

# STUDENT WELL-BEING DURING THE FIRST WAVE of COVID-19 PANDEMIC IN BIRMINGHAM, UK

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RESULTS FROM THE C19 ISWS SURVEY.

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## Contents

Introduction .....	3
Characteristics of the participants .....	5
Demographics .....	5
Academic characteristics .....	8
Changes in life resulting from the COVID-19 outbreak.....	10
Changes in workload.....	10
Changes in accommodation and financial situation .....	11
Changes in lifestyle .....	12
Physical activity .....	13
Smoking behaviour .....	13
Alcohol consumption .....	15
Sleep.....	16
Food behaviour .....	16
Academic life during the COVID-19 pandemic.....	18
Perceptions of the support offered by the university .....	18
Contact with teaching staff and student counselling services.....	19
Contact with family and friends and feelings of loneliness .....	20
COVID-19 diagnosis, symptoms and perceived risk of infection .....	21
COVID-19 diagnosis and symptoms .....	21
COVID-19 perceived risk of infection and severe illness- individual.....	22
COVID-19 Perceived risk of infection and illness- personal network .....	23
COVID-19 Perceived risk of medical supply shortage .....	24
COVID-19 knowledge .....	25
The perceptions of and compliance with COVID-19 measures .....	28
Mental wellbeing during the COVID-19 outbreak .....	32
8-item depression scale .....	32
Demographics .....	33

Physical health .....	35
Physical activity and food behaviour .....	35
Social support.....	37
Academic characteristics .....	39
The perception of changes in university workload and university’s response to the COVID and impact on mental wellbeing .....	41
Students’ tips for staying well.....	42
Summary of findings and conclusions .....	44
References .....	46

## Introduction

In response to the COVID-19 pandemic, lockdown measures in England were first implemented at the end of March 2020. Strict lockdown and social distancing measures, which included closing down of all food outlets, places of worship, and higher education institutions, were in place between the 23rd of March and 10th of May. Between May and July an 'alert system' was in place with gradual steps to ease the lockdown. Schools, food outlets, and shopping centres were either partially reopened or opened with social distancing measures at the beginning of July. During the data collection period (May 2020), most students were engaging in remote, on-line study and were experiencing the first phase of easing the restrictions with phased reopening of public outdoor spaces and shops and a relaxing of rules regulating the time spent outdoors.

There is an emerging body of literature and knowledge about the impact of COVID-19 pandemic and related restrictive measures on the health and well-being of the general population. Evidence from other epidemics, although limited, shows that quarantine measures have a severe psychological impact (Brooks et al., 2020). Although similar negative outcomes will be observed in all countries affected by the pandemic, there were vast differences in how different nations approached the outbreak. These resulted in varying degrees of lockdown measures and restrictions on daily life (Hale et al., 2020). From the UK, the initial data indicated that there were several misconceptions and anxieties related to the outbreak before lockdown measures were introduced (Geldsetzer, 2020).

Currently, the majority of our understanding about the influence of these measures on general population and higher education students is derived from China which was the source of the outbreak and had lockdown measures of varying severity in place since January 2020 (Zhai and Du, 2020; Cao et al., 2020; Wang et al., 2020a; Rajkumar, 2020). In the UK, as well as many other countries, universities have closed their buildings to the majority of students and shifted to online course delivery to break chains of virus transmissions (Sahu, 2020). In China, 25% of college students reported mild, moderate, or severe anxiety symptoms and the level of anxiety was influenced by students' social and economic circumstances (Cao et al., 2020). Those students who had a relative or acquaintance infected with COVID-19 and who lived in areas with high infection rates were more likely to have symptoms of severe anxiety and depression (Cao et al., 2020; Ojewale, 2020). International students were identified as particularly vulnerable to the negative mental health outcomes due to the impact of travel restrictions on their ability to visit home countries and/or return to the university when face-to-face teaching resumes (Zhai and Du, 2020; Sahu, 2020).

Students worried about their academic progression, the economic impact of the pandemic including future employment, and the influence on daily life. The prolonged period of lockdown resulted in a

higher negative psychological impact for students who were faced with transitioning to online education and examinations uncertainty (Wang et al., 2020b). In the US, college students experienced loneliness and depressive symptoms and reported apprehension towards the changes in course delivery (Tasso et al., 2021). There are also emerging studies from Nigeria, Russia, and Israel with similar conclusions regarding the negative impact on the students' mental health (Ojewale, 2020; Yehudai et al., 2020).

Researchers have found a high level of COVID-19 related knowledge and adherence to preventative behaviours particularly around hygiene among medical students in Iran and United Arab Emirates (Taghrir et al., 2020; Saddik et al., 2020). Students studying health-related subjects in Nigeria were also less anxious than those from other faculties (Ojewale, 2020). These findings correspond to those of general population in Turkey and China suggesting that better understanding and knowledge of the COVID-19 and engagement in preventative behaviours result in better mental health outcomes (Yıldırma and Gülerc, 2020; Wang et al., 2020c). However, in the UK, universities were given the power to graduate final year medical students so that they can join overstretched health services (Harvey, 2020) and therefore their wellbeing might have been affected differently than that of health students from other countries and those who were not recruited to the COVID-19 response.

The COVID-19 International Student Well-Being Study Consortium led by the University of Antwerp developed a student survey to measure the impact of the COVID-19 pandemic on health and wellbeing of student populations (Van de Velde et al., 2021). The survey measured changes (resulting from the lockdown and preventative measures) in students' accommodation, workload, lifestyle behaviours, and social interactions. Additionally, the Centre for Epidemiologic Studies Depression Scale (Radloff, 1977) was utilised to assess students' mental wellbeing. The survey also explored students' perception of and adherence to the Government's measures as well as their perception of the university's response. Finally, students in the UK were asked additional questions about their food behaviours and their tips for staying well during the pandemic.

Ethical approval has been granted by Birmingham City University (BCU) (Faculty of Health, Education and Life Sciences) ethics committee (REF:7378 /R(A) /2020 /Apr). Online informed consent was obtained before the start of the survey and the surveys were anonymised at the point of data collection with no identifying personal details being collected. Data was stored in accordance with GDPR regulations on the BCU's cloud storage account (Microsoft OneDrive). No potential risk was envisaged to participants, however information and a link providing the university well-being support was provided in case it was required.

An anonymised email address was set up via the University IT team and the students were invited via an anonymised email list with a message containing the survey link, information sheet, and consent form. Permission to access has been sought in advance and approved in principle by the relevant authorities at BCU after gaining the ethical approval. All students were informed that participation is voluntary and of their right to withdrawal. The survey was available for three weeks and a reminder email was sent after a week to increase participation. Data was collected using Qualtrics survey software and took approximately 15 minutes to complete.

