Public perceptions and preventive behaviours during the early phase of the COVID-19 pandemic: a comparative study between Hong Kong and the United Kingdom

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Abstract

Background: In the absence of treatments and vaccines, the mitigation of COVID-19 relies on population engagement in non-pharmaceutical interventions, which is driven by their risk perception, anxiety level and knowledge. There may also be regional discrepancies in these drivers due to different historical exposure to disease outbreaks, government responses and cultures.

Objective: This study compared psycho-behavioral responses in two regions during the early phase of the pandemic.

Methods: Comparable cross-sectional surveys were administered among adults in Hong Kong (HK) and the United Kingdom (UK) during the early phase of each respective epidemic. Explanatory variables included demographics, risk perception and knowledge of COVID-19, anxiety level and preventive behaviors. Responses were weighted according to census data. Logistic regression models, including interaction terms to quantify regional differences, were used to assess the association between explanatory variables and the adoption of social-distancing measures.

Results: Data of 3431 complete responses (HK:1663; UK:1768) were analysed. Perceived severity differed by region (HK: 97.5%; UK: 20.7%). A large proportion of respondents were abnormally/borderline anxious (HK:64.8%; UK:45.9%) and regarded direct contact with infected individuals as the transmission route of COVID-19 (HK:94.0-98.5%; UK:69.2-93.5%), with HK identifying additional routes. HK reported high levels of adoption of social-distancing (HK:32.4-93.7%; UK:17.6-59.0%) and mask-wearing (HK:98.8%; UK:3.1%). The impact of perceived severity and perceived ease of transmission on the adoption of social-distancing varied by region. In HK, they had no impact, whereas in the UK, those who perceived severity as “high” were more likely to adopt social-distancing (aOR:1.58-3.01), and those who perceived transmission as “easy” were prone to both general social-distancing (aOR:2.00, 95% CI:1.57, 2.55) and contact avoidance (aOR:1.80, 95% CI: 1.41, 2.30). The impact of anxiety on adopting social-distancing did not vary by region.

Conclusions: These results suggest that health officials should ascertain and consider baseline levels of risk perception and knowledge in the populations, as well as prior sensitisation to infectious disease outbreaks, during the development of mitigation strategies. Risk communication should be done through suitable media channels - and trust should be maintained - while early intervention remains the cornerstone of effective outbreak response. Clinical Trial: Nil

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KEYWORDS

COVID-19; novel coronavirus; pandemic; behavioural response; risk perceptions; anxiety; comparative; Hong Kong; United Kingdom

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ABSTRACT

Background: Given the public health responses to previous pandemics of respiratory diseases, and in the absence of treatments and vaccines, the mitigation of Coronavirus Disease 2019 (COVID-19) relies on population engagement in non-pharmaceutical interventions. Engagement is largely driven by risk perception, anxiety level and knowledge, as well as historical exposure to disease outbreaks, government responses and cultures.

Objectives: To compare psycho-behavioral responses in Hong Kong (HK) and the United Kingdom (UK) during the early phase of the pandemic.

Methods: Comparable cross-sectional surveys were administered among adults in HK and the UK during the early phase of each respective epidemic. Explanatory variables included demographics, risk perception, knowledge of COVID-19, anxiety level and preventive behaviors. Responses were weighted according to census data. Logistic regression models, including effect modification to quantify setting differences, were used to assess the association between explanatory variables and the adoption of social-distancing measures.

Results: Data of 3431 complete responses (HK:1663; UK:1768) were analysed. Perceived severity differed by setting (HK: 96.8%; UK: 19.9%). A large proportion of respondents were abnormally/borderline anxious (HK:60.0%; UK:46.5%) and regarded direct contact with infected individuals as the transmission route of COVID-19 (HK:94.0-98.5%; UK:69.2-93.5%), with HK identifying additional routes. HK reported high levels of adoption of social-distancing (HK:32.6-93.7%; UK:17.6-59.0%) and mask-wearing (HK:98.8%; UK:3.1%). The impact of perceived severity and perceived ease of transmission on the adoption of social-distancing varied by setting. In

HK, they had no impact, whereas in the UK, those who perceived severity as “high” were more likely to adopt social-distancing (aOR:1.58-3.01), and those who perceived transmission as “easy” were prone to both general social-distancing (aOR:2.00, 95% CI:1.57, 2.55) and contact avoidance (aOR:1.80, 95% CI: 1.41, 2.30). The impact of anxiety on adopting social-distancing did not vary by setting.

Conclusions: These results suggest that health officials should ascertain baseline levels of risk perception and knowledge in the populations, as well as prior sensitisation to infectious disease outbreaks, during the development of mitigation strategies. Risk communication should be done through suitable media channels - and trust should be maintained - while early intervention remains the cornerstone of effective outbreak response.

