Facemask wearing among Chinese international students from Hong Kong studying in United Kingdom Universities during COVID-19: A mixed method study

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Abstract

Background: The mental health of international students studying abroad has been neglected during the COVID-19 pandemic.

Objective: This mixed-method study examined perceived public attitudes, personal beliefs, practice and stress toward facemask wearing as a preventive measure against COVID-19 among international university students from Hong Kong studying in the United Kingdom (UK) in the early stage (January – March 2020) of the pandemic.

Methods: Our study included 2 parts: (i) an exponential, non-discriminative snowball sampling strategy was used to recruit 91 Chinese students studying in the UK to complete an online questionnaire survey, and (ii) online Zoom focus group interviews were conducted with 16 students to gain an in-depth understanding on their experiences and coping methods during the pandemic.

Results: Of the 91 students, 92.3% reported the UK public did not view facemask wearing as a preventive measure. 98.9% believed facemask wearing was an effective preventive measure, but 56% wore facemasks more than half of the time when out in public. 50.5% of them had internal conflicts of feeling stressed both when wearing facemasks and not wearing facemasks, which was more common in females than males [(62.5% versus 31.5%, P=0.004, Relative Risk (RR): 1.99 (1.17, 3.38)]. 61.5% reported public prejudiced attitudes against facemask wearing, also more females than males (71.4% versus 45.7%, P=0.02, RR: 1.56 (1.05, 2.32). Qualitative findings showed feeling of conflicts between personal beliefs and social norms, feeling stressed about wearing facemasks as a preventive measure, and experience of prejudice. Peer and family support helped students face such difficulties. Positive thinking and being adaptable were effective methods of stress management. Qualitative findings corroborated the quantitative results.

Conclusions: Prejudiced attitudes and behaviours from others, and differences in public attitudes toward facemask wearing resulted in much stress in students' stress. Clear and accurate public health messaging regarding facemask wearing is needed to change public attitudes and mitigate prejudice. Owing to the ongoing pandemic and rising xenophobia, specifically Sinophobia, academic institutions and public health professionals should take initiative in reaching out to urgently address the needs of international students and provide support in managing their ongoing stress and enhance mental wellbeing. Clinical Trial: Ethics approval was granted by the Institutional Review Board of The University of Hong Kong?/?Hospital Authority Hong Kong West Cluster (reference number: UW20-298). The study was registered with the National Institutes of Health (identifier number: NCT04365361).

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Keywords: Facemask; international; university students; COVID-19; stress; belief; attitudes

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INTRODUCTION

The novel coronavirus (COVID-19) pandemic has huge adverse impacts on mental health. Asian communities in Western countries, such as in the United Kingdom (UK), have been targets of incidents and attacks involving xenophobia, racism and discrimination (1). Wearing facemasks (either cloth or surgical masks) has often been a catalyst for such incidents (2, 3), a phenomenon dubbed as "maskaphobia". For

Chinese international students studying abroad, this problem is especially concerning, but the impacts on their mental health have been largely overlooked (4).

The pandemic has presented unprecedented challenges for global higher education. According to the United Nations Educational, Scientific and Cultural Organisation (UNESCO), more than 166 countries have implemented nationwide closures since March 2020, impacting close to 90% of the world's student population (5). From January to March 2020, Confirmed COVID-19 cases in the UK dramatically increased to a higher level (n=29,681) than that in Hong Kong (HK) (n=680) (6, 7).

Hong Kong had almost 100% voluntary masking since the end of January (8). Hong Kong public health professionals had been advocating for mass masking, social solidarity and altruism globally since 3 March 2020 (9, 10). Facemasks were not recommended in Western countries until several months later when outbreaks had become out of control. Moreover, the UK Prime Minister announced on 12 March 2020 that individuals with a continuous cough or high temperature should self-isolate at home for at least 7 days before seeking medical advice (11). Escalating outbreaks in the UK and the above policy resulted in many students from Hong Kong studying in the UK returning home where the outbreaks were under better control. Compulsory quarantine orders on all persons arriving from foreign places were imposed in Hong Kong and commenced on 19 March 2020 (12).