All students at Birmingham City University were invited to participate in the survey and their responses contributed to the wider study of 133 educational institutions from 26 countries. BCU is located in Birmingham- the second largest city and metropolitan area in the UK (England, West Midlands region). BCU is second largest University in Birmingham with approximately 24,000 students and has a large proportion of local students and students from ethnic minorities. BCU offers courses across four faculties (Arts, Design, and Media; Health, Education, and Life Sciences; Computing, Engineering, and Built Environment; Business, Law, and Social Sciences). The current report presents the results from preliminary data analysis of responses provided by BCU students.

The obtained data was managed and analysed in IBM SPSS Statistics 25 software by Dr Biernat with supervision from Professor Rabiee-Khan and in consultation with a Research Fellow in Medical Statistic (Dr Robert Cook). Descriptive and Bayesian statistic were carried out as appropriate and statistical test included, for example, paired sample T-test, ANOVA, Wicoxon Signed-rank, and Pearson's chi-squared. Results with a p-value lower than 0.05 were considered statistically significant.

## Characteristics of the participants

In total, we received 2251 responses from students across all faculties of Birmingham City University. 467 (20.75%) of the returned surveys were incomplete and we were able to obtain 1784 (79.25%) fully completed surveys.

### Demographics

Table 1 summarises the demographic details of participants who completed the questionnaire in full. There were no major differences in demographics between those who responded to the survey and those who completed the questionnaire.

The majority of students were female (76%) and the largest age group was between 21 and 25 years old (40% of total responses), followed by those under 20 years old (31%). However, the 'mature' student population was also substantial and the age groups over 25 years old (29.4%) included almost as many participants as the 'under 20 years old' age category. The relationship status of participants

was almost equally split between those in a relationship and those were single at the time of data collection. 4.6% of the students stated that their relationship status is 'complicated'.

Almost 53% of the respondents were native British (born to British parents in the UK or abroad) and further 18% were born in the UK as a second-generation migrant. Out of those who were second-generation migrants, 34.9% was born in families with both parents born outside of the UK and 11.6% had one parent who was born outside the UK. More than a quarter of students (28%) identified as a first generation migrant (born outside the UK to non-British parents). The majority of participants had UK citizenship (76%) or were permanent residents (7.5%), and 14% were temporary residents for more than two years. Only 2% had a temporary residency for one year or less- these students were primarily enrolled on master-level programmes.

Those who stated their parents were born outside the UK provided 118 countries as their parent's place of birth. The top 5 countries mentioned were Pakistan (8.4%), India (7.9%), Bangladesh (2.4%), Nigeria(2.1%), and China (2%). The students were not asked about their religious background or ethnicity.

While mothers of 41.9% of students completed higher education, this group was closely followed by those whose mothers completed secondary education (42.3%). For paternal education, the largest proportion (41.5%) of students had fathers who completed secondary education, however, the group whose fathers completed higher education was only marginally smaller (38.3%). Students with parents who completed only primary education were the smallest group with 9.8% for maternal education and 10.8% for paternal education. The socio-economic background of students, and their social capital, was identified by asking about the number of people they could borrow £500 within two days. All participants could borrow £500 within two days from at least 6 people and 68.3% could borrow from between 6 -10 people.

Table 1 -Demographic characteristics of the students

		N	%
<b>Gender</b>	Male	410	23%
	Female	1360	76.2%
	X	14	0.8%
<b>Age group</b>	Under 20	558	31.3%
	21-25	704	39.5%
	26-30	222	12.5%
	31-50	258	14.5%
	Over 51	42	2.4%
<b>Relationship status</b>	Single	841	47.1%
	In a relationship	861	48.3%
	Complicated	82	4.6%
<b>Nationality</b>	Native British	942	52.8%
	First generation migrant <sup>1</sup>	504	28.2%
	Second generation migrant <sup>2</sup>	315	17.6%
	Born outside the UK to British parents	11	0.6%
	Missing/ unknown	12	0.7%
<b>Status in the UK</b>	Citizen	1358	76.1%
	Permanent resident	134	7.5%
	Temporary resident for one year or less	38	2.1%
	Temporary resident enrolled at the university for more than one year	254	14.2%
<b>Parental education-mother</b>	Less than secondary	177	9.9%
	Secondary	753	42.3%
	Higher	748	41.9%
	Not known	106	6%
<b>Parental education-father</b>	Less than secondary	194	10.9%
	Secondary	752	42.2%
	Higher	672	37.7%
	Not known	166	9.3%
<b>The number of people they could borrow £500 from within 2 days</b>	6-10	1226	68.7%
	11-15	474	26.6%
	16-20	77	4.3%
	21 and over	7	0.4%

<sup>1</sup> Including those born to one non-native parent

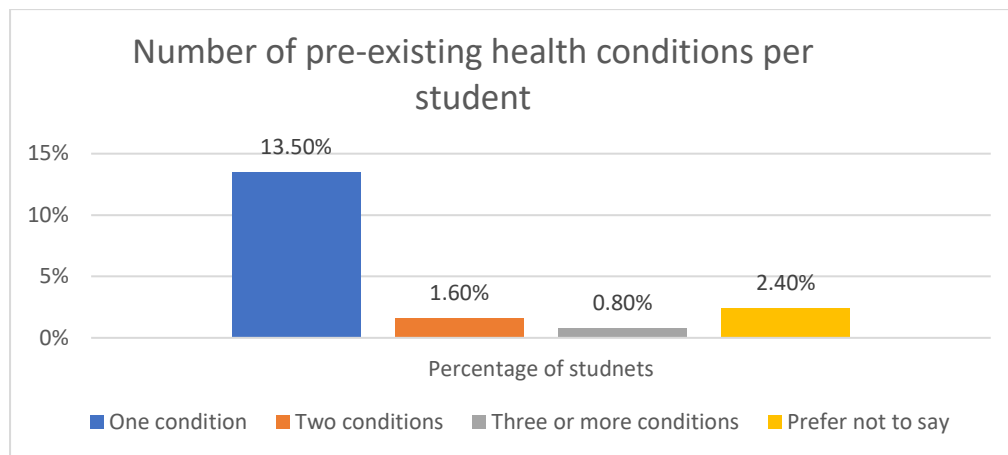
<sup>2</sup> Including those born to one non-native parent



## Pre-existing health conditions

Usually, the symptoms of COVID-19 are more severe in those with certain pre-existing health conditions (Callender et al., 2020) and so, in addition to further COVID-specific questions, the students were asked about their general health. The conditions included a recent cancer diagnosis, diabetes, heart disease, high blood pressure, immunocompromised conditions, kidney disease, lung disease, and obesity. 242 students (13.5%- see Figure 1) had at least one pre-existing health condition, with obesity and lung disease being the most common (6.6% and 6.1% of all students respectively).

