Abstract

The COVID-19 pandemic drastically affected higher education and higher education students around the world, but few studies of college students' experiences during the COVID-19 pandemic have been conducted in Latin America. This study describes the COVID-19-related experiences and perspectives of Peruvian college students. We surveyed 3,427 full-time college students (average age: 23) attending a multi-campus Peruvian university in fall 2020. Participants were recruited through the digital platform of the learning management system at their university, email, and social media. We asked participants how they were managing risks related to COVID-19, the continuity of social, educational, and work activities, and the psychological and economic impacts of the pandemic on their lives. Since March 2020, 73.0% of participants reported COVID-19-related symptoms, but only 33.9% were tested for COVID-19. During the national quarantine imposed by the Peruvian government (March 15-June 30, 2020), 64.3% of participants remained in their house. Furthermore, while 44.0% of participants were working in February 2020 (95%CI: 41.7%-46.4%), only 23.6% (95%CI 21.7%-25.7%) were working immediately after the pandemic began (i.e., at the end of April 2020). Participants were more stressed about the health and educational implications of COVID-19 for Peruvian society and their families than about themselves. The public health, economic, and educational implications of COVID-19 on college students are continuing to unfold. This study will inform Peruvian and Latin American higher education's continued response to, the COVID-19 pandemic, the progressive return to pre-pandemic activities, as well as other future pandemics and other crises.

Keywords: COVID-19, college students, emerging adults, health behaviors, Peru.

Introduction

The disruptive consequences of the COVID-19 pandemic, induced by infection with a coronavirus known as SARS-CoV-2 (CDC Coronavirus disease 2019 (COVID-19) – symptoms, 2020), have affected almost all sectors of society around the world (Aucejo et al., 2020). Higher education is not an exception. Previous evidence paints a bleak picture for college students (Aucejo et al., 2020; Cohen et al., 2020). The social and economic consequences of the pandemic, in addition to the immediate health consequences, have shaped (often negatively) college students' stress and well-being (Al-Rabiaah et al., 2020; Hoyt et al., 2021), their relationships (Dotson et al., 2022; Zhai & Du, 2020), their long-term educational outcomes (Cornine, 2020), and future job prospects (Wang et al., 2020).

As the COVID-19 pandemic unfolded, researchers studied the experiences and challenges that college students have endured (Cohen et al., 2020, 2021). However, few have studied college students in low- and middle-income countries (LMICs) (Dutta et al., 2020; Iqbal et al., 2022), where the health and economic impact of the pandemic is different compared to college students experiences in wealthier countries. Moreover, the types and depths of support that the government and private educational systems can provide in LMICs are minimal, making local action necessary to improve current and future response.

The COVID-19 pandemic drastically affected higher education in Peru. In-person classes were interrupted by emergency decree No. 026-2020 (Poder ejecutivo del Perú, 2020) in March 2020, when the Peruvian State mandated various exceptional and temporary measures to prevent the spread of the new coronavirus throughout the country. At the same time, many young people (aged 18-29) in Peru experienced loss of income, as their work hours were substantially decreased, or they lost their jobs (International Labour Organization, 2020). Most (52%) young workers (those

ages 18-29) continued to work but saw their hours reduced (from 8.4 to 4.6 hours per day), and 70% of young people lost their jobs (International Labour Organization, 2020). Limited access to employment due to the COVID-19 pandemic can have severe short- and long-term consequences on young people. In addition, to losing employment and financial stability, these economic conditions can affect emotional well-being and optimism for the future.

In this study, we aimed to describe the COVID-19 pandemic related experiences and perspectives of Peruvian college students. We examined how students reacted after the public health measures, engaged in COVID-19-related risk behaviors, continued with their social, educational, and work activities, and coped with the psychological and economic impact of the pandemic on their lives. In particular, we sought to contribute to a literature on college students' pandemic experiences that to date has focused primarily on those in North American, European, and Asian contexts. The fact that the study was conducted in Peru, a low- and middle-income nation in Latin America with structural limits and social, economic, and public health flaws that prevented an adequate response to the pandemic, diversifies the body of knowledge about the COVID-19 pandemic (Jaramillo & Lopez, 2021).