Rising xenophobia, specifically Sinophobia, during the pandemic has also been a factor in the decline of Chinese students studying in the UK (13) where Chinese students make up the majority of overseas students (14, 15). Discriminatory behaviours can contribute to students' ongoing stress which can negatively affect academic performance and mental wellbeing (16, 17). Stress exposures during puberty have more substantial effects on girls, including increased risks of developing mood- and stress-related disorders, such as depression, anxiety, and posttraumatic stress disorder (18, 19). Increasing severity of the outbreak affecting daily life and learning, compounded with growing fears over prejudice and discrimination, including those from against facemask wearing, would likely have affected the mental health of international students studying abroad.

We searched PubMed on 28 January 2021 using keywords including "international students", "mask" and "coronavirus", and found two articles examining face mask wearing behaviours in young Chinese and Taiwanese adults(20, 21) and one article exploring the impact of COVID-19 related stressors on mental health impact of international university students(22). We found no articles that focused on investigating stress related to face mask wearing in international students during COVID-19 pandemic.

We studied the experience in perceived public attitudes, personal beliefs, and practice and stress toward facemask wearing among international university students studying in the UK in males and in females. We hypothesized that females would report greater stress from facemask wearing than males.

METHODS

Study design

This study used different types of information and communication technologies strategies throughout the process from study promotion and recruitment (by WhatsApp) to collection of quantitative (by online questionnaire) and qualitative data (by Zoom focus group interviews).

We first conducted a cross-sectional online questionnaire survey on the psychological impact of COVID-19 on university students. A link was first disseminated through WhatsApp to university students studying in Hong Kong or overseas. These students were encouraged to forward the survey link to their friends. The inclusion criteria were current students aged 18 years or older. In this present paper, additional inclusion criteria were Chinese international students from Hong Kong and studying in UK universities. Secondly, for the recruitment of focus group interviews, we encouraged students who completed the survey to provide their phone numbers for further contact. We then invited those students who provided their contact number to join the online focus group interviews via WhatsApp messages and calls. We used Zoom, a cloud-based video conferencing service for the interviews. An interview link was sent to each participant via WhatsApp.

Informed consent was obtained before answering. The survey was conducted from 28 April through 12 May 2020. Participation in the survey and interviews was voluntary with informed consent. Ethics approval for the study was granted by the Institutional Review Board of The University of Hong Kong / Hospital Authority Hong Kong West Cluster (reference number: UW20-298). The study was registered with the National Institutes of Health (identifier number: NCT04365361).

Recruitment procedures

The online questionnaire was distributed via an anonymous link with an exponential, non-discriminative snowball sampling strategy (23). Details of recruitment have been reported (24). Briefly, a self-administered, anonymous questionnaire was used to collect students' information of demographic characteristics and experiences in the UK (the country of study) during 1 January to 31 March 2020 (the initial stage of the pandemic). As of 31 March 2020, UK had around 3000 confirmed COVID-19 cases, while Hong Kong had 68 cases (in which 17 were imported from other countries) (6, 7).

Four one-hour online focus group interviews were conducted with students who completed the survey and agreed to join the interviews on 3 May, 8 May (2 sessions) and 12 May 2020, moderated by the lead researcher (AYKL), a university academic, behavioral scientist and registered nurse with a doctoral degree and 25 years of clinical nursing, teaching and research experience. All qualitative interviews were tape-recorded and transcribed verbatim. Questions were structured chronologically to aid recall, and were phrased to provide scope for additional areas to emerge. The questions focused on students' experiences in the UK in relation to COVID-19, particularly with facemask wearing, and their stress and related stressors.

Measurements

Academic programme characteristics

Respondents were asked to indicate whether (i) they were studying full-time or part-time, (ii) they were final year students, (iii) their academic programme included a practicum placement component, and (iv) their programme was medical or health-related.

