Understanding the Social Determinants of Vaccine Acceptance and Hesitancy: Evidence from Hong Kong

This study examines the role of social determinants in contributing to COVID-19 vaccine hesitancy in Hong Kong, where COVID incidence and trust in the Government were both low. An online survey was conducted to examine Hong Kong people's subjective evaluation of the vaccine, threat perception, interpersonal influence and institutional trust which contribute to explaining vaccination decisions. The findings point to the importance of social influence and a more nuanced conception of trust in contributing to the decision to be vaccinated.

Methods

The survey was conducted between 25 and 28 June 2021. We collected a sample of 4,386 respondents after removing responses completed under five minutes. The survey covered a wide range of questions related to COVID-19 vaccination. First, respondents were asked, "Have you been vaccinated? (Yes/Scheduled/No)". For those who answered "no", they were further asked, "Are you planning to get vaccinated in the next few months? (Yes/Maybe/No). This allows us to formulate the dependent variable by categorising respondents into three groups labelled as *vaccine acceptant*, *hesitant,* and *resistant* respectively.

The survey proceeded to numerous attitudinal and behavioural questions to construct the independent variables. Respondents were asked about their threat appraisal of COVID-19 (perceived severity and perceived susceptibility) and their attitudes towards the vaccine using the components of the 5C model (Betsch et al., 2018), which focuses on individual psychological

antecedents such as attitude (Confidence), perceived personal health status and invulnerability (Complacency), barriers (Constraints), preference for deliberation (Calculation), and communal orientation (Collective Good) (Kwok et al., 2021; Al-Sanafi & Sallam, 2021; Mercadante & Law, 2021). They were then asked about their degree of trust towards different institutions, including the Hong Kong SAR Government, the health department, and medical experts, as well as different types of people, including family, friends, neighbours, and strangers. The former were combined into a measure of institutional trust, while the latter into a measure of interpersonal trust. Finally, to measure the impact of interpersonal influence, respondents were also asked to estimate the number of their family members and friends respectively who have been vaccinated.

The survey used several respondent-level characteristics as control variables. These included the basic demographic characteristics, such as age group, gender, education level, socioeconomic status, and political orientation. Respondents were further asked about their health conditions, whether they work in occupations that require regular COVID-19 testing, and whether they live with vulnerable persons. We also included questions that measure respondents' frequency of obtaining information from various sources, such as television, newspaper, social media, and online media.

Among the 4,386 respondents, 2,753 provided complete responses for the following analysis. The data has been weighted by the age group and gender of the respondents according to the census of Hong Kong.

Results

1) Vaccination status

The survey sample has a vaccination rate of 34.6%. 4.6% had scheduled the jab, while 60.9% had not been vaccinated. The rate is very similar to the population's (excluding those under 18) 33% vaccination rate by 28 June 2021, indicating representativeness. Among those who had not been vaccinated, only 6.6% were planning to do so. Meanwhile, 35.7% are considering getting

vaccinated; and 57.4% are not planning to do so. Hence, the three groups—*vaccine acceptant*, *hesitant*, and *resistant*—make up 43.2%, 21.7% and 35.1% of the sample, respectively.

2) Comparisons of key variables by vaccination intention

As shown in Table 1, the three groups (*Acceptant* vs *Hesitant* vs *Resistant*) were significantly different in all 5Cs, except Calculation. The *Acceptant* group was highest in Confidence and Collective Good, and lowest in Complacency and Constraints. The *Resistant* group was exactly the opposite. The *Hesitant* group lies somewhere in between.

The three groups were also significantly different in terms of institutional trust. *Resistant* was most distrustful of public institutions and were most likely to see vaccination as supportive of the the Government. *Acceptant* was the opposite. *Hesitant* again lies in between.

Interpersonal trust was similar across the three groups, with slightly higher values in the *Acceptant* group, followed by *Hesitant* and then *Resistant*. The *Acceptant* group also indicated more vaccinated family members and friends than the *Hesitant* and *Resistant* group. The proportions of respondents indicating more than half their family or friends being vaccinated were 34.6% and 12.5% respectively in the *Acceptant* group, but only 1.3% and 0.7% in the *Resistant* group. 16.8% of *Acceptant* and 57.8% of *Resistant* indicated none of their family members have been vaccinated. The estimation for friends' vaccination tended to be more conservative and clustered around "Quite a bit" (response = 2; 79.3% *Resistant* to 90.3% *Hesitant*).

Acceptant reported highest reliance on the traditional media as information sources (i.e., television and newspaper), whereas *Resistant* indicated highest reliance on online information, with *Hesitant* being in between. Finally, the three groups were not significantly different in the threat appraisals of COVID-19. All mean scores were on the lower end of the scale (less than 3 out of 10).

