

Original Research Article

The acceptability of COVID-19 vaccination during spring crisis in Myanmar

Yadanar Aung^{1,2*}, Zaw Z. Htun², Roy R. Marzo^{3,4}

¹Institute for Population and Social Research, Mahidol University, Bangkok, Thailand

²Department of Medical Research, Pyin Oo Lwin Branch, Myanmar

³Department of Community Medicine, International Medical School, Management and Science University, Malaysia

⁴Jeffrey Cheah School of Medicine and Health Sciences, Monash University, Malaysia

Received: 01 October 2021

Accepted: 08 November 2021

*Correspondence:

Dr. Yadanar Aung,

E-mail: dryadanaraung@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: During the spring crisis, the coup and COVID-19 have led to a weakening vaccination program and Myanmar's coronavirus prevention measures have been collapsed. The objective of this study was to determine the COVID-19 vaccine acceptance and assess its associated factors among the general adult population in Myanmar.

Methods: A cross-sectional, web-based survey was conducted with a total of 301 participants. The association between vaccine acceptability and its determinants was assessed by binary logistic regression analysis.

Results: The majority (90.4%) responded that they would like to accept vaccination if it is successfully developed and approved for listing in the future. Among the respondents, two-fifths (40.5%) had already received 1st dose of the COVID-19 vaccine, and 86.4% of the respondents thought that doctor's recommendation is a crucial factor in vaccination decision-making, while 70.4% responded that vaccine price is an essential factor. If the younger age of participants who possessed lower monthly household income and agreed that the doctor's recommendation is an important factor in vaccine decision making, the probability of accepting vaccine was more chance than those of older age participants.

Conclusions: The study highlighted that majority of the respondents wanted to accept the vaccine although they were concerned about the side effects and political unrest. It is recommended to develop a strategy successfully to strengthen vaccine convenience.

Keywords: Acceptability, COVID-19 vaccine, Hesitancy, Spring crisis

INTRODUCTION

Vaccine acceptability is very important in controlling communicable disease outbreaks as public acceptance has become more critical to maintain herd immunity. The control of COVID-19 is largely dependent upon its vaccine coverage. There are several factors significantly associated with the vaccine uptake while the population's acceptability of the vaccine will most likely be influenced by their socioeconomic status, perceptions, trust, beliefs, vaccines-related knowledge and information about the trustworthiness of vaccines, side effects of the vaccine

and the importance of the vaccine to prevent the health consequences of COVID-19.¹⁻¹⁴

Every country tries to flatten the COVID-19 epidemic curve with the ultimate goal of accepting vaccines against coronavirus. In the meantime, Myanmar's coronavirus prevention measures have been collapsed since February 2021.¹⁵ The military seized power and detained elected leaders on 1 February. Then, a series of mass protests happened, and the COVID-19 vaccination campaign among health care professionals across the country was stopped.¹⁶ Doctors, nurses and health care workers have been involved in Civil Disobedience Movement (CDM),

resulting in immediate deterioration of health services and COVID-19 responses during crisis.¹⁶⁻¹⁸ An empirical study revealed that vaccination is the best practice as the vaccines, one of the most powerful disease prevention tools, offer life-saving against COVID-19 disease.¹⁹ The preventative measures are key to control pandemics and vaccine acceptability could be a key preventative behaviour for COVID-19 during the spring revolution.^{20,21} Planning for a COVID-19 vaccination program under a military regime is currently worrisome though there is some supposition that acceptances of a COVID-19 vaccine. With the global pandemic of COVID-19 confirmed cases and deaths currently happen, it becomes important to study people's acceptability of a COVID-19 vaccine.

During the spring crisis, the coup and COVID-19 have led to a weakening vaccination program and also a worsening supply of essential vaccines.^{15,22,23} At the time of democratic government, health care workers received the first dose of COVID-19 vaccines on January 2021, and then some might be reluctant to get the second dose after coup.²² However, there is a lack of current evidence about people's acceptability of the COVID-19 vaccine or determinants that affect acceptability. Such findings will be useful for making well-informed projections of what vaccine acceptance might be in the future and also predicting factors for better acceptability of vaccine uptake. This study aimed to examine the COVID-19 vaccine acceptance and assess its associated factors among the general adult population in Myanmar.