Word count: 346

INTRODUCTION

In December 2019, a novel coronavirus (SARS-CoV-2) emerged in Wuhan, Hubei province, China, and spread rapidly worldwide, forming the second pandemic of the 21st century **[1]**. The disease progression varies by regions. As of 2 August 2020, there have been at least 17 million cases and over 670,000 deaths globally **[2]**.

Prior to the availability of effective treatments and vaccines, strategies to mitigate the impact of the pandemic have been primarily non-pharmaceutical **[3]**, mainly focusing on public health promotion of using simple but effective preventive measures **[4,5]**. Many important control strategies currently promoted by governments need public participation, either through direct adoption of preventative behaviours, such as handwashing or wearing face masks, or through compliance with social distancing policies, such as recommendations to avoid public transport and mass gatherings.

Previous studies of severe acute respiratory syndrome and pandemic influenza showed that governments should account for risk perception and anxiety when promoting preventative measures. There is evidence that higher perceived risk of infection is associated with increased adoption of precautionary measures **[6,7]**, while increased anxiety has also been shown to increase the likelihood that people will engage in protective behaviours **[8]**. Moreover, longitudinal data suggest that such perceptions, behaviours and anxieties change with context, and over time, as uncertainty about disease severity reduces, and knowledge of transmission increases **[9]**.

During the current coronavirus disease 2019 (COVID-19) pandemic, researchers have examined public risk perceptions and knowledge in various countries, including Finland **[10]**, Israel **[11]**, Italy **[12]**, Nigeria **[13]**, the United States **[14,15]**, South Korea **[16]** and Vietnam **[17].** However, only few

have identified the factors associated with greater adoption of preventative measures, or how these associations vary by context. In Hong Kong (HK), both greater understanding of COVID-19 and increased anxiety were associated with greater adoption of social distancing behaviours **[5];** whereas in the United Kingdom (UK), there was a significant socio-economic gradient in the ability to adopt and comply with social distancing measures, specifically the ability to work from home and ability to self-isolate **[18]**.

This initial evidence - that there is variation across context in affective responses, risk perceptions, and the impact of socio-demographic factors on the uptake of preventative behaviours - has significant implications when tailoring policies. To tease out these relationships, a more thorough comparative analysis is required. Yet studies in different countries often use different metrics to measure the same behaviour, which can lead to difficulty when interpreting the significance of heterogeneous contexts.

In this study, we examined and compared public perception and adoption of preventive behaviours in response to the early phase of the COVID-19 pandemic in two different settings: HK and the UK. We further investigated the factors associated with greater adoption of different types of social distancing measures. Our results have immediate implications on how health officials plan and communicate the mitigation strategies for the ongoing COVID-19 pandemic to communities.

METHODS

Study design and recruitment

In HK and the UK, cross-sectional surveys were conducted during the early phase of the COVID-19

pandemic, when there were only limited government-level interventions in place **[5,18]**. The survey period in HK was from 24 January 2020 to 13 February 2020, and in the UK from 17 to 18 March 2020. In HK, the first laboratory-confirmed case was reported on 23 January 2020, rising to 53 cases by 13 February 2020 **[19]**; whereas in the UK, the first two laboratory-confirmed cases were reported on 31 January 2020, rising to 2626 cases by 18 March 2020 **[20]**.

In HK, all 452 district councilors were invited to distribute an online open survey by sharing a survey link and promotion messages on their webpages, social media platforms or any channels which they usually use to convey information to their targeted residents. Individuals aged ≥18 years, who understood Chinese and lived in HK, were eligible to participate **[5]**. Respondents were compensated with HKD10 in form of a cash coupon. In the UK, the online non-open (users needed to login) survey was administered by YouGov, a market research company, to members of its panel of ≥800000 individuals (aged ≥18 years) as part of their omnibus survey **[21]**. Our UK sample was achieved through non-probabilistic active sampling method, and emails were sent to randomly selected individuals with particular characteristics to match the proportions of people with those characteristics in the 2011 UK census. No incentive was involved in the UK survey. More details of the survey design are described elsewhere **[5,18]**.

Study instrument

The study instruments are freely available online (HK: **[22]**; UK: **[23]**). The UK questionnaire was adapted from the HK one, with feedback from 20 members of the public (of different backgrounds) to improve its relevance and usability in the UK context. This process led to some discrepancies in the questions or answer choices, but the two questionnaires were largely similar.

Sociodemographic variables included age, sex, educational attainment and employment status. Anxiety level was measured using the Hospital, Anxiety and Depression scale - Anxiety (HASD-A) (0-7 = Normal; 8-10 = Borderline abnormal; 11-21 = Abnormal) **[24]**. Risk perception towards COVID-19 was measured by perceived severity of symptoms if infected with COVID-19 (HK: question 35; UK: question GIC_Q29). Knowledge of COVID-19 was assessed by asking whether COVID-19 could be transmitted through various routes (HK: question 45; UK: question GIC_Q33), including direct human exposure (for example, physical contact or a face-to-face conversation with someone who has coronavirus with or without symptoms) and other types of exposure (for example, visiting wet markets, or consumption of wild animal meat). From knowledge of COVID-19, perceived ease of transmission was regarded as “easy” if the virus was deemed to be transmitted by having face-to face conversation with asymptomatic infectees, and as “difficult” if otherwise. Respondents were also asked about the sources from which they retrieved information about COVID-19 and their perceived reliability towards them (HK: questions 40 and 43; UK: questions GIC_Q30 and GIC_Q32). In addition, they were asked about the adoption of preventative behaviours to cope with the transmission of COVID-19 (HK: question 46; UK: questions GIC_Q34a and GIC_Q34b). Three types of preventative measures were considered: personal hygiene, social distancing and travel avoidance.

