁽¹⁰⁾

Finally, a study from Israel showed a difference between occupations for vaccine hesitancy, with the highest anti-vaccination attitudes among nurses, followed by general public. Doctors reported the most willingness to get vaccinated.⁽¹¹⁾ To improve the uptake, Israel has given several incentives for people to get vaccinated, which can be accessible through a 'green pass'.⁽¹²⁾ This provides exemptions from quarantine, with holders having less restrictions in movement within the country. It is hoped that this approach will further increase vaccine uptake within the country.

In summary, vaccine hesitancy should be evaluated in each locality prior to introduction of COVID-19 vaccines. Vaccine education should target those at risk of vaccine hesitancy and those at risk of poor outcomes from COVID-19 infections. Universities and higher education institutions should also be prioritized for improving vaccine awareness. Political figures have a role in building public trust and influencing vaccine hesitancy. Vaccine information should also avoid ambiguity as much as possible, focusing on what is known and recommendations for the public.

This letter covers general points for consideration for vaccination campaigns to overcome vaccine hesitancy. It is not possible to provide specific

recommendations for each locality. As COVID-19 vaccines are being rolled-out internationally, there may be new changes that affect COVID-19 vaccine hesitancy, such as new emerging efficacy data or adverse events following vaccination.

Author contributions

SPT was involved in conceptualization, data curation, analysis, drafting and finalizing the manuscript.

Conflict of interest

The author has no potential conflict of interest to disclose.

References

1. Feleszko W, Lewulis P, Czarnecki A, Waszkiewicz P. Flattening the curve of COVID-19 vaccine rejection – a global overview [Internet]. 2020 [cited 2020 Oct 9]. Available from: <http://dx.doi.org/10.2139/ssrn.3631972>.
2. Reiter PL, Pennell ML, Katz ML. Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? *Vaccine* 2020;38:6500-7.
3. Wong LP, Alias H, Wong PF, Lee HY, AbuBakar S. The use of the health belief model to assess predictors of intent to receive the covid-19 vaccine and willingness to pay. *Hum Vaccin Immunother* 2020; 16:2204-14.
4. Dodd RH, Cvejic E, Bonner C, Pickles K, McCaffery KJ. Willingness to vaccinate against covid-19 in australia. *Lancet Infect Dis* 2021;21:318-9.
5. Palamenghi L, Barello S, Boccia S, Graffigna G. Mistrust in biomedical research and vaccine hesitancy: The forefront challenge in the battle against covid-19 in italy. *Eur J Epidemiol* 2020;35:785-8.
6. Shadmi E, Chen Y, Dourado I, Faran-Perach I, Furler J, Hangoma P, et al. Health equity and covid-19: Global perspectives. *Int J Equity Health* 2020;19:104.
7. Barello S, Nania T, Dellafiore F, Graffigna G, Caruso R. 'Vaccine hesitancy' among university students in italy during the covid-19 pandemic. *Eur J Epidemiol* 2020;35:781-3.
8. COCONEL Group. A future vaccination campaign against covid-19 at risk of vaccine hesitancy and politicisation. *Lancet Infect Dis* 2020;20:769-70.
9. Nihlén Fahlquist J. Vaccine hesitancy and trust. Ethical aspects of risk communication. *Scand J Public Health* 2018;46:182-8.

10. Han PKJ, Zikmund-Fisher BJ, Duarte CW, Knaus M, Black A, Scherer AM, et al. Communication of scientific uncertainty about a novel pandemic health threat: Ambiguity aversion and its mechanisms. *J Health Commun* 2018;23:435-44.
11. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrachi M, Zigron A, et al. Vaccine hesitancy: the next challenge in the fight against COVID-19. *Eur J Epidemiol* 2020;35:775-79.
12. Wilf-Miron R, Myers V, Saban M. Incentivising vaccination uptake. The 'green pass' proposal in Israel. *JAMA* 2021. Doi: 10.1001/jama.2021.4300.