METHODS

Study design and sampling

We conducted a cross-sectional, web-based survey, and participants (n=301) were recruited by using Google Forms through social media and personal contacts. The survey tool automatically confirmed that all questions had to be replied completely before submission and checked properly not to submit twice using a unique identifier of a single account. Eligible criteria were Burmese citizens aged over 18 years and above. We recruited all participants from an online survey by using a snowball sampling approach. Then, we distributed the structure questionnaire and data were collected from 15 February to 19 April 2021, when the military has taken power and declared a state of emergency at the time of the outbreak.

Measures

The investigators developed survey questions in English first, then translated them into Burmese language. The items on COVID-19 vaccination were based on the previous research question.²⁴ The survey instructions and purpose of this study were informed and consent was obtained from each participant. Not only validity and accuracy of collected data but also privacy and confidentiality of participants were ensured.

Description of the variables

We measured participants' vaccine acceptability by asking, "would like to accept vaccination if the COVID-19 vaccine is successfully developed and approved for listing in the future" as a binary outcome measure "yes/no". Participants' opinion on COVID-19 vaccination was assessed by asking whether they agreed that vaccination is an effective way to prevent and control COVID-19. Then, we examined factors that would determine the participants' decision-making to accept or not to get a COVID-19 vaccine. The important factors were vaccine convenience (vaccination method, frequency, and distance to vaccination sites), vaccine price, and doctor's recommendation. Participants were asked that they have received the first dose of the COVID-19 vaccine. If no, they indicated whether or not to accept the vaccine as soon as possible if the COVID-19 vaccine becomes available. The survey also evaluated their willingness to accept the vaccine at the time of Civilian Government when elected officials will take back the office. If participants had already received first dose of vaccine, they were questioned to imagine that they are considering whether or not to receive the second dose. Each factor was treated as dichotomous variables "yes/no".

Socio-demographic characteristics

The independent variables composed age group (young adults/middle-aged adults/old adults), gender (male/female), place of residence (urban/rural), ethnicity (Burma/non-Burma), states and regions, education (primary/secondary/post-secondary/tertiary), occupational status (employed/unemployed/student), marital status (single/married/divorced/widowed), individual income (low/high) and household monthly income (low/medium/high).

Data analysis

The data were analysed using STATA software version 15.1 for iOS, and missing data were checked properly although no missing value was noted. All categorical variables were calculated by using percentages in descriptive analysis. In bivariate analyses, we used the Chi-square test to explore associations between categorical variables. The association between vaccine acceptability and its determinants was assessed by binary logistic regression analysis. We calculated odds ratios (OR), 95% confidence intervals to identify correlates of COVID-19 vaccine acceptability by adding all variables in the regression model. Statistical significance was set at $p \leq 0.05$.

Ethical consideration

The research team considered confidentiality as an utmost concern in the collection, management, and analysis of

data from each participant after providing the required information in introduction.

This study was approved by the Ethics Committee of Asia Metropolitan University, Malaysia (Ethics Reference Number AMU/MREC/NF/28032020).

RESULTS

Background characteristics

There was a total of 301 participants in this study. Among them, more than half of the participants were female. Age ranged from 18-74 years with mean (\pm SD) age was 34.83 (\pm 9.073) years.

Table 1: Background characteristics (n=301).

Variable	Category	Frequency	Percent
Age group (years)	Young adults (18-39)	235	78.1
	Middle-aged adults (40-59)	58	19.3
	Old adults (60 and above)	8	6.6
Gender	Male	125	41.5
	Female	176	58.5
Place of residence	Rural	32	10.6
	Urban	269	89.4
Ethnicity	Bamar	232	77.1
	Non-Bamar	69	22.9
State/region	Mandalay	128	42.5
	Yangon	82	27.2
	Bago	18	6.0
	Kachin	12	4.0
	Naypyitaw	11	3.7
	Shan	9	3.0
	Sagaing	9	3.0
	Rakhine	8	2.7
	Magway	8	2.7
	Mon	5	1.7
	Kayin	4	1.3
	Kayah	3	1.0
	Ayeyarwaddy	2	0.7
	Tanintharyi	1	0.3
	Chin	1	0.3
Education level	Primary school	3	1.0
	Secondary school	1	0.3
	High school (Post-secondary education)	42	14.0
	Tertiary education	255	84.7
Occupational status	Employed (full-time/part-time)	261	86.7
	Unemployed	19	6.3
	Student	21	7.0
Marital status	Single	147	48.8
	Married	132	43.9
	Divorced	12	4.0
	Widowed	10	3.3
Monthly individual income	Low (less than 150,000 MMK)	35	11.6
	High (150,000 MMK and above)	266	88.4
Family income (per month)	Low (less than 300,000 MMK)	44	14.6
	Medium (300,000 to 500,000 MMK)	75	24.9
	High (500,001 MMK and above)	182	60.5