Perceived public attitudes and personal belief and practice in relation to facemask wearing

Respondents were asked three questions regarding facemask wearing as a preventive measure against COVID-19. The first question was on their perception regarding the public's attitudes: "What was the public's attitude toward wearing facemasks as a preventive measure against COVID-19 in the UK?". Responses included two answer options: "viewed as preventive" and "did not view as preventive". The second was on their personal beliefs regarding facemask wearing: "Did you believe that wearing a facemask was an effective preventive measure against COVID-19 in the UK?". Answer options were: "yes" and "no". The third was on their practice of facemask wearing in public: "How often did you wear a facemask as a preventive measure against COVID-19 when going out in public in the UK?". Responses were made on a five-point Likert scale: "1 = almost never or never", "2 = less than half of the time", "3 = around half of the time", "4 = more than half of the time", and "5 = almost always or always".

Stress in relation to facemask wearing and facemask-related stressors

Respondents were asked to recall the situation in their country of study from 1 January 2020 until 31 March 2020. Two questions asked about their feelings of stress from (i) wearing facemasks in public, "Did you ever feel stressed because you were wearing a facemask as a preventive measure against COVID-19?", and (ii) not wearing facemasks in public, "Did you ever feel stressed because you were not wearing a facemask when you went out in public?". Answer options were: "Yes" and "No".

Another question was asked regarding stressors in relation to wearing facemasks (facemask-related stressors), "What factors do you believe contributed to your stress in relation to wearing a face mask as a preventive measure against COVID-19 when you were in the UK?". Answer options were: "public prejudiced attitudes against facemask wearing", "social norms against facemask wearing', "difficulties acquiring facemasks" and "high cost of facemasks". Respondents could choose more than one answer option.

Statistical analysis

All statistical analyses were performed with SPSS for Windows (version 23.0). Chi-squared test was used to examine the differences in demographics and other variables between students who joined the focus group interviews and those who did not join. All tests were two-sided, with $P < .05$ indicating statistical significance.

Logistic regression was used to examine (i) the differences in perceived public attitudes toward facemask wearing as a preventive measure against COVID-19, (ii) personal belief and practice in relation to facemask wearing; (iii) facemask-related stressors (social norms, prejudiced attitudes, difficulties acquiring facemasks and high cost of facemasks) between males and females, adjusted for potential confounders. The potential confounders included age group (18 to 25 years versus 25 years or older), education programme level (undergraduate versus postgraduate), programme with practicum component (yes versus no), programme year (final year versus non-final year), and field of study (medical or health-related versus others).

The interviews were audio-recorded and transcribed verbatim. The transcripts were analysed by content analysis following the guidelines recommended by Morse and Field (25). Two researchers (AL and TL) independently reviewed the interview materials, including transcripts and recordings, summarized, and

extracted meaningful statements. Field notes were reviewed during the analysis process. Conflicting opinions on the contents of a theme were discussed and resolved by a research group composed of three registered nurses (two with a degree of Master of Nursing and one with a Doctoral of Nursing). Member checking, a respondent validation, was conducted by asking participants to review the transcripts from interviews they participated in and give feedback about emerging interpretations to ensure good representations of their realities, which helps to enhance the credibility of results. The software NVivo 11.0 (QSR International; Melbourne, VIC, Australia) was used to assist qualitative data administration, including creating codes, organizing, and summarizing data, searching for interrelationships between codes, and suggesting themes. We used a mixed-methods triangulation design to corroborate the findings of qualitative and quantitative data (26).

RESULTS

Recruitment

545 respondents accessed the online survey from 28 April through 12 May 2020. All were university students. Four respondents refused to join. 541 respondents accessed the link and agree to join the online survey. 107 respondents who did not provide full data and were treated as missing values. Ten respondents were part-time students, and 61 did not normally reside in Hong Kong. 272 of the remaining were not studying in the UK and one respondent was not Chinese. These respondents did not meet the inclusion criteria for this analysis and were excluded. The current analysis included 91 respondents, who were full-time Chinese students from Hong Kong studying in the UK who completed the online survey. Sixteen of them joined the focus group interviews.