Data analysis

Descriptive statistics for all variables present the number of respondents and the raw or weighted percentages. In this manuscript, weighted percentages were used for description except for demographics. The responding samples were weighted to be representative of the UK (2011 census **[25]**) and HK (2016 by-census **[26]**) adult populations using the raking method **[27]**. Each data point was given a weight so that the marginal proportions of demographics in the survey (age, sex, region,

education level and [UK only] social grade) were similar to those in the census. Chi-square goodness-of-fit tests were used for comparing characteristics across settings. Multivariate logistic regression models were used to identify sociodemographic and psychosocial factors associated with the adoption of three types of social distancing: (i) general measures, specified by avoiding crowded places, social events and going out; (ii) contact measures, specified by avoiding contact with individuals who had fever or respiratory symptoms, and who had been to affected areas recently; and (iii) work measure, specified by avoiding going to work.

Common and comparable sociodemographic factors considered in separate analytical studies **[5,18]** were included in this comparative analysis. They were considered as confounders in the association between psychosocial factors (including anxiety level, perceived severity and perceived ease of transmission) and adoption of social-distancing measures. Further, such association (between each aforementioned psychological factor and each type of social-distancing) was considered a priori to be affected by setting. Therefore, we examined the effect modification due to setting using interaction terms in the baseline models, which can be interpreted as the difference of the estimated effects of psychosocial factors on adopting social-distancing measures due to different settings. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) were estimated. Associations with a P <.05 in the adjusted analyses were considered to be statistically significant. Analyses were conducted in R (v3.6.3) and STATA (v11).

Ethical Approval

The study was approved by Imperial College London Research Ethics Committee (reference number: 20IC5861) and Survey and Behavioral Research Ethics Committee of The Chinese University of Hong Kong (reference number: SBRE-19-625).

RESULTS

Survey responses

In HK, there were initially 2478 clicks of the survey link. After removing 763 cases with missing demographics and 52 cases with ambiguous responses on the perceived ease of transmission, 1663 complete cases were included in the analysis. In the UK, 2500 individuals were approached and the response rate was 84.3% (2108/2500). After excluding cases with missing demographics or perceived severity, or cases with ambiguous responses on the perceived ease of transmission, 1768 cases were included in the analysis.

Demographic differences

There were significant differences in the sociodemographic characteristics of study respondents between the two settings. HK respondents were younger, with 26.0% aged 18-24 years, compared with 9.4% for the UK (P<.001) **(Table 1)**. The HK sample contained a greater proportion of females (68.6% [HK] vs. 52.9% [UK]; P<.001), and those educated to university degree level or above (63.2% [HK] vs. 33.7% [UK]; P<.001). Employment status reflected the age structure of respondents in each setting, with a greater proportion of the UK respondents in the retired category (2.6% [HK] vs. 27.2% [UK]; P<.001) **(Table 1)**.

Perceptions and beliefs

Higher perceived severity of COVID-19 was observed among HK respondents, with 96.8% rating

the symptoms of COVID-19 infection as serious or very serious compared with only 19.9% of the UK respondents. In terms of levels of concern, 92.6% of the HK sample responded as feeling very or fairly worried, compared with 78.5% of the UK sample. The HADS-A scores reflected similar trends, with 60.0% of the HK sample recording an abnormal or borderline abnormal result, compared with 46.5% of the UK sample **(Table 1)**.

Knowledge and information sources

The majority of respondents regarded direct contact with infected individuals (HK: 94.0-98.5%; UK: 69.2-93.5%) or virus-contaminated environments (HK: 96.3%; UK: 79.5%) as the primary means of virus transmission **(Table 2)**. However, respondents from HK identified a far boarder scope of transmission routes. A much larger proportion of HK respondents regarded wild animal meat (HK:93.4%; UK:11.3%), wet markets (HK:81.1%; UK:21.5%), imported seafood (HK:70.9%; UK:14.8%) and imported goods (HK:66.6%; UK:12.1%) as potential exposures than their UK counterparts. There was also significant variation across use and reliability of information sources (**Table S1**). The majority of respondents deemed health professionals reliable (HK, UK: >80%) but few could access them (HK:4.8%; UK:11.5%). In addition, most UK respondents (90.7%) considered official websites reliable, compared to 15.6% among HK respondents at the beginning of the pandemic.