Most of them (89.4%) were from urban area. More than two-thirds (69.7%) were from Mandalay and Yangon regions. Other socio-demographic characteristics of the respondents were described details in Table 1.

COVID-19 vaccine related factors

While assessing the issues related to the COVID-19 vaccination, 85.0% of the participants cited that

COVID-19 vaccination was an effective way to prevent and control the infection. The majority of them (90.4%) responded that they would like to accept vaccination if it is successfully developed and approved for listing in the future. The “vaccine convenience, vaccination method, the numbers of dose (frequency) and distance to vaccination sites” were important factors in making decision to get vaccination” was agreed by 86.7% of the respondents. In addition, 86.4% of the respondents thought that doctor’s recommendation is an important factor in vaccination decision-making, while 70.4% of the participants responded that vaccine price is an important factor.

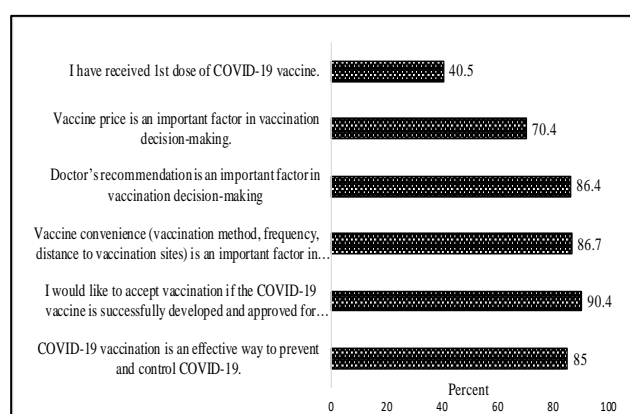


Figure 1: Covid-19 vaccine related factors (n=301).

Among the respondents, two-fifths (40.5%) had already received 1st dose of the COVID-19 vaccine, and among them (n=122), (82.0%) cited that they wanted to accept 2nd dose of the vaccine. The others who had not received 1st dose (n=179) and only (36.3%) of them would like to accept the vaccine as soon as possible if the COVID-19 vaccine becomes available. The respondents who did not receive the vaccine (114 out of 179) replied that they would like to delay vaccination until they confirmed the safety of the COVID-19 vaccine. In addition, (92.6%) the majority of the respondents who don't want to receive it supposed to accept the vaccine at the time of Civilian Government when elected officials will take the office.

While asking the reason for not accepting the COVID-19 vaccine, more than two-thirds of the respondents (71.3%) were said that “due to political unrest” while (23.5%) of them would not accept the COVID-19 vaccine because of “fear of side-effects”. The (2.9%) of participants replied that “they did not trust on military officials who provided vaccine and the rest, a few numbers of participants (2.3%) were said that “they don't think they need vaccine”.

Factors associated with COVID-19 vaccine acceptability, regression analysis

In the logistic regression analysis, education and occupational status were omitted. Age, gender, household

income, ‘vaccine is an effective way to prevent disease’, doctor’s recommendation had statistically significant effects on vaccine acceptability in the model of binary logistics regression. All the predictor variables were negatively associated with the dependent variable, except only one independent variable (doctor’s recommendation) had a positive association with vaccine acceptability. This study showed age as a significant predictor of vaccine acceptability, wherewith the younger the age -->the participant, the higher the chance of vaccine acceptability.