Participants

Table 1 shows the 91 students (38.5% male and 93.4% aged 18 to 25 years) included in the study. 87.9% and 35.2% of them were undergraduates and in their final year, respectively. 58.2% were studying programmes with a practicum component and 58.2% were studying a medical or health-related field. 25 of these students provided their phone number. All were contacted by WhatsApp and invited to join the focus group interviews. Nine students refused to join. Sixteen students (37.5% male and all aged 18 to 25 years) joined the interviews. 68.8% were undergraduates and 37.5% were in their final year. 37.5% were studying programmes with a practicum component, and 50% were pursuing a medical or health-related field. Greater proportion of students studying postgraduate programme joined the interviews than those who did not (31.3% versus 8.0%, *P*=.01).

Table 1. Characteristics of international students studying in the UK who returned home to Hong Kong (returnees) and those who stayed in the UK (stayers).

	All n=91 n(%)	Did join focus group n = 75 n (%)	Joined focus group n = 16 n (%)	*P* value
Sex				
Males	35 (38.5)	39 (38.7)	6 (37.5)	
Females	56 (61.5)	46 (61.3)	16 (62.5)	0.93
Age group				
18 to 25 years	85 (93.4)	69 (92.0)	16 (100)	
25 years or older	6 (6.6)	6 (8.0)	0 (0)	0.59
Education programme level				
Undergraduate	80 (87.9)	69 (92.0)	11 (68.8)	
Postgraduate	11 (12.1)	6 (8.0)	5 (31.3)	0.01*
Programme year				
Non-final year	59 (64.8)	49 (65.3)	10 (62.5)	
Final year	32 (35.2)	26 (34.7)	6 (37.5)	0.46
Programme with practicum component				
No	38 (41.8)	28 (37.3)	10 (62.5)	
Yes	53 (58.2)	47 (62.7)	6 (37.5)	0.06
Field of study				
Non-medical or health-related	38 (41.8)	30 (40.0)	8 (50.0)	
Medical or health-related	53 (58.2)	45 (60.0)	8 (50.0)	0.32

Chi-square test was performed, *$P < 0{\cdot}05$

Perceived public attitudes and personal beliefs and practice in relation to facemask wearing

Table 2 shows that 92.3% of the students reported that the public did not view facemask wearing as a preventive measure against COVID-19. Nearly all (98.9%) believed facemask wearing was an effective preventive measure against COVID-19, but only 56% wore a facemask more than half of the time when out in public. No significant difference in the above was found between males and females.

Table 2. Perceived public attitudes, and personal belief and practice in relation to facemask wearing as a preventive measure against COVID-19 in the UK.

	All n = 91 n (%)	**Males n = 35 n (%)**	**Females n = 56 n (%)**	**Relative risk Estimate (95%CI)**	***P* value** [a]
Perceived public attitudes toward wearing facemasks as a preventive measure					
Viewed as preventive	7 (7.7)	4 (11.4)	3 (5.4)		
Did not view as preventive	84 (92.3)	31 (88.6)	53 (94.6)	1.07 (0.93,1.22)	0.30
Personal belief toward wearing a facemask was an effective preventive measure					
No	1 (0.1)	1 (2.9)	0 (0.0)		
Yes	90 (98.9)	34 (97.1)	56 (100)	1.03 (0.97, 1.09)	1.00
Personal practice of wearing a facemask when go out in public in the UK					
Less than half of the time	40 (44.0)	19 (54.3)	32 (57.1)		
More than half of the time	51 (56.0)	16 (45.7)	24 (42.9)	0.94 (0.59, 1.50)	0.81

[a] Logistic regression with adjustment of age group, education programme level, programme year, practicum component and field of study

In the focus group interviews, students reported great differences in public attitudes toward facemask wearing as a preventive measure between the UK and HK. They expressed worries and fears on such differences in public attitudes. They reported internal conflicts between what they knew (facemask wearing is an effective preventive measure) and what they were expected to do (not wear facemasks in public and in hospitals). They also reported frustration when they were trying to persuade local students (their schoolmates) to wear facemasks.