Material and Methods

Participants

We conducted a descriptive study of college students aged 18 to 39 years old, recruited from a large, private Peruvian university between August and December 2020. The university has 11 campuses located in the urban areas of the Peruvian cities of Chimbote, Trujillo, Piura, Sullana, Tumbes, Cañete, Lima, Ayacucho, Huaraz, Pucallpa, and Satipo. These cities are spread throughout Peru; the first seven cities are located on the coast region, the eighth and ninth are located in the mountains region, and the last two are located in the jungle region of Peru. In July 2020, there were 24,282 students enrolled for the fall academic term (which ends in December).

A final sample of 3,427 students was obtained. Overall, this sample was representative of all college students in Peru in terms of age, gender, and socioeconomic position (i.e., mother's educational level, living with your family in your own home), when compared to national data (Instituto Nacional de Estadística e Informática, 2021) (**Table 1**). The digital platform of the learning management system at their university, email, and social media networks (e.g., Facebook) were used to promote the questionnaire to students, explaining the nature and objective of the study, anonymous participation and confidentiality of the data. Students were invited to respond to the study survey using a virtual format questionnaire (SurveyMonkey).

Data collection

College students who wanted to participate voluntarily completed the online questionnaire and confirmed their participation by accepting informed consent. The average time to complete the questionnaire was 30 minutes (range: 20–40 minutes). No financial incentive was offered.

Instrument

We used a questionnaire about experiences and perspectives of COVID-19 (i.e., symptoms, social contact, hygiene, stress level and discrimination) initially created by Cohen et al. (Cohen et al., 2020) for a study of American college students' experiences during the COVID-19 pandemic. The questionnaire was translated into Spanish and validated by a pool of bilingual experts (some of whom were native Spanish speakers and others who were native English speakers, including Authors 1, 2, and 8) (**Supplemental Table 1**). We used the university's learning management system's digital platform to distribute a link to the survey, which was hosted on SurveyMonkey.

Statistical Analysis

We use descriptive statistics (e.g., percentages, means) to summarize the demographic characteristics of the study population and their COVID-19 health experiences (e.g., symptoms and behaviors when symptomatic). We also conducted cross-tabulations to look at how one variable differed by another variable (e.g., social activities for each gathering size). Statistical analyses were conducted using STATA 16 for Windows (STATA Corp, College Station, TX, USA).

Results

1. Description of demographics

Our 3,427 participants had a mean age of 23.0 years (interquartile range (IQR)=11.0) (**Table 1**). The participants were distributed relatively evenly by academic year. Twenty-eight percent of participants were currently employed. Over three-quarters (75.6%) of participants' families had pre-pandemic monthly incomes of less than $255 USD.

At the time of the survey, 19.1% lived with both their father and their mother, and approximately half (48.0%) lived with at least one of their parents (e.g., 27.5% (95% CI: 25.9%-28.9%) lived with their mother or stepmother) (**Supplemental Table 2**). Over one-quarter (28.0%) of the participants who lived with their siblings (n= 486) provided childcare or school assistance for any younger children in their household, but this varied by gender: 73.4% (95% CI: 69.3%-77.2%) of women but only 26.6% (95% CI: 22.8%-30.7%) of men provided such assistance.

2. COVID-19 health experiences

2.1. Symptoms and testing

At some point between March 2020 and when they took the survey in fall 2020, 73.2% of participants (95% CI: 71.7% - 74.7%) experienced symptoms that could be consistent with COVID-19, as identified by the Centers for Disease Control and Prevention (CDC Coronavirus disease 2019 (COVID-19) – symptoms, 2020). Among those who experienced any symptoms (n = 2,510), 33.9% (95% CI: 31.9% - 35.8%) were tested for COVID-19, 16.2% (95% CI: 14.8% - 17.7%) tried to be tested but were unsuccessful and 49.9% (95% CI: 47.9% - 51.9%) did not try to be tested. Of the 804 people who experienced symptoms and were tested, 35.8% were positive, 60.9% were negative, and 3.3% did not report their results. Among those who

did not experience any symptoms (n = 917), 27.7% (95% CI: 24.9% - 30.7%) were tested for COVID-19, 9.7% (95% CI: 7.9% - 11.8%) tried to get tested but were unsuccessful, and 62.5% (95% CI: 5.9% - 6.6%) did not try to get tested. Of the 253 people who had no symptoms but were tested for COVID-19, 10.8% tested positive, 85.9% tested negative, and 3.3% did not report their results.

