Attitudes about Vaccination: A Covid-19 Study

Hailey A.L Walter, Merna Elias, and Karla D. Murillo Cruz

Kwantlen Polytechnic University

INTRODUCTION

- With increasing availability of the COVID-19 vaccine, death and infection rates are slowly declining, however, the fate of the COVID-19 pandemic does not solely depend on the availability of the COVID-19 vaccine (Hardt et al., 2016; Wang et al., 2021). Mass acceptance of a vaccine is also required for eradication (Hardt et al., 2016).
- An increasing number of the worldwide population has begun demonstrating hesitancy and disapproval of the COVID-19 vaccine, therefore necessitating the discovery of predictors for vaccine hesitancy is crucial to develop ways to maximize acceptance (Bendau et al., 2021; Sallam, 2021; Sekizawa et al., 2022).

Past research supports the ideation that vaccine hesitancy increases when:

- Individuals have low knowledge about the COVID-19 vaccine (Voo et al., 2017).
- Individuals have high levels of general anxiety (Sekizawa et al., 2022).
- Individuals feel negatively about the government pressure to become vaccinated (Porat et al., 2021).

Hypothesis: Vaccine knowledge, general anxiety, and attitudes about government pressure will be significant predictors of vaccine hesitancy.

- Specifically, vaccine knowledge will be negatively predictive of vaccine hesitancy, while general anxiety and negative attitudes about government pressure will be positively predictive of vaccine hesitancy.

METHODS

Participants:

- Recruitment: Participants were recruited through the KPU student research pool.
- Sample: There were 95 participants between the ages of 18 to 45 (M = 22.99; SD = 5.54). Most participants were female (78.9%) followed by male (14.7%) and non-binary (1.1%). The remaining participants (5.3%) chose not to disclose gender.
- Ethnicity: most participants were Southeast Asian (53.7%), followed by Caucasian (30.5%).
- Vaccinated: 94.7% of participants reported having at least one dose of the COVID-19 vaccine.
- COVID-19 Knowledge: participants disclosed all the sources in which they learned about COVID-19. the majority learned from mass media (e.g., TV, radio) (70.5%) followed closely by the internet (64.2%).

Materials:

- **The Knowledge Scale** (Islam et al., 2021): 5-items on a 3-point Likert scale ranging from -1 to 1 (no, don't know, yes) that measured general knowledge about the COVID vaccine, α = .27.
- **The General Anxiety Disorder-7 Scale** (Spitzer et al., 2006)**:** 7-items on a 4-point Likert scale ranging from 0 to 3 (not at all, several days, more than half the days, nearly everyday) that measured the general anxiety of participants, α = .93.
- **Single Government Pressure Item:** 5-point Likert scale ranging from -2 to 2 (strongly disagree, disagree, neither agree or disagree, agree, strongly agree) that measured participant attitudes surrounding government pressure to receive the vaccine.
- **The Hesitancy Scale** (Islam et al., 2021)**:** 6-items on a 3-point Likert scale ranging from -1 to 1 (disagree, undecided, agree) adapted from a Bangladesh study that measured vaccine hesitancy (removed reference to Bangladesh; changed item wording from future to past tense; e.g., "I will take the COVID vaccine without hesitation" to "I took the COVID vaccine without hesitation"), α = .90.

Items in the Hesitancy Scale (Islam et al., 2021):

- 1) The newly discovered COVID-19 vaccine is safe. 2) The COVID-19 vaccine is essential for us. 3) I took the COVID vaccine without hesitation. 4) I also encouraged my family/friends/relatives to get vaccinated. 5) It is not possible to reduce the incidence of COVID-19 without vaccination. 6) The COVID-19 vaccine should be distributed fairly to all of us.

Procedure:

- Participants completed the survey anonymously online through Qualtrics and received .05 bonus credits for participating.