Some of their words are quoted below:

> "I wasn't allowed to wear a mask in the hospital for my placement… they thought it would create panic and fear. I really think their views on facemask wearing is very different than our views. I didn't think it was reasonable, but I needed to follow the instructions from my supervisors." (Female, aged 22 years, an undergraduate student studying a medical and health-related programme)

> "My friends didn't care about wearing facemasks, it was like normal life for them. When I explained that facemasks can stop you from spreading to other people, they said sick people should

just stay home… I told them this would only happen in an ideal world and that's why facemasks are important. They said they weren't scared of the virus and it wasn't a matter of concern. Finally, I gave up trying to persuade them." (Male, aged 21 years, an undergraduate student studying a non-medical and health-related programme)

"I had to explain to my teachers why I was worried, especially with my experience from SARS… my teachers thought we were overreacting when we wore facemasks in class… I offered masks to my UK friends, but they said they didn't need them. I felt like no one took it seriously." (Female, aged 21 years, an undergraduate student studying a medical and health-related programme)

"The government repeatedly told us not to wear facemasks and not to worry… made me scared since I know wearing one is an effective preventive method." (Female, aged 21 years, an undergraduate student studying a medical and health-related programme)

Stress in relation to facemask wearing, facemask-related stressors and coping methods

Table 3 shows that 68.1% of the students reported feeling stressed when they wore facemasks out in public, with no difference between males and females. Regarding not wearing facemasks out in public, 62.6% felt stressed, significantly more females than males [(76.8% versus 40.0%, *P*=0.002, Relative Risk (RR), 95% confidence interval (C.I.): 1.92 (1.25, 2.95)]. 50.5% felt stressed both when wearing and not wearing facemasks out in public, significantly more females than males [76.8% versus 40.0%, *P*=0.004, RR (95% CI): 1.99 (1.17, 3.38)].

61.5% and 56% of students reported prejudiced attitudes and social norms against facemask wearing that contributed to their stress when they were in the UK, respectively. More females reported such prejudiced attitudes (71.4% versus 45.7%, *P*=0.02, RR (95% CI): 1.56 (1.05, 2.32)] than males.

Table 3. Stress in relation to facemask wearing and facemask-related stressors in the total student sample and subgroups.

	All n = 91 n (%)	**Males n = 35** n (%)	**Females n = 56** n (%)	**Relative risk Estimate (95%CI)**	***P* value** [a]
Stress in relation to facemask wearing as a preventive measure against COVID-19					
Felt stressed when wearing a facemask in public					
No	29 (31.9)	15 (42.9)	14 (25.0)		
Yes	62 (68.1)	20 (57.1)	42 (75.0)	1.31 (0.95, 1.81)	0.11
Felt stressed when not wearing a facemask in public					
No	34 (37.4)	**21 (60.0)**	**13 (23.2)**		
Yes	57 (62.6)	**14 (40.0)**	**43 (76.8)**	1.92 (1.25, 2.95)	**0.002****
Felt stressed both when wearing and not wearing a facemask in public					
No	45 (49.5)	**24 (68.6)**	**21 (37.5)**		
Yes	46 (50.5)	**11 (31.4)**	**35 (62.5)**	1.99 (1.17, 3.38)	**0.004****
Facemask-related stressors					
Prejudiced attitude					
No	35 (38.5)	**19 (54.3)**	**16 (28.6)**		
Yes	56 (61.5)	**16 (45.7)**	**40 (71.4)**	1.56 (1.05, 2.32)	**0.02***
Social norm					
No	40 (44.0)	20 (57.1)	20 (35.7)		
Yes	51 (56.0)	15 (42.9)	36 (64.3)	1.50 (0.98, 2.30)	0.064
Difficulties acquiring facemasks					
No	61 (67.0)	27 (77.1)	34 (60.7)		
Yes	30 (33.0)	8 (22.9)	22 (39.3)	1.72 (0.86, 3.43)	0.07
High costs of facemasks					
No	75 (82.4)	31 (88.6)	44 (78.6)		
Yes	16 (17.6)	4 (11.4)	12 (21.4)	1.88 (0.66, 5.36)	0.22