2.2. Behaviors when symptomatic

Among those who presented symptoms (n = 2,510), 35.3% (95% CI: 33.5%–37.2%) stayed at home exclusively while they had symptoms (**Table 2**). An additional 10.8% (95% CI: 9.6%–12.1%) stayed home more than usual, but not exclusively. However, many were still in public: 3.7% (95% CI: 3.0%–4.5%) reported attending classes, 4.3% (95% CI: 3.5%–5.6%) went to work, and 0.6% (95% CI: 0.3%-0.9%) attended social gatherings. Only 8.7% (95% CI: 7.6%–9.9%) visited a healthcare professional and/or hospital. There did not appear to be differences by household income or gender, e.g., 32.0% (95% CI: 30.2% - 33.8%) of participants whose monthly family income was less than 1,000 soles (USD 255) and 33.9% (95% CI: 30.1 % - 36.6%) of participants whose monthly family income was greater than 1,000 soles stayed at home exclusively while they had symptoms (**Supplemental Table 3**).

3. Opportunities for COVID-19 transmission

3.1. Social contact

Participants attended various in-person social gatherings of different sizes between March 1, 2020, and August 30, 2020 (**Table 3**). Groups of 10-49 people and <10 people, academic activity and gathering with people outside of the household were the most common types of gatherings.

Few participants traveled ≥50 miles at least once since March 2020 (0.44%, 95% CI: 0.26% - 0.72%) and in April 2020 (0.47%, 95% CI: 0.29% - 0.76%) of 2020 (**Supplemental Table 4**). In March 2020, a plurality 33.3% (95% CI: 0.42% - 85.1%) of these trips were made by car or bus; in April 2020, a plurality 40.0% (95% CI: 0.37% - 91.8%) of the trips were made by car.

Just over one-third (38.3%, 95% CI: 36.7%-39.9%) of participants reported following the CDC-recommended social distancing (i.e., within 6 feet of anyone outside their household) during the four weeks prior to when they completed the survey (i.e., summer or fall 2020) (**Table 4**). In particular, 32.0% (95% CI: 30.5% - 33.6%) reported being within 6 feet of family and friends for whom they were not providing care. Participants were asked to calculate the number of people who had been within 6 feet in different categories (e.g., coworkers, friends, household and non-household members) and were the most uncertain about the number of essential workers they were exposed to. Approximately one-quarter (23.4%, 95% CI: 21.4% - 25.5%) of the participants were in close contact with people they knew who had COVID-19 symptoms.

3.2. Hygiene behaviors

During summer and fall 2020, 71.7% of participants reported never coughing or sneezing into their hands (95% CI: 69.5% - 73.8%) (and instead using safer modalities, like a tissue or a mask) and 81.8% reported not covering their mouth at all (95% CI: 79.8% - 83.5%). Also, more than two-thirds of participants reported never touching their eyes, nose, or mouth without first washing their hands when outside their home. Approximately three-quarters of the participants (74.1%, 95% CI: 72.0% - 76.1%) always wore masks or face-covering in public places. Additionally, 64.6% (95% CI: 62.3% - 66.8%) reported consistently washing

their hands for the recommended duration of ≥20 seconds or using a hand sanitizer with ≥60% alcohol after being in a public place, and more than half of the participants always did so after blowing their nose, after coughing or sneezing and opening a package (**Supplemental Table 5**).

3.3. Sheltering in place

Approximately two-thirds (64.3%) of the participants had sheltered in place or stayed at home (leaving only for essential services, essential work or exercise) during the national quarantine established by the Government of Peru. One out of five participants (21.3%) began sheltering in place before the official stay-at-home order (March 15, 2020). Approximately one-third (33.6%) of participants ate their last meal at a restaurant before March 15, 2020, when the formal stay-at-home order was issued as part of the national quarantine. Even though the Peruvian government had just recently introduced meal delivery and pick-up in restaurants, more than half of the population (55.8%) ate at a restaurant after the stay-at-home order was put in place-although for many this was in fall 2020, after the stay-at-home order was lifted (**Figure 1**).

4. Psychosocial and economic experiences

4.1. Perceived impact

Participants who received financial assistance from the government of Peru due to the pandemic were more concerned about the economic (63.7%) and emotional (62.5%) impacts on their lives than those who did not receive financial assistance (**Supplemental Table 6**). Approximately 16% of participants reported that the COVID-19 pandemic changed their post-college career plans; this did not vary by financial assistance status

(16.3%; 95% CI: 0.96 - 26.3%) of those who received financial assistance and 16.1% (95% CI: 14.4 - 17.9%) of those who did not.