If male participants were 69% less likely to accept the COVID-19 vaccine than females ($p < 0.5$) and if they lived in rural area, holding other variables constant, 13% decreased the chance of accepting the vaccine than those who lived in urban area. The participants who were in high household income had 72% lower odds ($OR = 0.28$), while the medium household income group had 82% lower odds ($OR = 0.18$) of vaccine acceptability compared with those who were in the low household income group ($p < 0.5$). If the participants were married, there would be 1.4 times more likely to accept the COVID-19 vaccine compared to widow while those of single and divorced would be less likely. The probability of accepting the vaccine would be 18% decreased if they agreed that the vaccine price is an important factor in vaccine decision making at the significant level of 0.705. When the participants had received the first dose of the COVID-19 vaccine, the chance of accepting the vaccine would be 17% decreased, holding other variables constant.

Calculation of probability of accepting vaccine when concentrate on age, household income and doctor's recommendation

In Figures 2 (a and b), the graphs that could be seen adjusted proportional probability when comparing probability to vaccine acceptability between monthly household income and the doctor’s recommendation when concentrating on their age. The three selected important factors (age, household income and doctor’s recommendation) were set up with the margins command and figured out with the graphs.

The probabilities of getting chance of accepting vaccine among the participants were higher in younger and middle age, while the participants who were over 40 years and above decreased the probabilities of vaccine acceptability. At the same time, if the younger age of participants who possessed lower monthly household income and agreed that the doctor’s recommendation is an important factor in vaccine decision making, the probability of accepting the vaccine was more chance than those of older age participants. Thus, the results found out that young age, income level, and doctor’s recommendation were important factors for COVID-19 vaccine acceptability.

Table 2: Logistic regression coefficient and odds ratios (n=301).

Characteristics	Variables	Coeff.	OR (95% CI)	P value
Age (years)		-0.08	0.93 (0.87-0.99)	0.015
Gender	Female (ref.)	1.00		
	Male	-0.68	0.51 (0.20-1.32)	0.165
Place of residence	Urban (ref.)	1.00		
	Rural	-0.14	0.87 (0.16-4.73)	0.869
Marital status	Widowed (ref.)	1.00		
	Single	-0.01	0.99 (0.37-2.69)	0.988
	Married	0.33	1.39 (0.13-15.14)	0.788
	Divorced	-0.29	0.75 (0.06-8.95)	0.821
Household income	Low (ref.)	1.00		
	Medium	-1.72	0.18 (0.02-1.80)	0.144
	High	-1.28	0.28 (0.03-2.71)	0.271
Effective way to prevent	Yes (ref.)	1.00		
	No	-0.73	0.48 (0.12-1.95)	0.305
Convenience	Yes (ref.)	1.00		
	No	-0.14	0.87 (0.23-3.24)	0.832
Doctor's recommendation	Yes (ref.)	1.00		
	No	1.15	3.17 (0.94-10.62)	0.026
Vaccine price	Yes (ref.)	1.00		
	No	-0.20	0.82 (0.29-2.30)	0.705
Vaccinated first dose	Yes (ref.)	1.00		
	No	-0.19	0.83 (0.32-2.16)	0.698
Cons		6.96	1055.28 (26.79-41575.21)	0

Log likelihood=-74.964545 LR χ^2 (15)=25.69; Prob > χ^2 =0.0414; Pseudo R^2 =0.1463.