[a] Logistic regression with adjustment of age group, education programme level, programme year, practicum component and field of study, **P* <0.05

In the focus group interviews, students reported that they felt stressed and embarrassed when wearing facemasks and perceived to be stigmatized by others and experienced prejudice. Some of their words are quoted below.

> "No one really wore masks where I lived, but fortunately I never saw people purposely looking at me, unlike in London where violent attacks have happened… even though I felt relatively safe to wear a mask, I felt embarrassed to do so." (Male, aged 20 years, an undergraduate student studying a non-medical and health-related programme)

> "A few guys saw me and my friends wearing masks and purposely walked over and coughed to our faces… same thing happened with another man who started coughing really hard when he saw us walk near him to get a cab." (Female, aged 21 years, an undergraduate student studying a non-medical and health-related programme)

> "In February, while my friends and I were walking down the street wearing facemasks, someone yelled "coronavirus!" from across the street, labelling us as the virus." (Female, aged 21 years, an undergraduate student studying a medical and health-related programme)

> "While going into a restaurant for dinner, someone at the door asked where I was from… when I replied Hong Kong, they immediately said, 'So do I need to wear a mask?' and proceeded to cover their nose and mouth with their hand." (Male, aged 21 years, an undergraduate student studying a non-medical and health-related programme)

However, students also reported some positive experiences and were aware of the importance of peer and family support. Positive thinking and being adaptable were reported as effective methods of stress management.

> "I went to a number of pharmacy stores, but no facemasks were available. I tried to make online orders, but all were also out of stock… Finally, my mother sent boxes to me by express mail." (Female, aged 21 years, an undergraduate student studying medical and health-related programme)

> "One of my classmates shared some facemasks with me… and I shared my disinfectants with her." (Male, aged 20 years, an undergraduate student studying a non-medical and health-related programme)

> "I wore a facemask to protect myself when I was in the subway… but took it off and kept it in an envelope when I worked in the hospital... because I didn't want to appear against the suggestions (instructions) from my supervisor … I put it (the facemask) on again when I was off duty." (Female, aged 21 years, an undergraduate student studying medical and health-related programme)

> "I'm proud of myself for being resourceful… when I couldn't buy any face masks, I used my scarf and turned it into a face covering." (Female, aged 21 years, an undergraduate student studying a non-medical and health-related programme)

> "I experienced some negative incidents (being yelled at when I wore a facemask in the supermarket) … had negative thoughts… but I'm not going to dwell on them. Life must go on. I tried to shift my thinking to be more positive." (Male, aged 21 years, an undergraduate student studying a non-medical and health-related programme)

DISCUSSION

This is the first report on stress associated with facemask wearing during COVID-19 among international students studying abroad. More than 90% of students from Hong Kong reported studying in the UK that the public in the UK did not view facemask wearing as a preventive measure against COVID-19 during the early stage of the pandemic. Contrasting public attitudes and personal beliefs might explain the stress from facemask wearing. More females reported perceived prejudiced attitudes or behaviours of others resulting in their stress in relation to facemask wearing. Half of the students were stressed about both wearing facemasks and not wearing facemasks in public. Peer and family support, positive thinking and being adaptable were important for stress management. Besides, the information communication technologies were fully utilized

during study promotion and recruitment (by WhatsApp) as well as quantitative (by online questionnaire) and qualitative data collection Zoom focus group interviews).