4.2. Level of stress

We asked participants about their stress level regarding the economic, educational and health implications of COVID-19 for themselves, their families and Peruvian society (**Supplemental Table 7**). Participants were far more concerned about the health and educational implications of COVID-19 for Peruvian society than for themselves. Two out of three people (69.5%) were very or highly concerned about the economic implications of COVID-19 for themselves.

4.3. Employment

Approximately half of the participants (44.0%, 95% CI: 41.7% - 46.4%) had been employed in February 2020, but only 23.6% (95% CI: 21.7% - 25.7%) were employed after the pandemic began (i.e., at the end of April 2020). Approximately one out of three (28.3%) employees in February 2020 were no longer employed at the end of April 2020. Among those employed in both February 2020 and late April 2020 (n = 400), 65.0% (95% CI: 60.2% - 69.5%) had their take-home salary reduced due to the COVID-19 pandemic.

4.4. Discrimination

One out of five participants (20.9%, 95% CI: 19.1% - 22.9%) reported experiencing discrimination related to coronavirus. Of the people who experienced discrimination, 56.4% (95% CI: 51.0% - 61.6%) suspected it was due to their face mask or clothing, and 25.2% (95% CI: 20.8% - 30.2%) suspected it was due to their socioeconomic status. Of the people who report having been discriminated against due to their socioeconomic status, 22.3% (95% CI: 20.1%–24.7%) lived in a low-income household.

5. Perspectives about COVID-19

Participants were very open to continuing current restrictions until treatment or vaccine became available to reduce the spread of COVID-19 (70.1%, 95% CI: 67.9% - 72.3%). However, 9.4% (95% CI: 8.1% - 10.9%) wanted the current restrictions lifted immediately, and 6.5% (95% CI: 5.4% - 7.8%) of participants thought that restrictions should be lifted in >2 months.

Participants were confident the Federal Government would do everything possible to prevent the spread of COVID-19 (**Supplemental Table 8**). However, they had greater confidence in the information about COVID-19 provided by the Ministry of Health.

Participants also expressed some optimism (**Supplemental Table 9**). Two out of five people were inspired to see how other people are working hard to respond to this crisis (42.0%, 95% CI: 39.6% - 44.4%) and how young people are doing valuable things for their communities during the pandemic (42.9%, 95% CI: 40.5% - 45.3%).

Discussion

This is one of the first studies to examine the experiences of college students from low- and middle-income countries during the COVID-19 pandemic. We provide a snapshot of Peruvian college students' experiences and perspectives during early months of the COVID-19 pandemic, focusing on attitudes during public health measures, disease management, and social, educational, and economic coping after mandates established by the Peruvian government.

The COVID-19 pandemic continues to shape the experiences of Peruvian college students. The return to in-person university classes began gradually. After two years of remote classes due to the COVID-19 pandemic, the universities of Peru started hybrid learning activities in spring 2022 and adapted to the conditions of the National Emergency Plan of the Peruvian Educational System (Ministerio de Educación del Perú, 2021). This included a requirement that all college students returning to classes must obtain two doses of the COVID-19 vaccine and the booster (Ministerio de Educación del Perú, 2021). Approximately 76% of those eligible in Peru have received two doses of a COVID-19 vaccine (Repositorio Único Nacional de Información en Salud, 2022). However, it has now been well-established that breakthrough cases of COVID-19 can occur among the vaccinated, so testing and contact tracing among college students will continue to be a challenge and will require creative solutions (Ministerio de Educación del Perú, 2021). We found that a low proportion of college students who experienced any symptoms of COVID-19 were tested, suggesting that testing capacity should be greatly increased.

There continues to be room for improvement in reducing the spread of COVID. For example, just one-third of those experiencing symptoms that could potentially be due to COVID-19 stayed at home exclusively, as compared to 40-50% of U.S. college students at that time (Cohen et al., 2020, 2021). As a result, in the absence of more widespread testing to determine which of the

people who are symptomatic have COVID-19, there need to be greater incentives for staying at home while symptomatic. Additionally, our findings suggest students are protecting themselves (e.g., by washing their hands) but could do more to prevent transmission to others (e.g., by wearing a mask). Some of these health-protective behaviors were less prevalent in our study than in other studies in higher-income countries (Aucejo et al., 2020; Cohen et al., 2020, 2021). However, it remains important to emphasize that participants seemed to be taking COVID-19 seriously and open to significant public health interventions: nearly a third of participants restricted their behavior before official national stay-at-home orders went into effect (before March 15, 2020), and a large portion of them were open to continuing restrictions until a vaccine or treatment was available.