Adoption of social distancing measures

There were variations in the weighted proportion of HK and the UK respondents adopting precautionary measures against COVID-19 **(Figure 1; Table S2)**. HK respondents reported higher levels of adoption across all social distancing and personal hygiene measures. In particular, 98.8% of

HK respondents reported wearing a face mask compared to 3.1% among the UK respondents. General measures were adopted by 63.1-87.2 % and 37.8-59.0 % of respondents in HK and the UK respectively. Contact measures were adopted by 83.8-93.7% and 33.7-50.1 % of respondents in HK and the UK respectively. Work measure was reported by 32.6% and 22.5% of respondents in HK and the UK respectively.

Sociodemographic factors were associated with the three social distancing measures **(Table S3; Table 3)**. The UK respondents were significantly less likely than their HK counterparts to adopt social distancing measures (**Table S3,** OR: 0.08-0.53, *P*<.001; **Table 3**, aOR:0.08-0.70, *P*<.001). When adjusting for differences between settings, general measures were less likely to be adopted by males (**Table 3**, aOR:0.82; 95% CI:0.71-0.95) but more likely to be adopted by the unemployed (**Table 3**, aOR:1.65; 95% CI: 1.30-2.09) or retired (**Table 3**, aOR:1.92; 95% CI: 1.43-2.59). Contact measures were less likely to be adopted by males (**Table 3**, aOR:0.74; 95% CI:0.63-0.88) but more likely to be adopted by those retired (**Table 3**, aOR:1.40; 95% CI: 1.03-1.91). Finally, work measure was less likely to be adopted by those aged 55 years or above (**Table 3**, aOR:0.60; 95% CI: 0.39-0.93).

The impact of perceived severity of infection and perceived ease of transmission on the adoption of social distancing behaviours varied by setting **(Table 4)**. In HK, they had no impact, whereas in the UK, those who perceived COVID-19 infection as serious were more likely to adopt all social distancing measures (aOR:1.58-3.01), and those who perceived transmission of SARS-CoV-2 as easy were more likely to adopt both general social distancing measures (Model 4.2, aOR:2.00, 95% CI:1.57-2.55) and contact measures (Model 5.2, aOR:1.80, 95% CI:1.41-2.30). On the other hand, the impact of anxiety on the adoption of social distancing behaviours did not significantly differ by setting **(Table 4)**. Those with borderline abnormal (HK, aOR:1.26-1.62; UK, aOR:1.36-1.48) or

abnormal HADS-A (HK, aOR:1.82-2.09; UK, aOR:1.40-2.40) scores were more likely to adopt all three types of social distancing measures compared to those with normal anxiety levels.

DISCUSSION

Principal results

This study compared the initial public perceptions and preventative behaviours during the COVID-19 pandemic across HK and the UK. The adoption of social-distancing measures was higher in HK than in the UK. Risk perception and knowledge of COVID-19 were consistently and significantly higher in HK, but for the UK respondents adoption of preventive behaviours were associated with two metrics: where transmission was considered ‘easy’, and perceived severity was considered ‘severe’, they were more likely to adopt preventive behaviours. Anxiety was a driver of behaviour change in both settings: those more anxious were more likely to adopt preventative measures. Such behaviour is consistent with the wider literature surrounding the adoption of precautionary measures **[6,7]**, and provides further evidence that anxiety drives protective behaviours, such as handwashing **[8]**, an effective intervention against the transmission of respiratory diseases **[28]**.

Implications

This study has three implications. First, health officials should account for context-specific baseline levels of risk perception and knowledge when designing and promoting mitigation strategies. The evidence presented in this study demonstrates that geographical and socio-cultural context is important in terms of both how people understand risk, and how risk drives behaviour. While the social, historical and cultural heterogeneity between HK and the UK likely contributes to the results

of this study, the importance of intrinsic factors, such as population sensitisation via past infectious disease outbreaks, and state-led health promotion campaigns, should not be underestimated. In studies elsewhere, public perceptions of these factors have been significant drivers of adopting preventative behaviours during previous epidemics **[29]**, while conceptions of personal risk have been connected to individuals' understanding of local disease prevalence and severity **[30-32]**. Therefore, assessment of the baseline population knowledge, attitudes and practices (KAP) and subsequent continual monitoring throughout the pandemic are essential to effective context-specific pandemic preparedness plan.

Second, risk communication should build upon baseline KAP outcomes and develop trust across suitable media channels. Significant contextual heterogeneity in the public reliance on information sources provides insight here. HK reported greater reliance on social media and far less trust in official websites, suggesting that official messaging in HK unlikely drove individual behaviour change; by contrast, the UK results suggested that although the UK government held an effective platform to influence public health behaviour, government health messaging was insufficient to attain similar HK baseline knowledge levels, particularly in the absence of prior population sensitisation to infectious disease outbreaks. Therefore, there is a pressing need to tailor communication approaches, likely on a graduated scale, but as a minimum in a binary fashion to accommodate both "naive" and "experienced" populations.