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RESULTS

- A simultaneous multiple regression analysis was conducted to examine the influence of vaccine knowledge, general anxiety, and attitudes about government pressure on vaccine hesitancy.
- The present study met all assumptions (continuous variables, independence of observations, non-zero variance, additivity and linearity, independent residuals, homoscedasticity, normally distributed errors, multicollinearity) and identified zero outliers.
- Table 1 provides a summary of the correlational matrix, the means and standard deviations for all variables.
- The overall regression model was significant, $F(3, 91) = 17.79$, $p < .001$, $R^2 = .37$ (large effect).
- Table 2 provides a summary of the results of each predictor variable's influence on vaccine hesitancy. As seen in the table, attitudes about government pressure was the only significant predictor. The positive standardized beta value indicates a positive relationship, specifying that the more one dislikes government pressure, the more vaccine hesitancy one has.
- Vaccine knowledge and general anxiety were not found to be statistically significant predictors.

Table 1: *Correlation Matrix, Means and Standard Deviations*

Variable	1	2	3	4	*M*	*SD*
1. Knowledge	-	-0.10	-0.27	-0.30	0.83	0.19
2. Anxiety		-	0.19	0.08	1.18	0.87
3. Gov. Pressure			-	0.59**	-0.05	1.97
4. Hesitancy				-	-0.86	1.00

** $p < .001$

Table 2: Analysis Predicting Vaccine Hesitancy

Predictor	*B*	*SE B*	β	*t*	*p*
Knowledge	-0.82	0.47	-0.15	-1.76	.082
Anxiety	-0.50	-0.10	-0.04	-0.51	.610
Gov. Pressure	0.28	0.05	0.56	6.33	<.001

DISCUSSION

- These results partially support the present study's hypothesis. Results indicated that attitudes about government pressure was positively related to COVID-19 vaccine hesitancy (Porat et al., 2021). These results suggest that a decrease in government pressure may help to maximize the overall acceptance and willingness to become vaccinated. This suggestion coincides with existing research suggesting that the government implementation of COVID-19 passports may have detrimental effects on individual acceptance and the willingness to become vaccinated (Porat et al., 2021).
- These results may stem from a perceived lack of autonomy. Research suggests that when individuals feel restricted by COVID-19 passports they are less likely to endorse their implementation; whereas those who believe that the government has their best interests in mind and that vaccination is a choice are more likely to show support (Porat et al., 2021). Therefore, by changing vaccination from a mandate to a strong suggestion backed in empirical research the government may increase overall support. Further research is needed to determine a link between autonomy and vaccine hesitation.
- The hypotheses made for vaccine knowledge and general anxiety were not supported despite previous supporting literature (Sekizawa et al., 2022; Voo et al., 2017). A major limitation that may have resulted in the insignificance of vaccine knowledge was the extremely low Cronbach's alpha that was detected after the study had concluded. This result suggests that the items in the knowledge scale were not accurately measuring COVID-19 knowledge, therefore inaccurately representing one's COVID-19 vaccine knowledge. If a stronger scale was implemented, different results may have emerged.
- The insignificant general anxiety results may be due to the vast amount of reputable COVID-19 information available today (HealthLinkBC, 2022). Past research has suggested that general anxiety can impact one's knowledge acquisition which may impede one's ability to search for accurate COVID-19 information, resulting in hesitation (Lukasik et al., 2019). However, considering the duration of the COVID-19 pandemic, individuals may have sound knowledge of this subject due to the amount and accessibility of information, despite general anxiety impediments. Further research should be conducted to determine this.
- This sample was entirely made of self-selected, post-secondary participants. Therefore, results of this study may not be applicable to the general population. The hesitancy scale was also modified to address a population with a readily available vaccine and to remove reference to Bangladesh (Islam et al., 2021). These modifications did occur without a prior pilot study, lowering the scale's reliability and possibly impacting the overall conclusions made. There is also a possibility that participants answered in socially desirable ways, although such effects have arguably been controlled for by having the study be completed anonymously online.
- The results from the present study continue to expand the literature on vaccine hesitancy in hopes to expedite the end of the COVID-19 pandemic.

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