Hong Kong has had previous experiences from the severe acute respiratory syndrome (SARS) outbreak in 2003. In many Asian cities and countries including Hong Kong which was among the first region with 100% voluntary mass masking, facemask wearing has become rapidly ubiquitous and is perceived as a civic responsibility and symbol of social solidarity in response to the pandemic (3, 10). This might explain the positive beliefs and practice of HK international students regarding facemask wearing. Current evidence suggests that mass masking in the community can reduce the extent of transmission and act as a form of source control (9, 27). However, UK people do not have a culture or history of facemask wearing. Moreover, in the early stage of the COVID-19 pandemic when our survey was conducted, facemask wearing had been controversial with conflicting guidelines from different agencies and organizations (3, 27, 28). These inconsistencies exacerbated noncompliance and rejection of facemasks, mostly in Western countries, as an essential tool against the pandemic. The sight of facemasks has become a catalyst for panic and violent attacks on Asians in many Western cities, where facemask wearing was less common and perceived as only worn by sick individuals (2, 3). A poll conducted in April 2020 also found that only 19% of the UK public were wearing facemasks (29). These might explain why most Hong Kong students felt stressed about wearing facemasks and thousands had left the UK and returned home where all were wearing mask in public and the outbreak was under better control.

Significantly more female students reported stress related to facemask wearing and being prejudiced against. This is consistent with studies showing higher posttraumatic stress symptoms related to the pandemic (30) and increased vulnerability from exposure to persistent stress in females (31). With xenophobic and racist behaviours often rooted in fear, ignorance and a lack of awareness, and fueled by misinformation (1, 32, 33), schools and governments have the responsibility to communicate accurately and effectively with students and the public to mitigate these problems and negative consequences, especially from facemask wearing.

Fear and stress from xenophobic attacks compounded with physical threats of the pandemic can severely impact the mental well-being of university students, who are in a transitional phase with additional stressors from adapting to new stimuli, environments and challenges (34). International students have to cope with further challenges, including adjusting to the host country’s culture and norms and being away from home and central support systems such as family and friends. With more students set to gradually return to their respective schools of study, our findings have significant implications on the proactive roles that academic institutions and mental health professionals need to take to provide additional support for international students.

Positive thinking and resilience were identified as important coping methods associated with less severe mental health impacts. Similar findings were reported in our sister paper (22). Online mindfulness-based intervention and/or mental health programme may help enhancing students’ resilience (35).

Our study had a few limitations. Firstly, because validated questionnaires were not available for measuring stress from specific stressors, we developed our own outcome-based questionnaire to assess

beliefs, attitudes, and practice related to facemask wearing. The quantitative findings were corroborated by the qualitative findings from focus group interviews. Secondly, all the respondents were Chinese students from Hong Kong, and the sample size was small. Our results might not be generalizable to all Chinese international students in the UK and from other countries. Further studies, especially multi-country studies on international students using standardized methods are needed. Thirdly, we asked respondents to recall their experiences from January to March 2020, which might be subject to recall errors. Fourthly, the snowball sampling was an effective and efficient strategy to recruit respondents and collect valuable data at the height of the pandemic, but could have led to sampling bias from respondents forwarding the survey to peers with similar traits and characteristics (23). Lastly, the proportions of students who answered the online survey was higher in females than males. It might be because females are more likely to engage in online activity characterized by communication and exchanging of information whereas males are more likely to engage in online activity characterized by information-seeking (36). Online survey response behaviour is a process of online information-exchange and online information-seeking (37). In addition, female college students responding at much higher rates than male students is a common phenomenon (38).

CONCLUSIONS

To conclude, most Hong Kong international students studying in the UK perceived to be stigmatized and experienced prejudice. Prejudiced attitudes and behaviours from others, and differences in public attitudes toward facemask wearing resulted in much stress in students' stress. Clear and accurate public health messaging regarding facemask wearing is needed to change public attitudes and mitigate prejudice. Owing to the ongoing pandemic and rising xenophobia, specifically Sinophobia, academic institutions and public health professionals need to take initiative in reaching out and providing urgently address the needs of international students and provide culturally sensitive support to them in managing their ongoing stress and enhance their mental wellbeing.

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