Figure 1- The number of pre-existing health conditions



## Academic characteristics

36.1% of the students were in their first year of studies and 72% studied an undergraduate bachelor programme. Almost 20% of the students were working towards a masters qualification, 3% were PhD students, and 6.2% were studying on a different programme. The students were asked to rate the importance of their studies in relation to other areas of their life- over 90% rated their education as equally (46%) or more (48%) important than other activities.

Over a half of the students used a student loans service or a bank loan to cover the cost of their tuition. Most students were pursuing a qualification in Health (28%) or Art (16%). The remaining fields (as well as sources of tuition payments) are summarised in Table 2 below.

Table 2- Academic characteristics of the students

		N	%
<b>Importance of education vs other activities<sup>1</sup></b>	More important	860	48.2%
	Equally important	862	48.3%
	Less important	62	3.5%
<b>First year in higher education</b>	Yes	637	35.7%
	No	1147	64.3%
<b>Study programme</b>	Bachelor	1275	71.5%
	Master	335	18.8%
	Doctorate	58	3.3%
	Other	116	6.5%
<b>Source of tuition payments</b>	Not relevant/ Publicly funded tuition	239	13.4%
	Parents	193	10.8%
	Self-funded	105	5.9%
	Bank loan or student loan	978	54.8%
	Scholarship	98	5.5%
	Other <sup>2</sup>	271	15.2%
<b>Field of study</b>	Health	484	27.1%
	Art	298	16.7%
	Security and other <sup>3</sup>	84	4.7%
	Education	217	12.2%
	Social and behavioural science	233	13.1%
	Business and administration	210	11.8%
	Information and communication technologies	87	4.9%
	Law	83	4.7%
	Architecture, construction, and agriculture	81	4.6%
	Engineering and manufacturing	73	4.1%
	Journalism, media, and communication	46	2.6%
	Natural sciences, mathematics, and statistics	37	2.1%
	Language	38	2.1%
	Welfare	37	2.1%
	Humanities	10	0.6%

<sup>1</sup> The students were asked 'How important are your studies compared to other activities (e.g. meeting with friends, doing hobbies, etc.) for you?'

<sup>2</sup> Text answers for 'other' included sources such as: apprenticeship, student loan, bursary, government, current employer, family (including spouse and other non-parent members).

<sup>3</sup> Text answers for other included subjects such as: sport, exercise science, real estate, film production, English, Criminology, art education.

## Changes in life resulting from the COVID-19 outbreak

The following sections will explore the reported changes in students' personal and academic life. We will also provide a summary of reported changes in lifestyle including the physical activity levels, smoking behaviour, alcohol consumption, and sleep.

### Changes in workload

It should be noted that the answers to the questions below from 64 students were removed from the data set as they appeared highly improbable (with students claiming to work for more than 15 hours per day, every day of the week). To remove such outliers and ensure a realistic interpretation of the data, the number of hours dedicated to work (academic and professional) pre-COVID was summarised and the answers indicating more than 80 hours or study/work per week were removed. While this number of hours remains high (almost 12 hours per every day of the week), it allows for inclusion of those who might be working full time alongside their studies.

The students were asked about the number of hours they have spent on offline teaching, online teaching, personal study time, and paid employment. The questions were concerned with the average number of hours in a week before the COVID-19 outbreak and then in a week during the COVID-19 outbreak.

#### **Changes in offline teaching during last week and before COVID**

From 1572 responses, 1301 (83%) received less offline teaching before the COVID outbreak, 114 (7%) received more than before the COVID outbreak<sup>1</sup> and the number of hours spent in offline teaching remained the same for 157 students (10%).

#### **Changes in online teaching during last week and before COVID**

From 1555 responses, 871 (56%) students experienced more online teaching during COVID than before the outbreak. 318 (20%) reported less online teaching and the number of hours did not change for 366 (24%) students.

#### **Changes in personal study time during last week and before COVID**

From 1521 responses, 465 (31%) students reduced their personal study time during the last week in comparison to before COVID outbreak. 728 (48%) spent more time on personal study and 328 (21%) maintained the same level.

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<sup>1</sup> It is most likely that those students were either at placement (including nursing students who remained in training) or research students.

### Changes in time spent in paid employment during last week and before COVID

From 1452 responses, 758 (52%) did not change the number of hours worked in paid employment. 561 (39%) spent less time in paid employment during the last week than pre COVID and 133 (9%) increased their working hours during the last week.

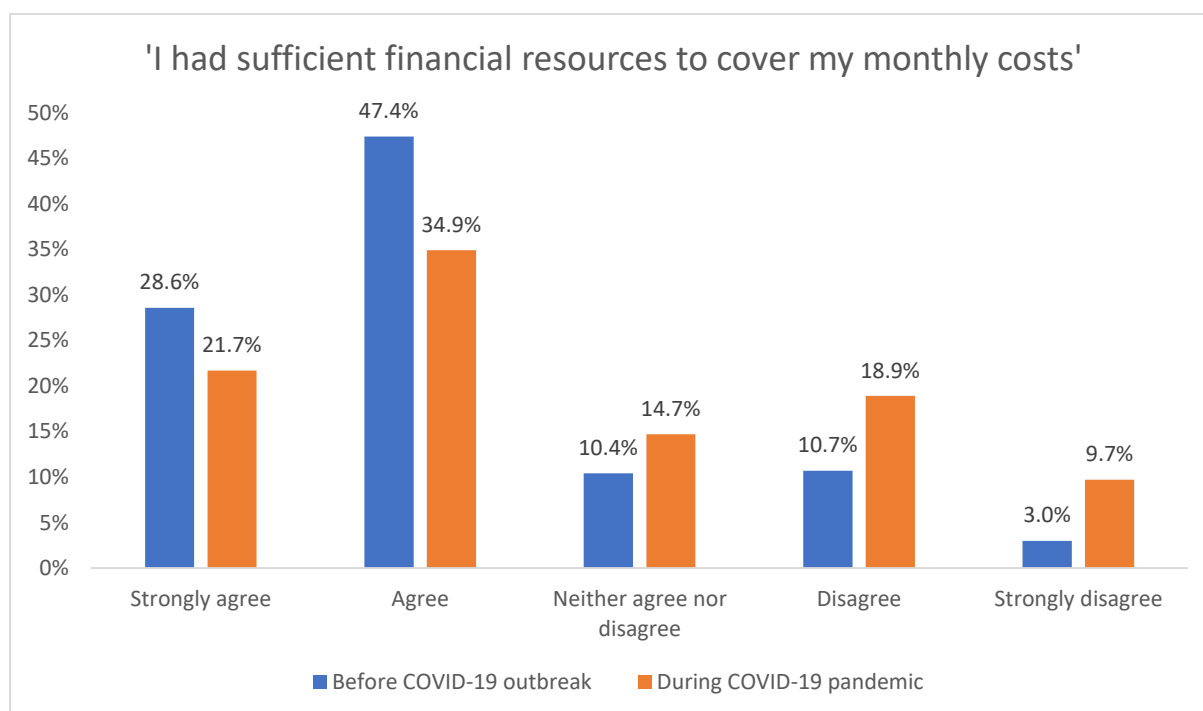
Table 3- Changes in the number of hours dedicated to academic and professional work each week

