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Learning about COVID-19 across borders: public health information and adherence among international travellers to the UK

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ABSTRACT

Objective: Public health control measures at borders have long been central to national strategies for the prevention and containment of infectious diseases. Travel was inevitably associated with the rapid global transmission of COVID-19. In the UK, public health authorities tried to reduce the risks of travel-associated spread by providing public health information at ports of entry. This study investigates risk assessment processes, decision-making and adherence to official advice among international travellers, to provide evidence for future policy on the provision of public health information to facilitate safer international travel.

Study design: This study is a qualitative study evaluation.

Method: International air passengers arriving at the London Heathrow Airport on scheduled flights from China and Singapore were approached for interview after consenting to contact in completed surveys. Semi-structured interviews were conducted by telephone, using two topic guides to explore views of official public health information and self-isolation. Interview transcripts were coded and analysed thematically.

Results: Participants regarded official advice from Public Health England as adequate at the time, despite observing differences with intervention measures implemented in their countries of departure. Most participants also described adopting precautionary measures, including self-isolation and the use of face coverings that went beyond official advice, but reported adherence to guidance on contacting health authorities was more variable. Adherence to the official guidance was informed by the perceived salience of specific transmission possibilities and containment measures assessed in relation to participants' local social and institutional environments.

Conclusion: Analysis of study findings demonstrates that international air travellers' responses to public health advice constitute a proactive process of risk assessment and rationalised decision-making to guide preventive action. This process incorporates consideration of the current living situation, trust in information sources, correspondence with cultural logics and willingness to accept potential risk to self and significant others. Our findings concerning international passengers' understanding of, and compliance with, official advice and mitigation measures provide valuable evidence to inform future policy and generate recommendations on the presentation of public health information to facilitate safer international travel. Access to a central source of regularly updated official information would help minimise confusion between different national guidelines. Greater attention to the differentiated

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information needs of diverse groups in creating future public-facing guidance would help to minimise the uncertainties generated by the receipt of generic information.

Introduction

The significant transmission risks associated with travel mean that public health disease control measures at borders have long been central to national strategies for the prevention and containment of infectious diseases. COVID-19 has surged across successive countries and continents since early 2020,[1] despite various cross-border travel restrictions. The socio-economic impact of COVID-19 may be causing the largest global recession in history,[2] with decades of progress and development at risk.[3]

Although interventions such as mass vaccination may ultimately succeed in containing COVID-19, behavioural measures based on public health guidance remain vital, particularly while national health systems remain under pressure and new variants with increased transmissibility constitute threats to effective vaccination.[4,5] Knowledge and information can support the public to adopt measures that will mitigate or prevent transmission and these behavioural non-pharmaceutical interventions remain key to controlling the spread of COVID-19.

As the first cases of COVID-19 were reported, public health authorities in the UK took action to reduce the risk of travel-associated spread by monitoring travel and providing public health advice at ports of entry. On 25 January 2020, Public Health England (PHE) activated the Airport Public Health Monitoring Operations Centre to monitor all direct flights from China to the London Heathrow Airport (LHR) and subsequently all international direct flights to London (Heathrow and Gatwick) and Manchester. Measures directed at passengers travelling from affected countries to England included (see Supplementary material online):

- a broadcast message to passengers made on incoming aircraft, to encourage travellers to report relevant symptoms,
- posters containing COVID-19 related public health advice displayed at arrival terminals and
- leaflets containing the same advice distributed to passengers by airlines on board flights and/or made available on arrival.

These measures remained in place until extensive travel restrictions were implemented on 23rd March as part of a national lockdown, with UK residents prohibited from travelling abroad unless they had a permitted reason to do so, while returning travellers were required to quarantine for 14 days.