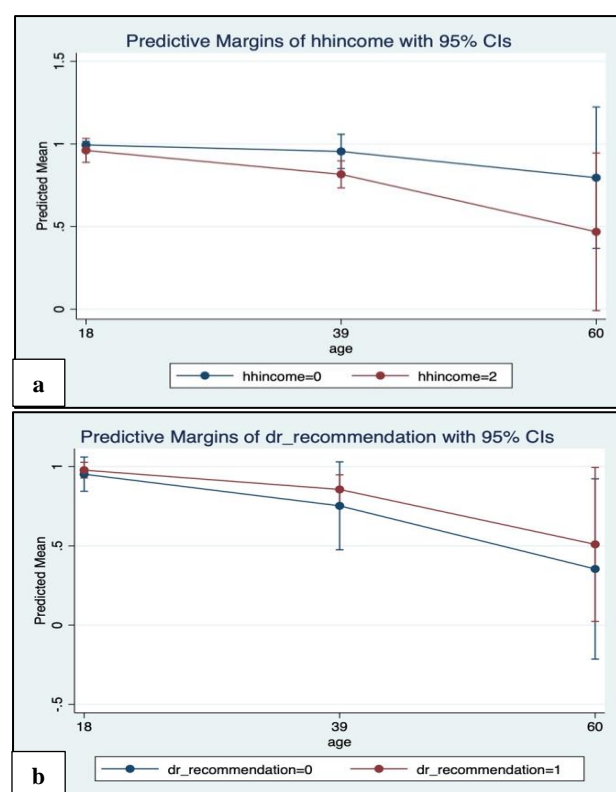


Figure 2: Probability of vaccine acceptability when concentrating on age, household income and doctor's recommendation.

DISCUSSION

This study had been imperative findings in evaluating vaccine acceptability during the time of political unrest, spring crisis in Myanmar. Commonly, COVID-19 vaccine acceptability, hesitancy, reasons for not accepting, important factors in vaccine decision-making, socio-demographic characteristics, and political conditions would be the issues associated with current situation of vaccine acceptability. All over the countries have been facing the challenges with the COVID-19 global pandemic. At the same time, vaccination is the first priority to control the outbreak as the COVID-19 is a vaccine-preventable disease.

Myanmar, a country that recently happened coup, is resulting in post-coup health system collapse and ongoing crisis of not only COVID-19 vaccination program but also the COVID-19 prevention measures following the military take-over on first February, 2021.^{22,25} The very first time COVID-19 vaccination program in Myanmar was started on 27 January 2021 with the healthcare providers, medical staffs and frontline volunteers allocating as prioritized population groups by receiving vaccine from India, the Covishield.²³ Then, many people came out to protest, and difficulties in staying at home, poor quarantine facilities and contact tracing worsened the COVID-19 outbreaks. Also, the people who received the first dose of the vaccine might be refused to take vaccine under the Military government. This research

mainly focused on the assessment of vaccine acceptability based on the important factors in decision making.

Well-established COVID-19 vaccine and availability of the vaccine with high vaccination rates worldwide could be able to control the disease.²⁶ Herd immunity is required to control and/or stop the COVID-19 pandemic and delay or refusal to take the vaccines are happening all over the world regardless of the country's development status.^{27,28} Both developed and under-developed countries face a vaccine hesitancy problem that is the major barrier in countering the spread of COVID-19 disease.²⁹ So, this study results are very critical to develop an effective mass vaccine program in Myanmar.

The participants reported they would like to accept the vaccine at the time of civilian government, and this showed that trust in government is needed to endorse the willingness to accept the vaccine. This finding was similar to the studies conducted in the United States, United Kingdom and Australia.³⁰ A similar study tended to assess the willingness to accept the COVID-19 vaccine in Jordan was found out the same result as medical doctor's advice/recommendation is significantly associated with vaccine acceptability.³¹ These results clarified the importance of concurrently reflecting significant drivers for accepting the COVID-19 vaccine and the extent to which individuals' demographic characteristics related to these intentions to accept the vaccine.

The acceptability of COVID-19 vaccine survey shown that a few of the participants (less than ten percent) were refused the vaccine acceptability was fairly high. The study conducted in Portugal was denied that finding as the acceptability of vaccine was low.³² The results obtained in this recent study showed, firstly that more than seventy percent of the participants agreed that the important factors in decision-making were vaccine effectiveness, convenience (distance to vaccine sites, vaccination method and frequency), doctor's advice, and vaccine price. Less than half of the participants received the first dose of vaccine that was very low while compared to the other Asian countries. The demographic coverage of the COVID-19 vaccine was reported as of May 24 this year in Singapore (34.5%), Hong Kong (16.9%), India (11.1%), and Russia (10.8%), South Korea (7.5%), Malaysia (5.2%), Japan (5.2%) and Bangladesh (3.6%) of the total population had received one dose of vaccine accordingly.³³

Regarding the associations of vaccine acceptability, it has been observed that young age people who had low household income were more likely to accept than those who had a high income. This finding was inconsistent to the other studies.^{3,4,32} However, this finding was similar with Bono et al and Dula et al studies.^{1,14}