Type of work	Mean number of hours before COVID (S.D.)	Mean number of hours during last week (S.D.)	% change
Offline teaching	10.84 (8.085)	1.67 (5.022)	84.6% decrease
Online teaching	2.85 (5.115)	5.40 (7.268)	89.5% increase
Personal study	12.08 (10.581)	14.71 (14.689)	21.8% increase
Paid employment	10.13 (12.197)	5.50 (11.819)	45.7% decrease

### Changes in accommodation and financial situation

Due to the outbreak, the proportion of students who had sufficient resources to cover their monthly costs reduced from 76% to 56%. There was an increase of almost 15% in the number of students who reported not being financially stable. Figure 2 below illustrates the negative impact of the pandemic on the students' ability to cover their monthly costs.

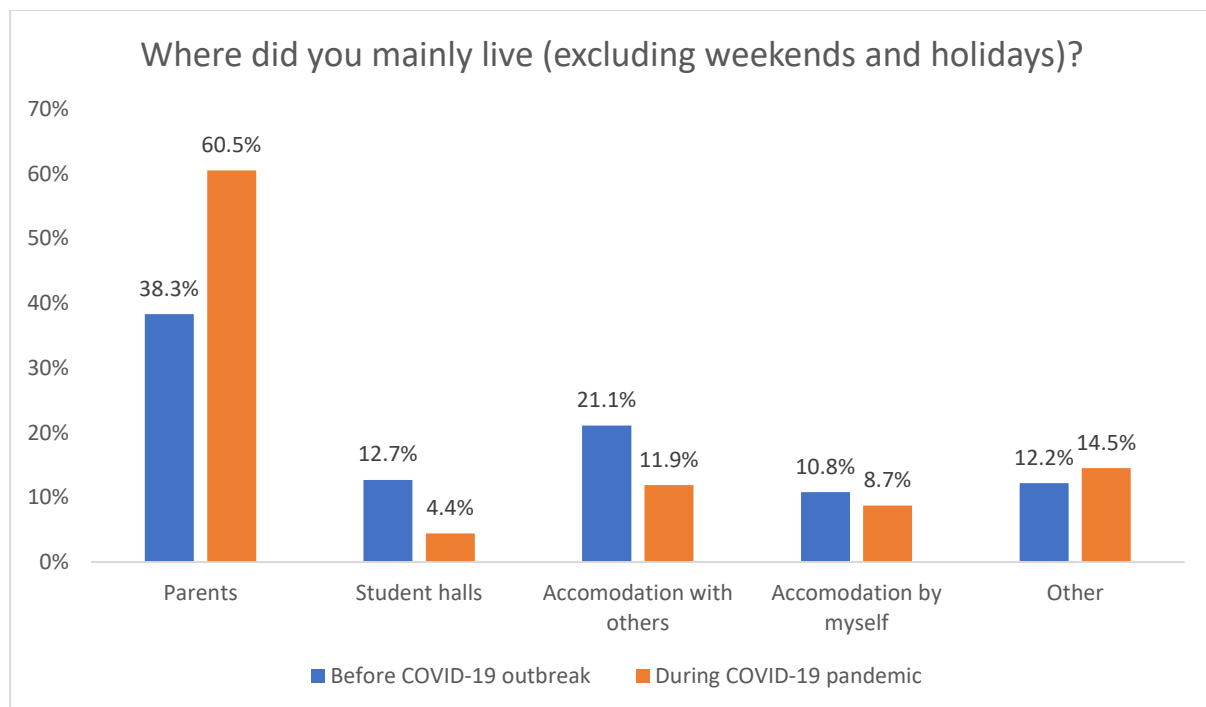
Figure 2- Changes in financial situation



In regard to the primary accommodation, 71.6% of students reported no change as a result of the COVID-19 outbreak. 61% also did not experience any changes in the number of people they lived with (however, it is probable that these were different people for those who did change their primary place of accommodation). Out of those students who were temporarily residing in the UK (n= 292), 22.3% moved back to the previous country of residence.

427 (24%) of the students lived with a lower number of people during the COVID-19 outbreak than before while the number of co-occupants increased for 269 (15%). The number of people the participants lived with before the outbreak ranged from 0 to 24<sup>1</sup> with a median and average of approximately 3 people. The largest percentage (19.2%) of students lived with three other people. During the epidemic, the number of co-occupants ranged from 0 to 13<sup>2</sup>. Living with three other people was still most common and increased to 24.8% of the students.

Figure 3- Changes in primary accommodation



### Changes in lifestyle

The students were asked about the impact that the outbreak of COVID-19 had on their lifestyle behaviours including physical activity, alcohol drinking, smoking, sleep patterns, and food-related habits.