As vaccination programmes progress and lockdown measures in certain countries are eased, international travel has again become a pressing concern. Amid discussion of vaccine passports and pressure from the travel industry and national economies dependent on tourism to ease restrictions, passengers are left to navigate differing rules, guidance and social norms between countries. International passengers' views on, and compliance with, official advice and mitigation measures can provide valuable evidence to inform policy. Our previous evaluation of official COVID-19 guidance for international travellers reported on the impact and effectiveness of these communication materials in the early stage of the pandemic.[6] Drawing on qualitative data collected prior to the implementation of travel restrictions, this paper considers risk assessment, decision-making and adherence practices among air travellers arriving in the UK. Our findings provide wider insights into the interactions between official advice and individual behaviour and indicate possible improvements in the presentation of public health information to facilitate safer international travel.

Methods

A mixed-methods study was conducted to evaluate the public health information provided to international travellers arriving in the UK. Passengers aged 18 years and over from any nationality, arriving at LHR on three scheduled flights from China and Singapore in March 2020 were recruited for a cross-sectional survey and semi-structured interviews regarding their experience and understanding of the official guidance they received, as well as their subsequent actions. A total of 121 passengers consented and completed the survey (results reported separately).[6] Of the respondents, 15 indicated a willingness to take part in the follow-up interviews, by recording their contact details on the questionnaire and consenting to participate when contacted on arrival, and subsequently participated in semi-structured interviews.

One-to-one semi-structured telephone interviews were conducted in April 2020 in either English or Mandarin, according to participant preference. All interviews were audio-recorded with consent. Two topic guides were used; one which explored participants' experience and views regarding COVID-19 information they had received during travel was used with all participants, and the second was used to elicit details of experiences relating to self-isolation if a participant reported having self-isolated due either to potential exposure or to having developed COVID-19 symptoms.

Key information was summarised by researchers in field notes either during or immediately after the completion of each interview. Prior to data analysis, interviews in English were transcribed verbatim and those in Mandarin were transcribed directly into English.

Data analysis

Interview transcripts were initially coded independently (by TZ, SC, CS and WR) using open coding, followed by collaborative development of an initial coding framework that was then used to index each transcript in NVivo 12 Pro. Codes that represented similar concepts were assembled into conceptual categories and themes. Common categories emerging across the transcripts indicated that all themes reached saturation.

Results

Participants ranged from 20 to 80 years of age; five were male and ten were female. Ten were permanent residents in the UK while five were visitors or temporary residents. Six participants were retired; five worked full-time, three were full-time students and one was unemployed (Table 1). Most participants were British; all three Chinese participants spoke Mandarin and English and had read the official PHE guidance in both languages, while other participants only knew English and accordingly, only read the English version. One participant reported symptoms of COVID-19 after arrival.

Table 1
Demographic background of participants in follow-up interviews, arriving at the London Heathrow airport from COVID-19 affected countries in March 2020.

Participant No.	Age	Gender	Language
P01	50–59	Male	English
P02	60–69	Male	English
P03	60–69	Female	English
P04	20–29	Male	English, Chinese
P05	70–79	Male	English
P06	30–39	Female	English
P07	20–29	Female	English
P08	60–69	Female	English
P09	70–79	Female	English
P10	70–79	Male	English
P11	60–69	Female	English
P12	70–79	Female	English
P13	70–79	Female	English
P14	20–29	Female	English, Chinese
P15	40–49	Female	English, Chinese

Summarised from qualitative research data.

Perceptions of public health measures

Fourteen participants recalled obtaining the official information from PHE on COVID-19 (leaflets and/or posters) in flight or at the airport, while one participant reported only receiving local information at the port of departure. Most participants stated that they considered the UK official guidance to be adequate. However, they also reported finding the situation on disembarkation dramatically different from their experience at their departure airport; extensive public health border control measures were implemented in most Asian countries within weeks of the first reports of COVID-19. In Singapore, inbound flights from Wuhan were cancelled from 23rd January and all passengers returning from mainland China were required to quarantine or self-isolate from 19th February onwards. In China, exit and entry health supervision was implemented on 25th February 2020, including body temperature monitoring, health check, epidemiological history survey and medical sample monitoring.