Almost half of the participants were much more concerned about the health and educational implications of COVID-19 for Peruvian society and their families than about themselves. Additionally, unlike students from more economically developed countries, who may choose to live on campus (Cohen et al., 2020), in Peru, three-quarters of college students live at home and average monthly family income is less than USD 255. Therefore, supporting the economic wellbeing and health of students' families is important for supporting Peruvian college students' health and learning-and will likely require government assistance, including provision of COVID-19 vaccines and treatments.

The economic instability caused by the COVID-19 pandemic has caused a high level of stress among college students. The quarantine, physical distancing, and curfew measures, established by the government of Peru were put in place to stop the accelerated spread of COVID-19. However, there were also negative repercussions of these life-saving measures, as a third of the students in our sample lost their jobs in the first two months of the pandemic (March and April

2020), creating financial strain and psychological stress due to this economic uncertainty for both students and their families. Our findings show that the pandemic has also negatively affected emotional well-being and plans to complete college. On top of these challenges, other research has documented increased isolation, reduced technological capabilities, increased demand for welfare services, and experiences of violence (Benites et al., 2021), further increasing mental health concerns among college students. This situation is even more dire for college students who work in the informal economy (Instituto Nacional de Estadística e Informática, 2021). For example, in agriculture or in small cafes or restaurants, more than half lost their jobs due to the temporary closure of their places of employment (Instituto Nacional de Estadística e Informática, 2021). Inadequate access to the labor market for young people resulting from the COVID-19 crisis has serious short- and long-term consequences. University and government authorities must address the mental health consequences of the economic instability caused by COVID-19 on college students.

Social implications

During the COVID-19 pandemic, institutions of higher education across the world shifted to online education, but it has not been a uniform process due to gaps in access to necessary technology and user experience difficulties. Peru, as well as other LMICs like Bangladesh, Philippines, and Panama, kept schools closed for longer periods of time than elsewhere (United Nations Educational Scientific and Cultural Organization, 2021). Peru began hybrid classrooms in spring 2022, after two years of fully online education. Hybrid classrooms have only been implemented with a small percentage of students, but they provide an excellent opportunity for students and teachers to improve their use of technological tools, as well as for the government to invest in improving connectivity and strengthening information systems to protect the right to

education (Rama, 2021). Also, given that in this study we did not assess student perceptions of the shift to online learning, future research should investigate the difficulties of online instruction and the transition to online learning, its perception, impediments, and stability among college students. Additionally, with the return of in-person learning, it will be important to take a multi-pronged approach to supporting college students. For instance, there will need to be strong prevention and early diagnosis of COVID-19 to reduce the spread of the illness among college students. Some students may also benefit from additional financial assistance to support them through the completion of their studies. Relatedly, structural changes that include redefining, updating, and creating scholarship programs, tuition breaks, and virtual internationalization measures could further support college students' progress (Obando et al., 2021).

Strengths and limitations

This study is one of the first studies of college students' pandemic experiences in South America, and was carried out in eleven cities, across the three regions of Peru. We also noted some limitations. First, we used the SurveyMonkey survey, which was provided via the university platform for remote education, which could limit our sample to just those with reliable internet access. However, since all students needed access to at least some internet in order to participate in college classes, we estimate that there was not much selection bias that emerged from using this research modality. Second, we only recruited participants from a single private university. While it was a multi-campus university, allowing us to have participants from across Peru (**Table 1**), it meant that we did not have any participants from public universities. Students from public universities in Peru may have systematically different experiences than those of students from private universities. Thus, our findings may not be generalizable to all college students in Peru.