<sup>1</sup> The person living with 24 other individuals lived in a 'shared accommodation with others' before and during the pandemic

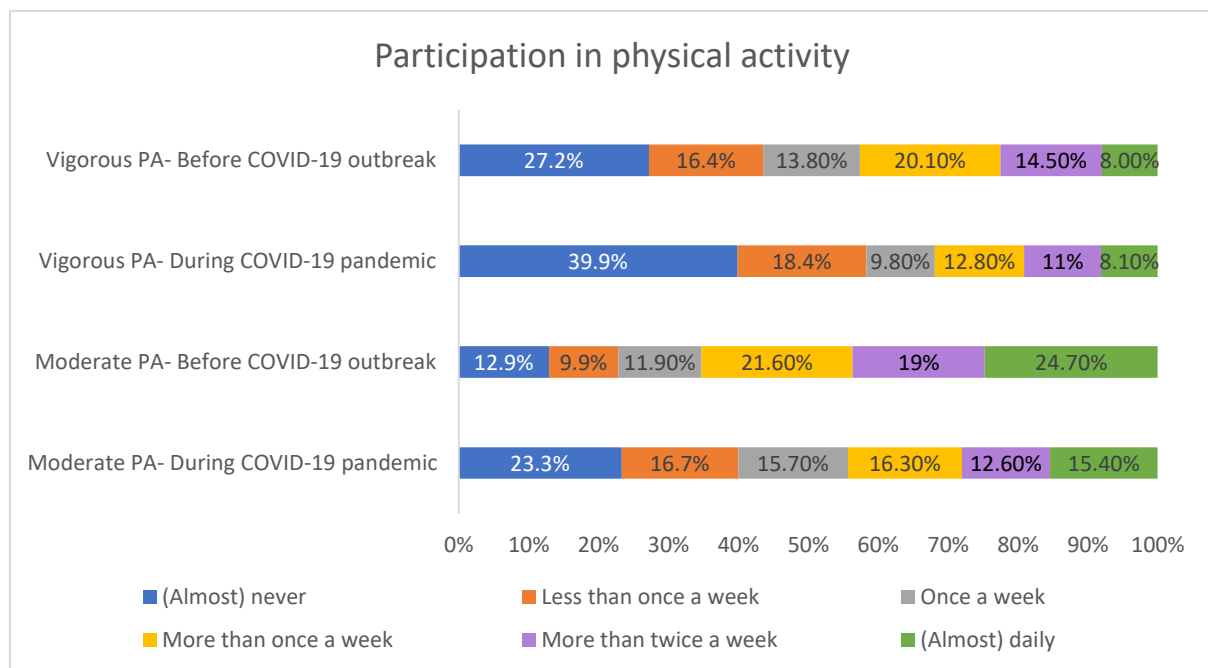
<sup>2</sup> The person living with 13 other individuals stated that they live with family and did not change accommodation

### Physical activity

Statistically significant changes were observed in the students’ physical activity levels. Slightly more than a third (36%) of the students reported no change in the frequency of vigorous physical activity (PA) (defined as at least 30 minutes of fast cycling, aerobics, running, lifting heavy weights). 39% reported a reduction and, the smallest proportion, 25% reported an increase. The proportion of students who never participated in vigorous PA increased from 27% to 40% (see Figure 4). However, the proportion of students who participated in activities almost daily remained the same.

Moderate PA was defined as participating in at least 30 minutes of easy cycling or walking. Before the outbreak, a quarter of the students engaged in such PA almost daily. This has reduced to 15% during the outbreak (see Figure 4). Similarly, the proportion of students engaging in moderate PA one a week and more than twice a week was also reduced during the outbreak. Almost a half of the students (47.7%) reported a reduction in frequency, 27.5% reported no change and a quarter increased the amount of moderate PA during the lockdown.

Figure 4- Changes in the frequency of moderate and vigorous physical activity



### Smoking behaviour

Of those students who smoked tobacco (approximately 20%), the mean amount of cigarettes smoked per day was 6 ( std. deviation 8.521) before the lockdown, increasing to 7 (std. deviation 11.735) during lockdown. 29% of the smokers reduced the number of cigarettes smoked per day, 40% increased the number of cigarettes smoked and the amount remained the same for the remaining 31%. It appears that the ‘casual’ (not daily) smokers smoked less during the outbreak with a 3% increase in the number of students who ‘almost never’ smoked (see Figure 5 below). A similar small

change was noted in the cannabis smoking behaviour as presented in Figure 6 below. However, there was also slight increase in the proportion of students who used cannabis almost daily (from 42 to 53 students). The changes in tobacco and cannabis smoking behaviour were not statistically significant.

Figure 5- Changes in tobacco smoking behaviour

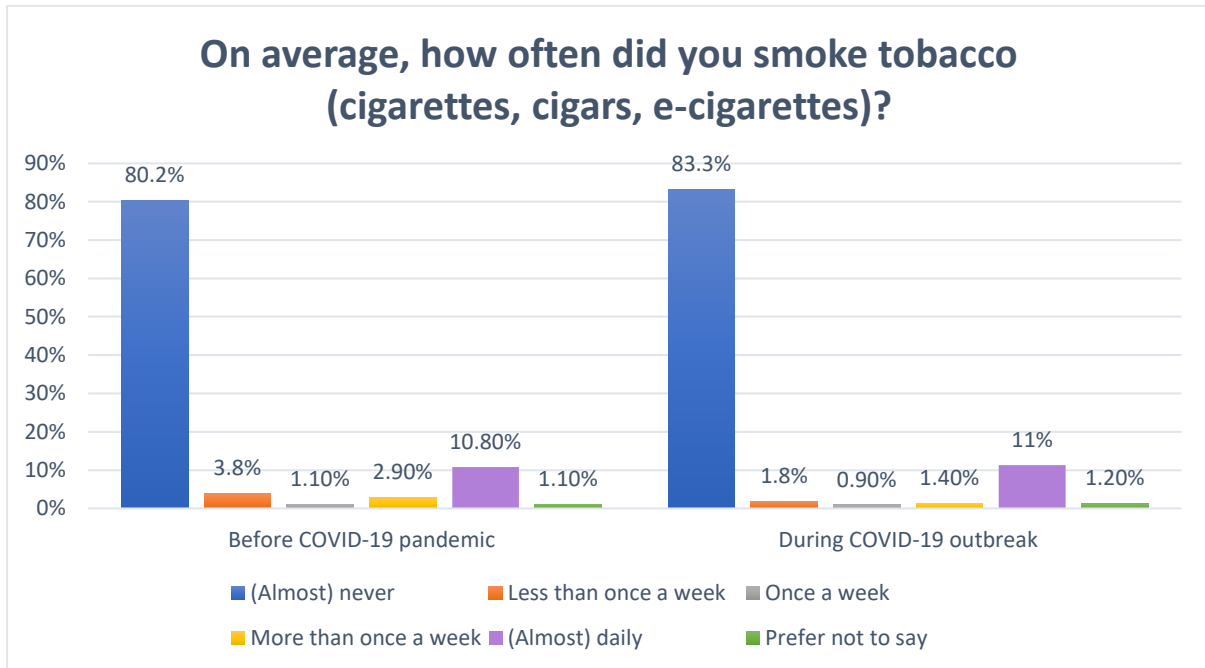
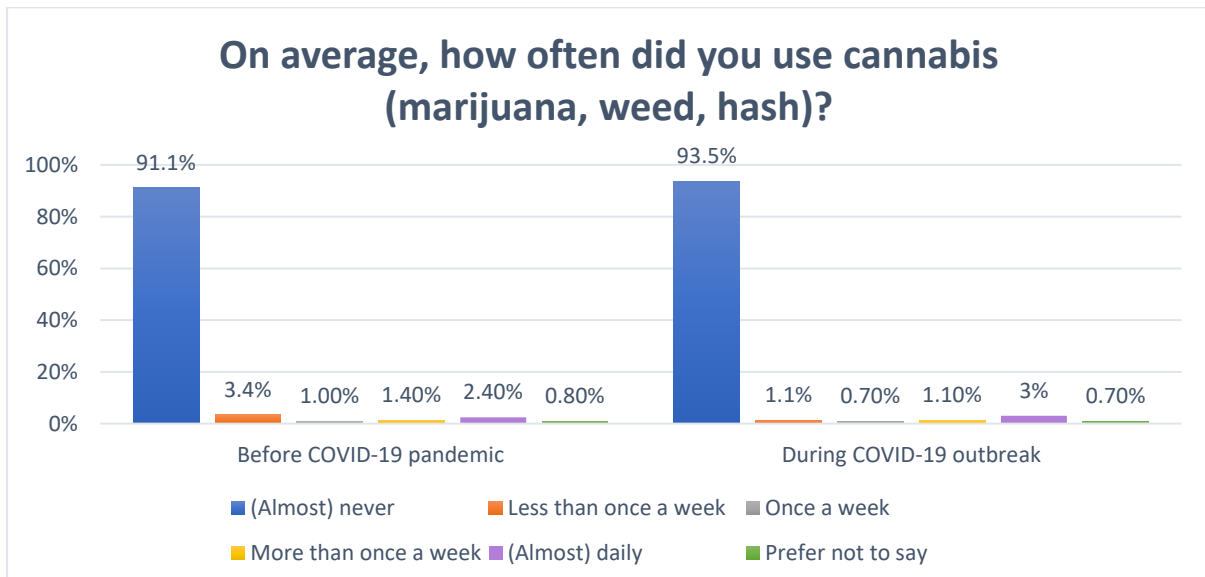