> "At China's airport… you need to fill in a Health Declaration Card… they will check your temperature; all the [airport] staff were fully equipped with PPE… [in the UK] only when I went through the customs that I saw the hand sanitiser there. They [airport staff] didn't wear face masks…So, in China, the official advice is wearing face masks and washing hands as often as possible. In the UK, as no one was wearing a face mask, it gave you the impression that things were not bad here." (P1, young female travelling from China)

Although posters and leaflet stands giving COVID-19 information had been set up at LHR, 12 participants had no recollection of seeing such posters or leaflets at all. Direct observation by our research team verified that these were unobtrusive and their visibility was very limited due to the print size, colour and positioning.[6] Only two participants recalled seeing hand sanitisers placed at the airport. Participants emphasised the amount of information and measures being reported in the media or displayed at the airport in their departure country, as well as the protection measures that were applied on board their flight, in contrast with the situation at the arrival airport. A British participant also expressed frustration and concern that airport staff at the disembarkation point did not provide detailed instructions regarding the COVID-19 situation in the UK and possible protection measures.

Most participants expressed uncertainty about the COVID-19 situation in the UK, having seen little evidence of interventions to actively contain travel-associated transmission on arrival. An airport without visible containment measures was considered to signal good containment of the virus in the UK; participants also described their desire for reassurance in the absence of detailed instructions and protection measures.

> "At Heathrow, it was like nothing was wrong in the UK, so I think that causes a false sense of security, maybe if there was more of a presence, like information, temperature check, personnel etc, people might take it more seriously. I think a lot of people probably didn't take it seriously at the time." (P2, older male, Singapore)[1]

> "They could have had thermal imaging cameras, they could have had medical staff in protective clothing there to talk to people whose temperature came up as above the norm, they could have then asked people in those conditions, if they met those conditions to isolate them." (P3, older female, Singapore)

> "When we came back through in March the taxi driver said that there hadn't really been too many more cases. So, at the time, how silly, it didn't seem to be as serious as we all now know it is." (P4, older male, Singapore)

All participants were eager to acquire information regarding the pandemic and official advice about how to protect themselves and their families. Participants reported proactively searching for advice and information in traditional and social media to understand the changing situation at ports of departure and arrival, evaluate potential risks and identify measures they should take for international travel.

> "We'd kind of already sort of lived with it, listened to it out there probably all through February [on the television], we were a bit ahead of the game if you like in terms of that we'd already seen it." (P5, older female, Singapore)

> "I think we found out enough ourselves and heard enough and talked about it between ourselves and came to the decisions that we did, so yeah, so I don't really think that there could have been any more advice at that time that would have made any difference because as I say that advice if you like that was coming out later on we were already doing because of being where we'd been I suppose." (P3, older female, Singapore)

Based on their experience in the country of departure, some participants also pointed out that following official advice was voluntary in the UK and noted that, 'advice and rules imposed by the British government are already very loose'. Participants also stated awareness of the vacuum of scientific knowledge and detailed guidance at this early stage of the pandemic, which provided a space for interpretation of official advice regarding actions people should take.

> "Even if you self-isolate I think nobody quite realised how contagious this virus is, so when it means self-isolate it means self-isolate, it means don't touch anyone, you know, wear a mask. I think at the time little was really known about the virus. If you're going to redesign the leaflet again it might not only say to self-isolate but wear a mask, do not come into contact with each other, self-isolate but also practice social distancing as well to make sure that you do not give the virus to anybody else." (P6, older male, Singapore)

[1] In this and subsequent quotes, placename denotes the flight origin, not nationality, of the quoted passenger.