A limitation is that it was a cross-sectional study and was nationally unrepresentative. There is a lack of information and available data on non-respondents. At the time of data collection, the internet was able to access only in cities of Myanmar. Moreover, social media applications are protected the users' privacy from the military government. A key limitation of this study is that we recruited a convenient sampling of participants through social media. The strengths of our study include enough sample size, participants from throughout entire Myanmar, and evaluating a wide range of possible correlates. Further studies are also needed in Myanmar, and it would be of great interest if future mass vaccination programs could establish to control the current COVID-19 pandemic by achieving herd immunity across the country.

CONCLUSION

An attempt was made to study the role that some of the variables emphasized in this study may consider as explanatory factors regarding vaccine acceptability. Although the results obtained with respect to personal variables, such as age and reasons for not accepting, coincide with the previous studies. Beyond such observations of an individual factor, the results obtained shows the importance of the household-level characteristics, especially income.

ACKNOWLEDGEMENTS

The authors thank all responsible persons who sincerely shared the link of the survey via email or social media to get the required data. We also thank all participants of this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Asia Metropolitan University, Malaysia (Ethics Reference Number AMU/MREC/NF/28032020)

REFERENCES

1. Bono SA, Faria de Moura Villela E, Siau CS, Chen WS, Pengpid S, et al. Factors affecting COVID-19 vaccine acceptance: an international survey among low-and middle-income countries. *Vaccines*. 2021;9(5):515.
2. Malik AA, McFadden SM, Elharake J, Omer SB. Determinants of COVID-19 vaccine acceptance in the US. *E Clin Med*. 2020;26:100495.
3. Paul E, Steptoe A, Fancourt D. Anti-vaccine attitudes and risk factors for not agreeing to vaccination against COVID-19 amongst 32,361 UK adults: implications for public health communications. Available at SSRN 3716874. 2020.