Figure 6- Changes in cannabis use



## Alcohol consumption

The frequency of binge drinking (drinking six or more glasses of alcohol on a single occasion) generally reduced with 15% more students stating that they ‘almost never’ binge drink during the outbreak than before (see Figure 7 below). However, there was a small, but statistically significant, increase noted in the number of students who engaged in binge drinking more than once a week or daily. As illustrated by Figure 8 below, there was a statistically significant reduction in the number of students who drank between 1 and 5 glasses of alcohol per week, there was an increase in those reporting drinking between 6 and 10 and more than 11 glasses per week. 20.9% of students reduced the number of glasses consumed each week, 27.6% increased the number of glasses consumed and the weekly alcohol consumption remained the same for 51.6%.

Figure 7- Changes in the frequency of consuming six or more glasses of alcohol on a single occasion

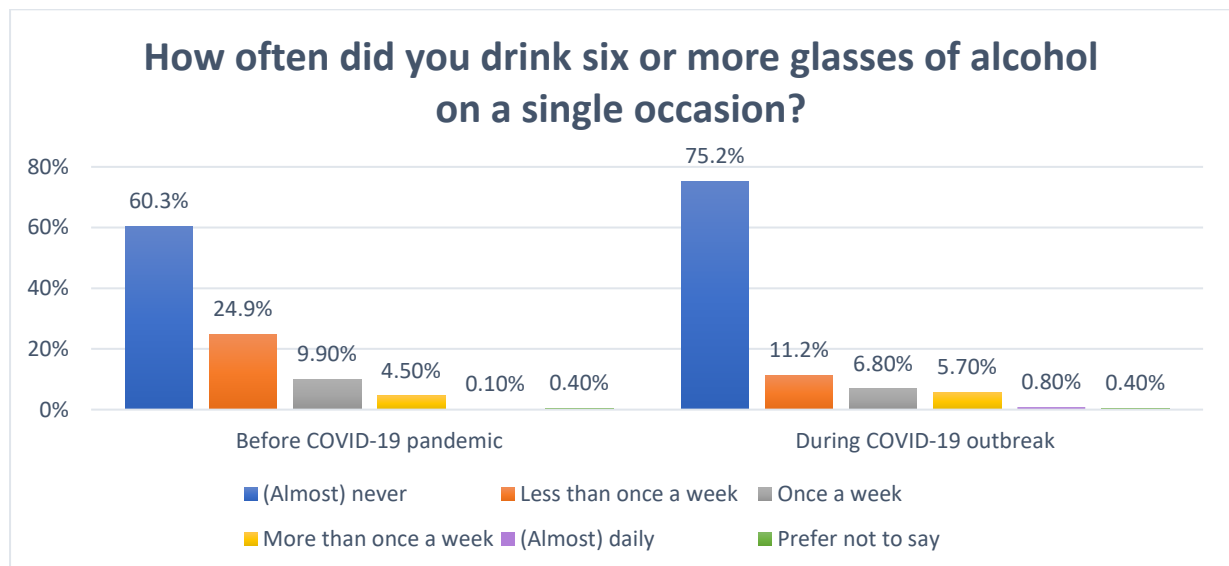
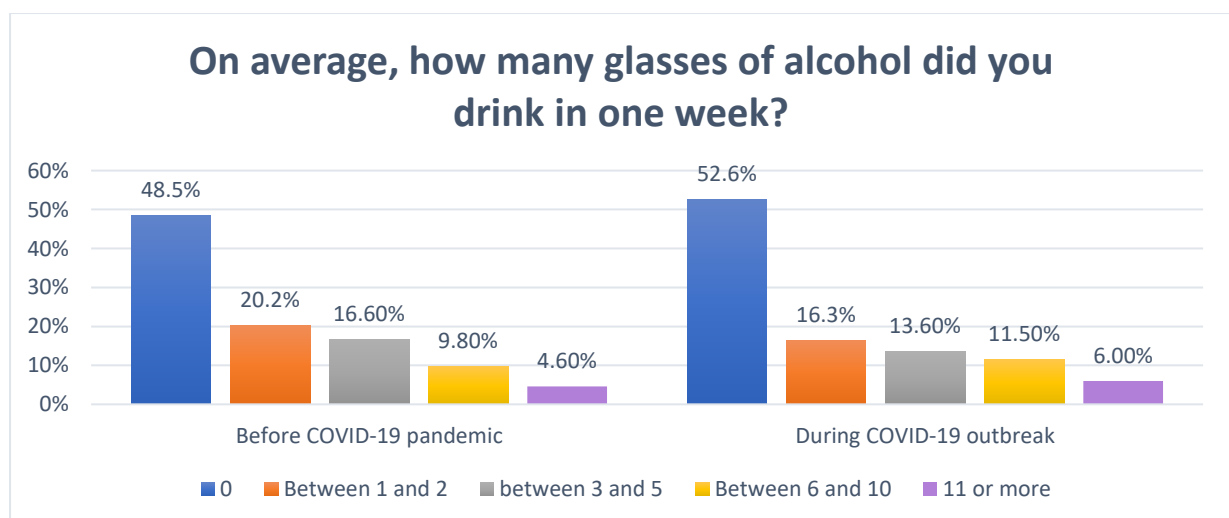