Third, the comparative snapshots of initial community responses captured by this study demonstrate the diversity in approach and pandemic response during the early phases. Across many contexts, national lockdowns became commonplace as the true magnitude of transmission became apparent; but the associated indirect costs render blanket strategies untenable in the medium term. As national lockdowns are lifted, countries worldwide face the challenge of resurging cases, and must consider

nuanced approaches to prevent additional harm. Driven by anxiety, high perceived severity and knowledge, HK conducted widespread preventive measures early, and en masse. Together with early government actions **[33]**, the strategies adopted by the HK community were successful during the initial phase of the pandemic. Considering this, and that national populations are now highly sensitised to COVID-19 transmission, tailored public health messaging, early regional containment, and increased health capacity should ensure more effective public health responses with less indirect impact on national economies.

Study strengths and limitations

From a methodological perspective, the UK sampling approach allowed sample size to be achieved quickly, thereby accurately capturing prevailing sentiment and behaviour across a short time frame (two days). However, this approach likely came at the expense of excluding participants without access to the internet, and contrasted with the survey period in HK (three weeks), likely leading to some sampling bias, especially during the initial phase of the pandemic (when there was much uncertainty about the disease). Additionally, both samples varied across the demographic spectrum that, while responses were weighted, cautions should be taken when extrapolating study findings to wider populations. Moreover, given the incompatibility of region-specific weights and the controversy in estimating standard errors when survey weights are involved **[34]**, unweighted regression results were presented but they should be interpreted with caution. Last but not least, though both surveys were conducted early locally, the difference in surrounding international events during the survey periods (for example, the HK survey had been conducted before COVID-19 was formally declared a pandemic but the UK survey was launched after such declaration) may introduce bias in survey responses.

Conclusions

This study compared the initial community responses towards COVID-19 in HK and the UK. In line with the high baseline level of risk perception and knowledge, and historical exposure to respiratory disease outbreaks, the adoption of preventive measures was higher in HK. However, the UK sample demonstrated that such adoption could be improved by heightened risk perception and knowledge, best driven by improved public health campaigns. Together, these results suggest that health officials should ascertain baseline levels of risk perception and knowledge, as well as prior sensitisation to infectious disease outbreaks, when developing mitigation strategies. Risk communication should be done through suitable media channels - and trust should be maintained - while early intervention remains the cornerstone of effective outbreak response.

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CONTRIBUTION

Bowman LR (BLR), Kwok KO (KKO), Ward H (WH), Atchison C (AC) and Wong SYS (WSYS) conceived the study; KKO, Wei WI (WWI) and AC collected the data; KKO, Yi YY (YYY) and WWI analysed the data; BLR, KKO, Redd RE (RRE), WH, WWI, AC and WSYS interpreted the data; BLR wrote the first draft of the manuscript; KKO, RRE, YYY, WH, WWI, AC, and WSYS edited the manuscript.

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CONFLICTS OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

ABBREVIATIONS

HK: Hong Kong

UK: United Kingdom

COVID-19: coronavirus disease 2019

HASD-A : Hospital, Anxiety and Depression scale - Anxiety

aOR: adjusted odds ratio

CI: confidence interval

KAP: knowledge, attitudes and practices

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FIGURES AND TABLES

Table 1. Hong Kong and United Kingdom study respondent characteristics

Characteristics	UK (n = 1768)			HK (n = 1663)			*P*-value [a]
	N	% (unweighted)	% (weighted)	N	% (unweighted)	% (weighted)	
Age							
18-24	166	9.4	9.9	433	26.0	17.0	<.001
25-34	243	13.7	14.3	535	32.2	23.5	
35-44	335	18.9	19.5	370	22.2	23.9	
45-54	300	17.0	17.7	193	11.6	22.2	
55+	724	41.0	38.6	132	7.9	13.4	
Sex							
Female	936	52.9	51.8	1141	68.6	57.1	<.001
Male	832	47.1	48.2	522	31.4	42.9	
Education attainment							
No formal qualification/ lower secondary or below	100	5.7	5.5	53	3.2	9.9	<.001
Secondary level qualification/ higher secondary	738	41.7	43.2	292	17.6	32.5	
Post-secondary but below degree	334	18.9	18.3	267	16.1	16.2	
Degree or above	596	33.7	32.9	1051	63.2	41.5	
Employment status							
Employer/Employee	1025	58.0	59.6	1135	68.3	66.0	<.001
Full-time student	90	5.1	5.3	278	16.7	12.5	
Unemployed/Not working	172	9.7	10.4	206	12.4	17.2	
Retired	481	27.2	24.7	44	2.6	4.3	
Perceived severity [b]							
Level 1	96	5.4	5.2	1071	64.4	65.0	<.001
Level 2	270	15.3	14.7	550	33.1	31.8	
Level 3	1058	59.8	60.2	32	1.9	2.2	
Level 4	320	18.1	18.5	7	0.4	0.7	
Level 5	24	1.4	1.4	3	0.2	0.3	
Worry about COVID-19							
Very worried	536	30.3	30.1	852	51.2	49.4	<.001
Fairly worried	858	48.5	48.4	723	43.5	43.2	
Neutral/ Don’t know	5	0.3	0.3	40	2.4	3.2	
Not very worried	295	16.7	16.9	1	0.1	0.1	
Not at all worried	74	4.2	4.3	47	2.8	4.1	
Anxiety level							
Normal	956	54.1	53.5	586	35.2	40.0	<.001
Borderline abnormal	336	19.0	19.4	512	30.8	27.3	
Abnormal	476	26.9	27.1	565	34.0	32.7	