Conclusion

The public health, economic, and educational implications of COVID-19 are continuing to unfold. The impact of the COVID-19 pandemic has been wide-reaching. COVID-19 continues to be widespread in Peru (Centro Nacional de Epidemiología, 2022) and the pandemic continues to shape daily life, including, for college students, the return to face-to-face classes (Katzourakis, 2022). Building upon studies from elsewhere in the world (Alicea-Planas et al., 2021; Cohen et al., 2021), our findings identify risk behaviors (e.g., mask wearing) and practices (e.g., testing and tracing) that the Peruvian government and university authorities could try to modify among college students, with the goal of preventing future outbreaks of unpredictable public health circumstances. We encourage government authorities and institutions of higher education to pool their resources and support university students as we continue through the COVID-19 pandemic.

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Tables

Table 1. Study sample demographic characteristics in comparison to the demographics of all college students in Peru.

Characteristics	This sample (n = 3247)	All college students in Peru
Age, mean ± SD	23.0 ± 11.0	21.0 ± 7.0
Gender		
Male	1031 (30.1)	92114 (52.9)
Female	2395 (69.9)	81848 (47.1)
College year (August 2020)		
First	340 (10.0)	
Second	593 (17.4)	
Third	532 (15.6)	
Fourth	670 (19.6)	
Fifth	423 (12.4)	
Sixth	277 (8.1)	
Seventh	578 (16.9)	
Family's monthly income (before COVID-19)		
Less than 255 USD	2613 (76.5)	
255 - 638 USD	636 (18.6)	
638 - 1275 USD	135 (4.0)	
1275 - 2551 USD	19 (0.6)	

2551 USD or more	12 (0.4)	
Mother's educational level		
No studies	262 (7.7)	2523 (3.0)
Primary	987 (28.8)	18832 (21.0)
Secondary	1142 (33.3)	37674 (39.0)
Upper	980 (28.6)	33360 (35.0)
I do not know	55 (1.6)	2273 (2.0)
Live with your family in your own home		
Yes	2095 (61.2)	7856 (1.7)
No	1331 (38.9)	465773 (98.3)
Family received financial aid or social program		
Yes	166 (4.9)	
No	3260 (95.2)	
Currently is working		
Yes	983 (28.7)	
No	2444 (71.3)	

Abbreviations: COVID-19, Coronavirus disease 2019; SD, standard deviation.

Table 2. Activities of participants who had any COVID-19 related symptoms, while experiencing symptoms (n = 2510)

Activity	%
Stay at home exclusively	35.3
Stay home more than usual but not exclusively	10.8
Attend class	3.7
Go to work	4.3
Attend social gatherings	0.6
Go shopping (e.g., to supermarket)	5.2
Exercise outside	1.0
Seek health care remotely (via phone, web interface, and/or telehealth)	9.7
Visit a healthcare professional and/or hospital	8.7
Travel more than 50 miles	0.6

Abbreviations: COVID-19, Coronavirus disease 2019.

Table 3. Attendance at in-person social gatherings since March 1, 2020.

Social gathering	Gathering size			
	<10 people	10-49 people	50-249 people	>250 people
Present at any gathering	45.9%	5.8%	0.7%	0.6%
Number of gatherings attended, by type of gathering and size:				
Academic programming	241	73	17	8
Social event (e.g., party, bar/club, holiday, sport events, birthday party)	222	54	12	7
Major milestone ceremonies (e.g., wedding, quinceanera, bar/bat mitzvah, funeral)	136	55	15	10
Routine religious gathering	90	30	11	9
Other gathering with people from outside of household	268	55	16	15
Others	206	40	17	15

Table 4. Physical distancing behaviors in April 2020.

Less than 2 meters	n (%)	More details
No one	433 (12.6)	
Only household members	1098 (32.0)	
Nonhousehold members for whom I am caring	57 (1.7)	Among those who answered yes, average number of contacts: 2.1 (range: 1-10), 80.7% were uncertain about number of contacts.
Nonhousehold family members, significant other, or friends for whom I am not providing care	150 (4.4)	Among those who answered yes, average number of contacts: 3.9 (range: 1-17), 69.8% were uncertain about number of contacts.
Coworkers	149 (4.3)	Among those who answered yes, average number of contacts: 3.2 (range: 1-18), 77.8% were uncertain about number of contacts.
People providing essential services	154 (4.5)	Among those who answered yes, average number of contacts: 3.7 (range: 1-18), 68.2% were uncertain about number of contacts.
Other members of the public	123 (3.6)	

If participants did not offer a number (e.g., "unknown" or "a lot"), we did not include these responses, so these are underestimates.

Figures

Figure 1. Timing of sheltering in place and eating in dine-in settings.