Figure 8 -Changes in the amount of alcohol consumed per week





## Sleep

The mean number of hours slept per night prior to the COVID-19 outbreak was 7.59 (std deviation 1.341) and it was marginally reduced to 7.47 (std deviation 2.255) during the pandemic. The average number of hours slept remained the same for 21.9% of students, reduced for 40.5% and increased for 37.6%. One student who reported a large decrease noted that this was due to Ramadan- this could also explain similar patterns in sleep reduction for other students who were practicing Muslims. However, the questionnaire did not explore students' religion and so it is not possible to confirm this.

## Food behaviour

To understand whether the students' food security and food intake were affected by the outbreak, they were asked a series of questions regarding the changes in their food behaviour. These included positive changes:

- Do you eat more fresh/ frozen fruits /or vegetable?
- Do you cook/ bake more?

And changes typically perceived as negative in relation to food security and health:

- Do you buy more food out of fear?
- Do you eat more food out of boredom/ anxiety?
- Do you eat more canned fruits/or vegetables?
- Are you relying on social protection measures related to food? (e.g., food banks, food assistance, gifts from friends and relatives)

Almost a quarter of students bought more food out of fear, 18.6% consumed more canned fruits and vegetables, and 10% relied on social protection measures related to food. The majority also ate more food out of boredom and anxiety (see Table 4 below).

*Table 4- Food behaviour during the pandemic*

Question	% of Yes answers	% of no answers
Do you buy more food out of fear?	23.8%	76.2%
Do you eat more food out of boredom/ anxiety?	61.8%	38.2%
Do you eat more fresh/ frozen fruits /or vegetable?	50.4%	49.6%
Do you eat more canned fruits/or vegetable	18.6%	81.4%
Do you cook/ bake more?	72.4%	27.6%
Are you relying on social protection measures related to food?	10.1%	89.9%

However, within the group that relied on social protection measures related to food, there was no clear negative impact on other food behaviours except for eating more food out of anxiety/boredom.

These students were also more likely to cook more and consume more fresh and frozen vegetables. Results that were statistically significant at  $p < 0.05$  are highlighted with a \* symbol in Table 5 below (and in subsequent tables of this report).

*Table 5- Food behaviour during the pandemic- students who relied on social protection measures only*

Question	% of Yes answers	% of no answers
Do you buy more food out of fear?*	46.4%	53.6%
Do you eat more food out of boredom/ anxiety?	58%	42%
Do you eat more fresh/ frozen fruits /or vegetable?	59.7%	40.3%
Do you eat more canned fruits/or vegetable*	37.6%	62.4%
Do you cook/ bake more?	74%	26%

## Academic life during the COVID-19 pandemic

### Perceptions of the support offered by the university

The students were asked to rate their agreement with a series of statement relating to the university's response to the COVID-19 outbreak. Both negative (statements [a] to [e] in Table 6 below) and positive statements (statements [f ]to [h]) were included.

Most students strongly agreed or agreed with the negative statements. However, at the same time, more students agreed than disagreed with the positive statements. This could indicate that while the students experienced increased stress and confusion regarding their education, they also appreciated the university's response to the pandemic in regard to the implementation of (and sufficient communication about) the COVID-19 protective measures.

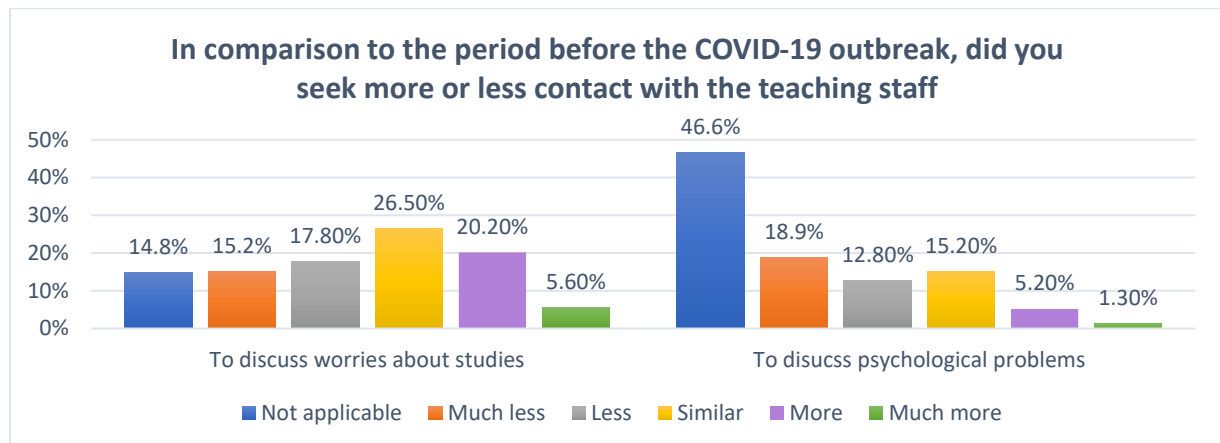
*Table 6- Level of agreement with statements regarding the university's response to the COVID-19 outbreak*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
(a) My university/college workload has significantly increased since the COVID-19 outbreak.	14.3%	23.2%	31.1%	23%	8.4%
(b) I know less about what is expected of me in the different course modules/units since the COVID-19 outbreak.	23.8%	36.7%	18.8%	16%	4.7%
(c) I am concerned that I will not be able to successfully complete the academic year due to the COVID-19 outbreak.	27.2%	27.4%	16%	20.9%	8.5%
(d) The university/college provides poorer quality of education during the COVID-19 outbreak as before.	21.2%	24.4%	29%	19.1%	6.3%
(e) The change in teaching methods resulting from the COVID-19 outbreak has caused me significant stress.	31.2%	32.3%	17.2%	14.2%	5.2%
(f) The university/college has sufficiently informed me about the changes that were implemented due to the COVID-19 outbreak.	20.3%	49.6%	15.9%	9.9%	4.3%
(g) I am satisfied with the way my university/college has implemented protective measures concerning the COVID-19 outbreak.	16.1%	40.4%	26.1%	11.9%	5.5%
(h) I feel I can talk to a member of the university/college staff (e.g., professor, student counsellor) about my concerns due to the COVID-19 outbreak.	14%	35.3%	23.1%	18%	9.6%

### Contact with teaching staff and student counselling services

A quarter of students sought more contact with the teaching staff to discuss their worries about studies and 6% of students sought contact to discuss psychological problems. However, a third of the students, sought less contact during the pandemic than before the outbreak to discuss the education-related issues and the psychological problems (see Figure 9 below).