[a] Chi-square goodness-of-fit test

[b] Level 1 = very serious (HK) / life-threatening (UK); Level 2 = serious (HK) / severe (e.g. may need care and treatment in hospital) (UK); Level 3 = neutral (HK) / moderate (e.g. may need self-care and rest in bed) (UK); Level 4 = not serious (HK) / mild (e.g. can go about daily tasks normally) (UK); Level 5 = not serious at all (HK) / no symptoms (UK)

Table 2. Knowledge of COVID-19 transmission

Are the following transmission routes of COVID-19?	Respondents answering "yes"					
	UK (n=1768)			HK (n=1663)		
	N	% (unweighted)	% (weighted)	N	% (unweighted)	% (weighted)
Contact						
Face-to-face conversation (no physical contact) with someone who has coronavirus but no symptoms	1234	69.8	69.2	1564	94.0	94.0
Face-to-face conversation (no physical contact) with someone who has coronavirus with symptoms	1398	79.1	78.7	1616	97.2	96.8
Physical contact with someone who has coronavirus but no symptoms	1580	89.4	89.0	1635	98.3	98.1
Physical contact with someone with coronavirus who has symptoms	1657	93.7	93.5	1644	98.9	98.5
Transmission mode						
Droplets	-	-	-	1649	99.2	99.2
Aerosol when infected people cough or sneeze	-	-	-	1478	88.9	91.2
Being in close contact (i.e. within 2 meters) to someone who has coronavirus when they cough or sneeze	1604	90.7	90.4	-	-	-
Being further away (i.e. further than 2 meters away) to someone who has coronavirus, when they cough or sneeze	615	34.8	34.8	-	-	-
Others						
Contact with virus-contaminated environment	1411	79.8	79.5	1594	95.9	96.3
Consumption of wild animal meat	199	11.3	11.3	1546	93.0	93.4
Visiting wet market	374	21.2	21.5	1342	80.7	81.1
Consumption of seafood imported from specific regions [a]	258	14.6	14.8	1199	72.1	70.9
Consumption/use of products imported from specific regions [a]	209	11.8	12.1	1101	66.2	66.6

[a] Specific regions refer to Wuhan (HK)/ China (UK).

Table 3. Factors associated with the adoption of different types of social distancing

Factors	Types of social distancing					
	General [a] (n=3431) (Model 1)		Contact [b] (n=3431) (Model 2)		Work [c] (n=2160) (Model 3)	
	aOR (95% CI)	*P*-value	aOR (95% CI)	*P*-value	aOR (95% CI)	*P*-value
Age						
18-24	-	-	-	-	-	-
25-34	1.54 (1.16, 2.05)	.003	0.96 (0.68, 1.35)	.81	1.00 (0.72, 1.39)	.99
35-44	1.25 (0.93, 1.68)	.13	0.74 (0.53, 1.05)	.09	0.95 (0.68, 1.33)	.77
45-54	1.30 (0.95, 1.79)	.10	0.67 (0.47, 0.97)	.03	0.72 (0.49, 1.05)	.09
55+	0.99 (0.70, 1.41)	.97	0.81 (0.55, 1.19)	.28	0.60 (0.39, 0.93)	.02
Sex						
Female	-	-	-	-	-	-
Male	0.82 (0.71, 0.95)	.01	0.74 (0.63, 0.88)	<.001	0.95 (0.78, 1.16)	.62
Education attainment [d]						
No formal qualification/ lower secondary or below	-	-	-	-	-	-
Secondary level qualification/ higher secondary	0.99 (0.68, 1.44)	.96	0.96 (0.64, 1.44)	.85	1.04 (0.46, 2.34)	.92
Post-secondary but below degree	1.06 (0.72, 1.55)	.78	1.12 (0.74, 1.71)	.58	1.09 (0.48, 2.47)	.83
Degree or above	1.27 (0.87, 1.83)	.21	0.98 (0.66, 1.47)	.94	1.94 (0.88, 4.28)	.10
Employment status						
Employed	-	-	-	-	-	-
Full-time student	1.35 (0.98, 1.85)	.07	1.08 (0.73, 1.59)	.70	-	-
Unemployed	1.65 (1.30, 2.09)	<.001	1.20 (0.91, 1.58)	.20	-	-
Retired	1.92 (1.43, 2.59)	<.001	1.40 (1.03, 1.91)	.03	-	-
Setting						
HK	-	-	-	-	-	-
UK	0.35 (0.30, 0.41)	<.001	0.08 (0.07, 0.10)	<.001	0.70 (0.57, 0.87)	<.001

[a] "General" refers to avoiding going to: (i) crowded areas; (ii) social events; and (iii) going out.
[b] "Contact " refers to avoiding contacting individuals who (i) had a fever or respiratory symptoms; and (ii) had been to affected areas (UK) / Wuhan (HK) in the past 14 days (UK) / past month (HK).
[c] “Work” refers to avoiding going to work.