Table 1: Comparisons of key variables by vaccination intention (N=2,753)

Variables	(a) Acceptant (n=1188) M(SD)	(b) Hesitant (n=598) M(SD)	(c) Resistant (n=967) M(SD)

Confidence	4.20 (0.98)	3.27 (0.78)	2.71 (0.81)
Collective Good	4.24 (1.06)	3.75 (1.09)	3.15 (1.21)
Complacency	2.78 (1.66)	3.53 (1.47)	3.92 (1.75)
Constraints	2.73 (1.53)	3.60 (1.65)	3.48 (1.90)
Calculation	6.08 (1.05)	6.07 (0.96)	6.10 (1.23)
Threat appraisals of COVID-19	2.90 (1.45)	2.92 (1.37)	2.82 (1.58)
Trust in the Government	2.74 (1.31)	2.34 (1.00)	1.97 (0.88)
Confidence in government policy	2.64 (2.10)	2.12 (1.57)	1.86 (1.45)
Vaccination as support to the Government	2.94 (1.86)	3.95 (1.95)	4.22 (2.12)
Interpersonal trust	4.44 (0.87)	4.33 (0.85)	4.27 (0.90)
Extent of family vaccinated	2.32 (0.92)	1.59 (0.59)	1.44 (0.53)
Extent of friends vaccinated	2.09 (0.40)	1.94 (0.31)	1.81 (0.42)
Reliance on traditional media	4.04 (1.72)	3.93 (1.59)	3.84 (1.70)
Reliance on online media	5.85 (1.11)	5.93 (0.97)	6.04 (1.06)

Note: All variables were responded on a 7-point Likert scale running from 1 (strongly disagree) to 7 (strongly agree) except threat appraisals of COVID-19 which was answered on a 10-point scale from 1 (not at all) to 10 (very much) and extent of family/friends vaccinated which was answered on a 4-point scale from 1 (none) to 4 (all).

Findings

1) Social influence plays a crucial role in vaccination decisions

Vaccination among family members has a particularly important impact. Not only does it make respondents less resistant to the vaccine, it also significantly enhances their likelihood of accepting it. On the other hand, there is only a partial effect in vaccination among friends. Respondents who have more friends that were vaccinated are less likely to resist the jab, but they are not necessarily more likely to show acceptance.

2) Trusting public institutions makes people less resistant to the vaccine

We found that institutional trust has a partial effect. People who trust public institutions are less resistant to the vaccine; but their trust does not make them more likely to accept it. No significant effect, meanwhile, is shown in respondents' confidence in the Government's COVID containment policy. Nevertheless, we found a significant effect in respondents' perception of whether vaccination is an act of supporting the Government. Those who hold a stronger perception of this are more likely to resist the vaccine, while those who disagree with this view are more likely to accept the jab as opposed to being hesitant.

3) The conventional 5C Model is only partially useful in predicting vaccination decisions

Respondents were asked about their attitudes towards the vaccine using the components of the 5C model. However, this model is only partially useful in explaining COVID-19 vaccination decisions. Respondents who have confidence in the vaccines are more likely to be *Acceptant*, and less likely to be *Resistant*. Those who are more complacent are more likely to be *Resistant*, and less likely to be *Acceptant*. However, Collective Good only has a partial positive effect. While respondents who think vaccination promotes the collective good are less likely to resist the vaccine (compared with being hesitant), they are not statistically more likely to accept it (also compared with being hesitant). Meanwhile, although Constraints is statistically significant, its effect is not linear across the two comparisons. The *Hesitant* group tends to report facing more constraints than both people who accept the vaccine and those who reject it.

4) Demographic features make no difference in making people accept the vaccine

There is no significant effect in age, gender, education level, and socioeconomic status in making people accept the vaccine, although male and more educated respondents are more likely to be *Hesitants* than *Resistants*. Sources of information and political orientation also have no significant effects. However, respondents who have no chronic illnesses, who are living with vulnerable persons, and who work in occupations that require regular testing, are more likely to show acceptance towards the vaccine.

Discussion and conclusion

Our results show that social determinants are essential factors in explaining vaccination decisions in Hong Kong. On the one hand, citizens' decisions are shaped by their attitudes towards public institutions and the Government in a generally low-trust environment. We found that having more institutional trust makes people less resistant to the vaccine. This makes sense because trusting public institutions can reduce people's misgivings about the consequences of getting the COVID-19 vaccines. However, trusting public institutions does not necessarily make people accept the vaccine. We further found that what differentiates people who accept the vaccine from people who are hesitant is an alternative measure of trust in the Government—the extent to which people perceive that vaccination is an act of supporting the Government. People who think that vaccination is an act of supporting the Government are more likely to resist the vaccine, while those who disagree more are more likely to accept it. The findings reveal that it is not institutional trust that makes people accept the vaccine—it is the belief that vaccination is not a socially undesirable behaviour.

The citizens of Hong Kong are also influenced by the vaccination decisions of people surrounding them. Such findings have two implications. First, family is an important medium in which vaccination decisions are transmitted in the context of Hong Kong. People tend to strongly trust family members, despite low trust in public institutions. This leads them to follow the decisions of family members as to whether to get the jab. Second, the fact that friends are weak influencers shows that the socialisation of vaccination decisions seldom goes beyond the family, which

undermines the networked effect of vaccination. This may help explain why the vaccine uptake in Hong Kong remained slow, at least up to the time of the survey.

References

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