"It was difficult because we'd had no idea what was going on anyway, because at that point it definitely felt a bit over the top, we didn't know how many cases were in the UK and you don't know if you've actually contracted it or not. I do know people that have come back from Italy, I think the advice then was you need to isolate yourself for a week but they just kind of took it as oh well I'll stay in my house, but I'll still be around my housemates and my family and stuff like that, so I think they need to actually take it seriously and just get used to not doing anything, being ok with not doing anything." (P7, older male, Singapore)

"I can't think why you would not follow the official advice, at the time the number of people who had died from Coronavirus was rising and the numbers were unclear, but they were talking about one to two percent of the people who got infected may die." (P8, younger male, China)

Precautionary measures

Although participants described the official advice as adequate, based on their experience of public health responses to outbreaks in Asia, some participants took actions beyond those recommended in official advice to reduce the risk of infection and transmission. On arrival, some participants voluntarily self-isolated or tried to maintain social distance by skipping social activities and gatherings (not required under PHE guidelines). Participants expressed their concerns over the seemingly 'business as usual' situation in the UK, which contradicted their experiences in areas with established outbreaks, and chose to take extra precautions such as staying indoors, socially distancing, wearing masks and monitoring their body temperatures daily, despite not being symptomatic.

"We sort of self-isolated anyway when we came back. Nobody told us to do it. Because of the precautions we had taken and because we hadn't really hardly been with anybody; the chances of us giving others anything were miniscule." (P5, older female, Singapore)

"I felt scared when I came back here. Because everyone in China took it seriously, but no one took it seriously here in the UK. When I go out, I wear a face mask, a pair of goggles and a pair of disposable gloves. I cover myself tight." (P1, younger female, China)

Several participants also mentioned their reasons for these precautionary behaviours as being in part related to the potential stigma associated with the possibility of being seen as 'contagious' due to being travellers who had just returned from epidemic hotspots. They expressed willingness to adopt these measures voluntarily to avoid such stigma and to protect their family and friends.

"We wouldn't have put anybody at risk if we really thought that were was a chance, but we just didn't want it on us. We knew the chances were absolutely miniscule, but we took the decision that we wouldn't see anybody, so that was family and friends, for over a week after we got back." (P5, older female, Singapore)

"There was a kind of stigma with Singapore and South Korea and a few other Southeast Asian countries. We wanted to make everybody aware that if they did get something it possibly wouldn't have come from us because we'd been self-isolating." (P9, older female, Singapore)

Study participants were asked whether they knew what they should do if they had developed symptoms or visited pandemic hotspots and whether they were familiar with the NHS 111 service. All participants mentioned difficulties accessing the service, while those who were visitors or temporary residents in the UK were more concerned about the vagueness of advice itself and uncertain whether formal support was available for non-citizens.

"I think they [official advice] were only saying like contact 111 basically if your symptoms get worse but obviously, they're inundated, but certainly had we got symptoms on those first few days after we got back then that's what we would have done because as I say at that time it was still quite a new thing here." (P5, older female, Singapore)

"Someone told me it [NHS 111] is constantly engaged. I would have hoped to know how to contact the NHS effectively in the case that I was infected. Maybe I could have been given a few more telephone numbers? This kind of information enabling me to have access to medical treatment would have given me a sense of security." (P8, younger male, China)

Alongside calling NHS 111, British participants noted that they had additional options such as contacting their GP or seeking support from their local communities. They considered it easy to access any help they might need to follow the official advice, such as support from their local authority or community organisations and were appreciative of this. However, interviewees who were visitors or temporary residents (such as foreign citizens travelling on business or studying in the UK) reported relying on personal or social networks, social media and employers, as well as NHS 999 in case of emergency, and stated that they had limited contact with and support from local authorities and communities.