Table 4. Setting-specific effect and the effect modification (by setting) of selected variables on the adoption of social distancing

Setting	Selected variables	Types of social distancing					
		General [a] (n=3431)		Contact [b] (n=3431)		Work [c] (n=2160)	
		aOR (95% CI)	*P*-value	aOR (95% CI)	*P*-value	aOR (95% CI)	*P*-value
	Perceived severity [d]	**(Model 4.1) [e]**		**(Model 5.1) [e]**		**(Model 6.1) [e]**	
HK	Not serious	-	-	-	-	-	-
	Serious	0.93 (0.50, 1.74)	.82	1.71 (0.85, 3.47)	.13	0.63 (0.30, 1.30)	.21
UK	Not serious	-	-	-	-		-
	Serious	3.01 (2.35, 3.86)	<.001	1.90 (1.48, 2.43)	<.001	1.58 (1.06. 2.37)	.03
	Effect modification [f]	3.24 (1.65, 6.35)	<.001	1.11 (0.52, 2.34)	.79	2.52 (1.09, 5.80)	.03
	Perceived ease of transmission [g]	**(Model 4.2) [e]**		**(Model 5.2) [e]**		**(Model 6.2) [e]**	
HK	Difficult	-	-	-	-	-	-
	Easy	1.15 (0.77, 1.74)	.50	1.00 (0.58, 1.71)	.99	0.61 (0.37, 1.03)	.07
UK	Difficult	-	-	-	-	-	-
	Easy	2.00 (1.57, 2.55)	<.001	1.80 (1.41, 2.30)	<.001	1.34 (0.96, 1.87)	.09
	Effect modification [f]	1.73 (1.07, 2.79)	.02	1.81 (1.00, 3.28)	.05	2.18 (1.18, 4.04)	.01
	Anxiety level	**(Model 4.3) [e]**		**(Model 5.3) [e]**		**(Model 6.3) [e]**	
HK	Normal	-	-	-	-	-	-
	Borderline abnormal	1.62 (1.27, 2.06)	<.001	1.26 (0.93, 1.70)	.14	1.51 (1.10, 2.06)	.01
	Abnormal	2.09 (1.64, 2.66)	<.001	1.85 (1.34, 2.56)	<.001	1.82 (1.34, 2.48)	<.001
UK	Normal	-	-	-	-	-	-
	Borderline abnormal	1.48 (1.11, 1.96)	.01	1.36 (1.02, 1.80)	.03	1.37 (0.92, 2.02)	.12
	Abnormal	2.40 (1.87, 3.09)	<.001	1.76 (1.37, 2.27)	<.001	1.40 (0.99, 1.98)	.06
	Effect modification (borderline abnormal) [f]	0.91 (0.63, 1.33)	.64	1.08 (0.71, 1.63)	.71	0.91 (0.55, 1.49)	.70
	Effect modification (abnormal) [f]	1.15 (0.82, 1.62)	.42	0.95 (0.63, 1.42)	.80	0.77 (0.48, 1.21)	.26

[a] "General" refers to avoiding going to: (i) crowded areas; (ii) social events; and (iii) going out.

[b] "Contact " refers to avoiding contacting individuals who (i) had a fever or respiratory symptoms; and (ii) had been to affected areas (UK) / Wuhan (HK) in the past 14 days (UK) / past one month (HK).

[c] “Work” refers to avoiding going to work.

[d] For perceived severity, “serious” refers to levels 1-2; whereas “not serious” refers to levels 3-5. (Refer to footnote b in Table 1)

[e] The models have been adjusted for all covariates in Table 4.

[f] It measures the "difference of the effect being considered" due to "difference in setting", and its value is the ratio of the two setting-specific effects.

[g] For perceived ease of transmission, ‘ease’ refers to that the virus can be transmitted by having face-to face conversation with someone who has coronavirus but no symptoms; otherwise, the perceived ease of trahsmission is ‘difficult’.