4. Machida M, Nakamura I, Kojima T, Saito R, Nakaya T, Hanibuchi T, et al. Acceptance of a COVID-19 Vaccine in Japan during the COVID-19 Pandemic. *Vaccines*. 2021;9(3):210.
5. Latkin CA, Dayton L, Yi G, Konstantopoulos A, Boodram B. Trust in a COVID-19 vaccine in the US: A social-ecological perspective. *Soc Sci Med*. 2021;270:113684.
6. Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, et al. A global survey of potential acceptance of a COVID-19 vaccine. *Nature Med*. 2021;27(2):225-8.
7. Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, et al. COVID-19 vaccination intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS), a nationally representative cross-sectional survey. *Hum Vacc Immunother*. 2021;17(6):1612-21.
8. Wong MC, Wong EL, Huang J, Cheung AW, Law K, Chong MK, et al. Acceptance of the COVID-19 vaccine based on the health belief model: A population-based survey in Hong Kong. *Vaccine*. 2021;39(7):1148-56.
9. Mannan DKA, Farhana KM. Knowledge, attitude and acceptance of a COVID-19 vaccine: a global cross-sectional study. *Int Res J Business Soc Sci*. 2020;6(4).
10. Eibensteiner F, Ritschl V, Nawaz FA, Fazel SS, Tsagkaris C, Kulnik ST, et al. People's willingness to vaccinate against COVID-19 despite their safety concerns: Twitter poll analysis. *J Med Internet Res*. 2021;23(4):e28973.
11. El-Elimat T, AbuAlSamen MM, Almomani BA, Al-Sawalha NA, Alali FQ. Acceptance and attitudes toward COVID-19 vaccines: a cross-sectional study from Jordan. *PloS One*. 2021;16(4):e0250555.
12. Puri N, Coomes EA, Haghbayan H, Gunaratne K. Social media and vaccine hesitancy: new updates for the era of COVID-19 and globalized infectious diseases. *Hum Vacc Immunother*. 2020;16(11):2586-93.
13. Piltch-Loeb R, Savoia E, Goldberg B, Hughes B, Verhey T, Kayyem J, et al. Examining the effect of information channel on COVID-19 vaccine acceptance. *PloS One*. 2021;16(5):e0251095.
14. Dula J, Mulhanga A, Nhanombe A, Cumbi L, Júnior A, Gwatsvaira J, et al. COVID-19 vaccine acceptability and its determinants in Mozambique: an online survey. *Vaccines*. 2021;9(8):828.
15. Han SM, Lwin KS, Swe KT, Gilmour S, Nomura S. Military coup during COVID-19 pandemic and health crisis in Myanmar. *BMJ Glob Health*. 2021;6(4):e005801.
16. Mahase E. Covid-19: Military coup in Myanmar sees virus response crumble as doctors are arrested. *Br Med J*. 2021;372:n704.
17. Shepherd A. Myanmar medics resist military coup. *BMJ*. 2021;372:n368.
18. Soe ZW, Oo MM, Wah KS, Naing AT, Skalicky-Klein R, et al. Myanmar's health leaders stand against military rule. *Lancet*. 2021;397(10277):875.
19. Jones I, Roy P. Sputnik V COVID-19 vaccine candidate appears safe and effective. *Lancet*. 2021;397(10275):642-3.
20. Dinleyici EC, Borrow R, Safadi MAP, van Damme P, Munoz FM. Vaccines and routine immunization strategies during the COVID-19 pandemic. *Hum Vacc Immunother*. 2021;17(2):400-7.
21. Guidry JP, Laestadius LI, Vraga EK, Miller CA, Perrin PB, Burton CW, et al. Willingness to get the COVID-19 vaccine with and without emergency use authorization. *Am J Infect Control*. 2021;49(2):137-42.
22. D'Apice C, Sarli L, Soe ZW. Myanmar: the ties between health and democracy. *J Glob Health Rep*. 2021;5:e2021076.
23. World Health Organization (WHO). Myanmar, Public Health Situation Analysis, 2021. Available from: <https://healthcluster.who.int/publications/m/item/myanmar-public-health-situation-analysis-29-may-2021>. Accessed on 13 July 2021.
24. Lane S, MacDonald NE, Marti M, Dumolard L. Vaccine hesitancy around the globe: Analysis of three years of WHO/UNICEF Joint Reporting Form data-2015-2017. *Vaccine*. 2018;36(26):3861-7.
25. Lancet T. Myanmar's democracy and health on life support. *Lancet*. 2021;397(10279):1035.
26. DeRoo SS, Pudalov NJ, Fu LY. Planning for a COVID-19 vaccination program. *JAMA*. 2020;323(24):2458-9.
27. Frederiksen LSF, Zhang Y, Foged C, Thakur A. The long road toward COVID-19 herd immunity: vaccine platform technologies and mass immunization strategies. *Front Immunol*. 2020;11.
28. Cascini F, Pantovic A, Al-Ajlouni Y, Failla G, Ricciardi W. Attitudes, acceptance and hesitancy among the general population worldwide to receive the COVID-19 vaccines and their contributing factors: a systematic review. *E Clin Med*. 2021;40:101113.
29. Sallam M. COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates. *Vaccines*. 2021;9(2):160.
30. Trent M, Seale H, Chughtai AA, Salmon D, MacIntyre CR. Trust in government, intention to vaccinate and COVID-19 vaccine hesitancy: a comparative survey of five large cities in the United States, United Kingdom, and Australia. *Vaccine*. 2021.
31. Aloweidi A, Bsisu I, Suleiman A, Abu-Halaweh S, Almufatah M, Aqel M, et al. Hesitancy towards COVID-19 vaccines: an analytical cross-sectional study. *Int J Environ Res Public Health*. 2021;18(10):5111.
32. Soares P, Rocha JV, Moniz M, Gama A, Laires PA, Pedro AR, et al. Factors associated with COVID-19 vaccine hesitancy. *Vaccines*. 2021;9(3):300.

33. Chakraborty C, Sharma AR, Bhattacharya M, Agoramoorthy G, Lee SS. Asian-origin approved COVID-19 vaccines and current status of COVID-19 vaccination program in Asia: a critical analysis. *Vaccines*. 2021;9(6):600.

Cite this article as: Aung Y, Htun ZZ, Marzo RR. The acceptability of COVID-19 vaccination during spring crisis in Myanmar. *Int J Community Med Public Health* 2021;8:5635-42.