"We're luckier than most and if I want to go down and take a walk, I sort of can. I think if somebody is locked up in a one-bedroom flat in London it will be horrible." (P4, older male, Singapore)

"I think providing they have sufficient support in their communities there is no reason at all why anybody should not self-isolate." (P9, older female, Singapore)

"I don't think so [received any official support]. But the school sent us emails. It offered a backup option. If we encountered any problem, we could contact the school in the case of need. The school made us feel that they are quite protective." (P10, older female, Singapore)

Participants also differed in their views of which official guidelines they should follow, especially regarding the use of face coverings. Some were concerned that airport staff did not wear face coverings and attributed this to cultural and policy differences from their departure countries. Having already adopted face coverings as a daily health protection measure, they argued that wearing masks should be included in official UK guidance:

"The quarantine officer [at Heathrow airport] told me: don't worry, it is ok, don't be nervous; it is no use to wear a face mask. Social distancing was not taken at that time. I felt there would be loopholes and hidden risk. The outbreak has worsened in the UK, I think it has something to do with the measures taken then. [The UK] Airports were free zones at that time, hidden risk reveals itself when you entirely depend on voluntary [adherence]." (P8, younger male, China)

Conversely, some participants noted that they did not believe in the value of face coverings, due to official announcements from New Zealand and Singapore on the lack of evidence for their effectiveness. Others shared an ambivalent 'wait-and-see' attitude towards face coverings.

"We've seen [on the TV] about the mask doing more harm than good so we had to keep saying no, we're not going to get one because it's going to do more harm than good." (P5, older female, Singapore)

"There wasn't any clear evidence to say an ordinary mask would prevent you picking up germs and if you did pick up a germ it would multiply inside the mask. So even though we had masks in our bags, but we decided we'd use the hand gel, but we didn't want to wear the masks." (P11, older female, Singapore)

"The concern is, are you depriving the NHS of masks, when you're buying them for yourself when there is such a short global supply. So, there's a difficulty and a dilemma in just do I wear a mask. There is also a flipside to wearing masks, if you happen to have the mask and if your mask happens to pick up droplets from somebody else, your mask might become contagious." (P6, older male, Singapore)

Discussion

Clear and actionable official information can help to shape the public's understanding of COVID-19 and promote adherence to official advice.[6–8] The transnational experiences of international travellers in this study exposed them to multiple versions of official information and interventions to contain transmission that became sources both of valued knowledge and of uncertainty or confusion. This was exacerbated at this early stage of the pandemic by frequent changes in public health guidance and implementation of control measures.[9,10]

This study indicates that early in the pandemic, international travellers arriving in LHR were relatively confident about their knowledge of appropriate behavioural measures and proactively used information acquired from multiple international sources to minimise exposure and transmission risks. In taking additional precautions beyond those recommended by UK authorities at the time, many of the international travellers in our study were not following official PHE guidance, albeit because they were 'ahead of the game'. Arriving from countries that had already instituted robust public health control measures in response to COVID-19, these travellers had acquired knowledge from the places where their travel originated and adopted additional precautionary measures that went beyond local recommendations.

The apparent lack of control measures at arrival ports led many arriving passengers to question the seriousness of the UK government's response to the pandemic. The explicit public health information they received was less comprehensive than, and in some areas contradicted, official responses in countries where their travel originated. One consequence of these cross-national discrepancies was that international travellers had to rely on their own judgement to navigate the salience and appropriateness of differing rules, guidance and social norms across borders.

Participants responded to the need to assimilate and interpret sometimes inconsistent information from multiple sources by 'customising' the available guidance to inform action. Their responses constituted a proactive risk assessment and rationalised decision-making process whereby living situation in the UK, trust in information sources, correspondence with cultural logic and degree of willingness to accept potential risk to self and significant others all contributed to choosing what advice to follow. Some interviewees took actions that were not aligned with PHE guidance at the time but constituted effective precautionary measures. Although study participants repeatedly described their actions while manoeuvring across borders as "common sense", their interpretations of multiple versions of official information and consequent behaviour were context-based and consistent with sociocultural affiliation.