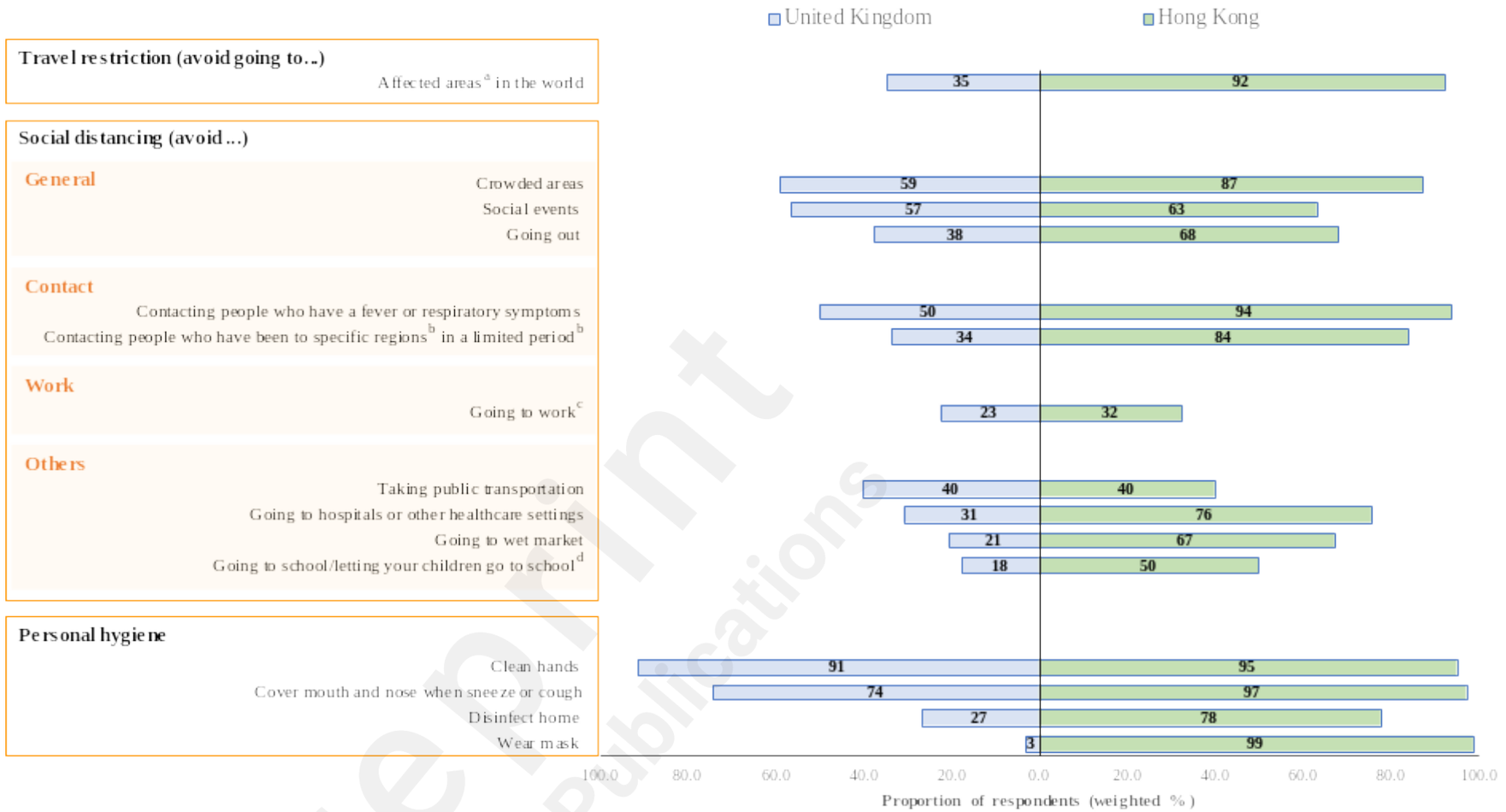

Figure 1. Adoption of precautionary measures against COVID-19

[a] Affected areas refer to China (HK) / affected areas in the world (UK).
[b] 'Specific regions in a limited period' refer to affected areas (UK) / Wuhan (HK) in the past 14 days (UK) / past one month(HK).
[c] Only included respondents who were employees or employers (n = 2160).
[d] Only included respondents who were full-time students or have at least one child (n = 1239).

Supplementary Files

Supplementary tables.
URL: https://asset.jmir.pub/assets/4804ab36f580bdd2e297f239bb73fdf9.docx

Point-by-point responses to reviewer comments.
URL: https://asset.jmir.pub/assets/c4e2098c7579d4c32271e2f248916f2d.docx

Cover letter.
URL: https://asset.jmir.pub/assets/6345340b72192f0ab07f31df4946cc81.pdf

Supplementary files.
URL: https://asset.jmir.pub/assets/8fe5f3572f4d110c5ea876dc0070da9a.docx

Point-by-point response to reviewer comments.
URL: https://asset.jmir.pub/assets/5f67a0ce7728707c591ee8ec69a3cbae.docx

Cover letter.
URL: https://asset.jmir.pub/assets/99b0c1396e69eed48665a9d6403c276c.pdf

CONSORT (or other) checklists

CHERRIES checklist.
URL: https://asset.jmir.pub/assets/3c39bfd38875e1ee1efaed4010b375d9.pdf