These tailored responses are informed population-level determinants of vulnerability, such as viral prevalence within specific population groups and geographies. Participants with a British background reported relative confidence in following official PHE advice, while visitors or temporary residents reported greater uncertainty and were more likely to maintain transmission-minimising precautions by adopting protective actions such as mask-wearing and non-mandated self-isolation, drawing on knowledge derived from their countries of origin and their own social networks. Younger visitors and temporary residents without pre-existing health issues who lacked knowledge about national health services in particular expressed uncertainty about the guidance to 'call NHS 111' in the event of experiencing symptoms. They also reported lacking connections with local communities and being highly reliant on members of their own networks for support. There were no significant differences in participants' awareness and knowledge about COVID-19 symptoms and self-protection measures,[6] but compared with other travellers, those who were visitors or temporary residents had willingly adopted additional preventive measures that were not required according to the UK official guidance at the time and maintained such caution after arrival. Such measures might have helped to reduce infection and transmission risks; however, as the pandemic continued, longer stay visitors may have faced other adverse impacts due to their limited integration into local structures for practical, social and emotional support, as well as difficulties in accessing health care. These difficulties which heighten potential vulnerability may also apply to resident minority communities in the UK and especially to more recent migrants. Studies have shown higher rates of COVID-19 exposure among minority communities due to socio-economic disparities,[11,12] and individuals from these communities have faced more barriers in adhering to official advice during self-isolation and national lockdowns.[8,13]

Several limitations exist in this study. First, our sample of international travellers was limited due to the rapid changes in travel restrictions and border closures. Also, all interviewees reported having essential business or reasonable needs to travel abroad, so our findings may not be generalisable to those travelling for leisure. However, the study does provide early evidence on responses to public health guidance among international travellers in the uncertain first phase of the pandemic. It provides an opportunity to learn about how people navigate between differing national rules and guidance across borders at the start of an international health emergency. This evidence can inform recommendations for improving information provision and hence individual adherence for public health benefits.

Public health implications

International travellers in this study were conscious of the potential risks associated with travel and keen to mitigate them. The provision of a centralised and regularly updated official national information hub would help to minimise possible confusion between different sources of guidance. Additionally, incorporating into public health guidance an explicit recognition that international travel inevitably entails exposure to public health containment measures, regulations and knowledge sources that differ across national jurisdictions may itself help to reassure travellers.

Our findings suggest that, information consistency, sociocultural norms, perceived risks and benefits and availability of support from both official and unofficial sources all affect adherence to official public health advice. In line with Denford et al. (2021),[8] we found individual adherence to involve a decision-making process to select

the health threats and containment measures that are most salient in the social context and institutional environment within which people are living. Greater attention to the differentiated information requirements of diverse groups of international travellers in the design of future public health guidance – for example, through the provision of tailored information for dual residents, short-stay business and leisure travellers and long-stay migrant workers and students – would help to minimise the uncertainties generated by receipt of generic advice which does not necessarily fit with individual circumstances. These categories of travellers could be anticipated in preparation for future cross-border epidemics and key aspects predesigned to facilitate rapid generation of tailored guidance when needed. Clarification of financial and other support measures available in the destination country for both short- and long-stay travellers would enhance adherence to requirements, such as mandatory self-isolation periods supported by testing, that are not institutionally provided but depend on voluntary action.

Author statements

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Ethical approval

This study was a form of service evaluation; therefore, no ethics committee approval was required. This was confirmed by the PHE Research Ethics and Governance Group.

All participants were informed about the purpose of this study and their participation was voluntary. The participants were told they could withdraw at any time without giving any reasons or if they are facing any consequences. They agreed to the interview being recorded and that any identifiable information would be removed. Consent was obtained from participants to use anonymous quotes to be published. Signed and verbal consent were obtained at the beginning of both the survey and interviews.

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Competing interests

No potential conflict of interest was reported by the authors.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhe.2021.11.015.

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