Figure 9 Changes in contact with the teaching staff

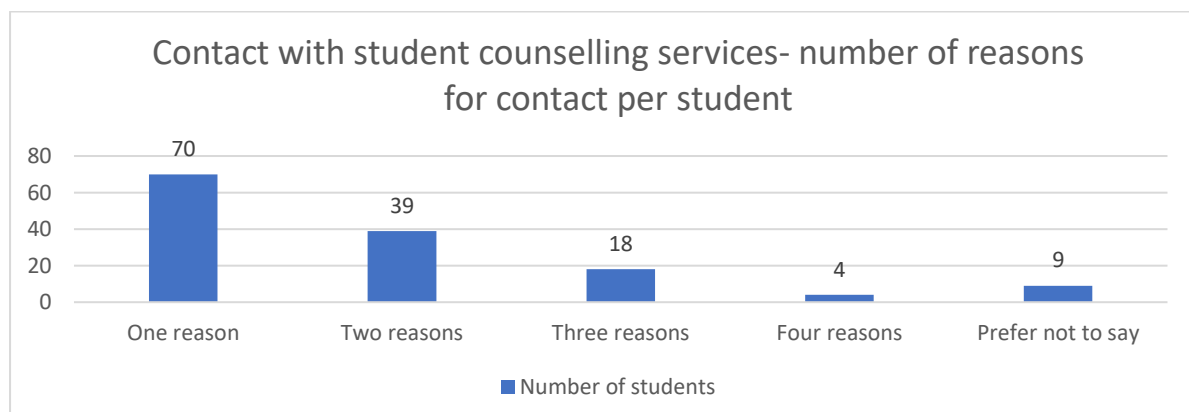


When asked about the contact with student counselling or social services, 7.8% of students (n = 140) confirmed that they were in touch with these services to:

- Discuss worries about the studies (83 students);
- Discuss financial worries (37 students);
- Discuss psychological problems (63 students);
- Discuss other worries (35 students) such as abusive relationships, bereavement, medical reasons (depression and anxiety), work related issues, stress, health of family members.

As illustrated by the Figure 10 below, a half of those who contact the services, did so for only one reason.

Figure 10- Number of reasons for contacting counselling services

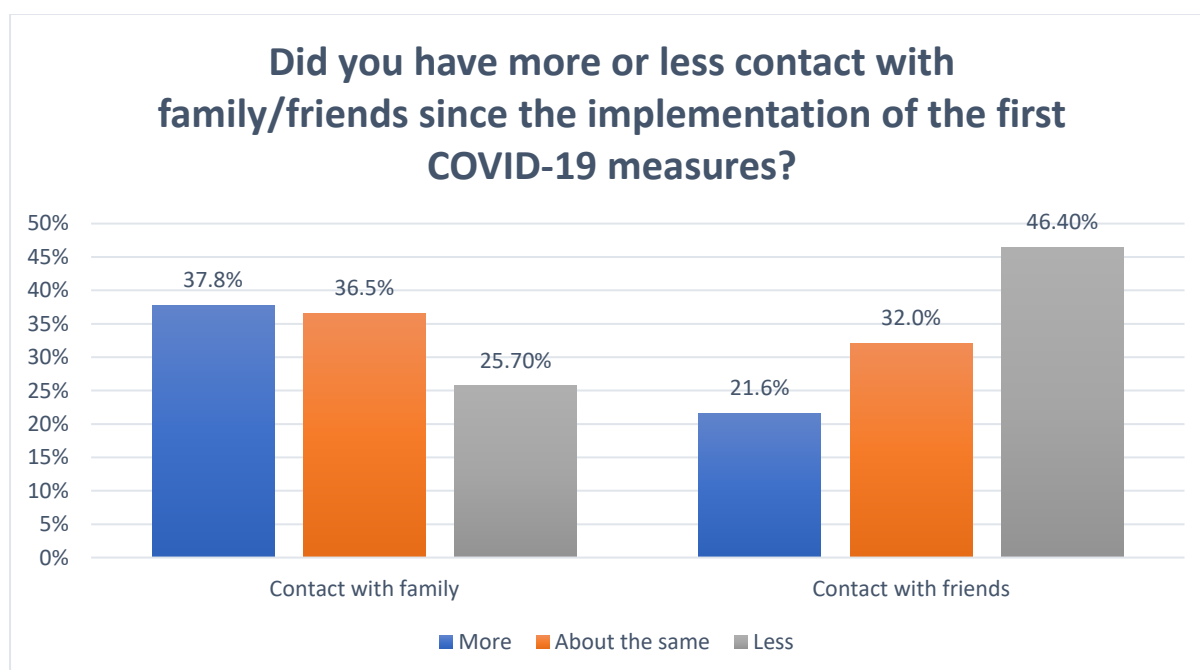


## Contact with family and friends and feelings of loneliness

Participants were asked whether their contact (online or offline) with friends and family was affected by the COVID-19. As illustrated by the Figure 11 below, 38% of the students increased their contact with family, but there was a substantial decrease in contact with friends with 46% of students reporting less contact. This could most likely be explained by the social distancing measures. The majority of students, 80.5%, had someone they could discuss personal matters with but 19.5% did not have such a person in their life.

Amongst those students engaged in distanced social activities: 36.2% talked to their family or friends on the street and 47.4% participated in a game or quiz online with friends and family. Video and phone calls were a popular way of keeping in touch with friend and family with 79.8% of students having video-calls and 78.5% having phone conversations at least once during their last week in the pandemic. Online chats were also popular and 65.3% had an online exchange with their friends and family.

Figure 11- Changes in contact with family and friends



However, when asked to indicate how much of the time during the past week they felt lack of companionship, isolation from others, and loneliness, the majority of students indicated experiencing these feelings at least some of the time (see Table 7 below).

Table 7- Feelings of loneliness during the outbreak

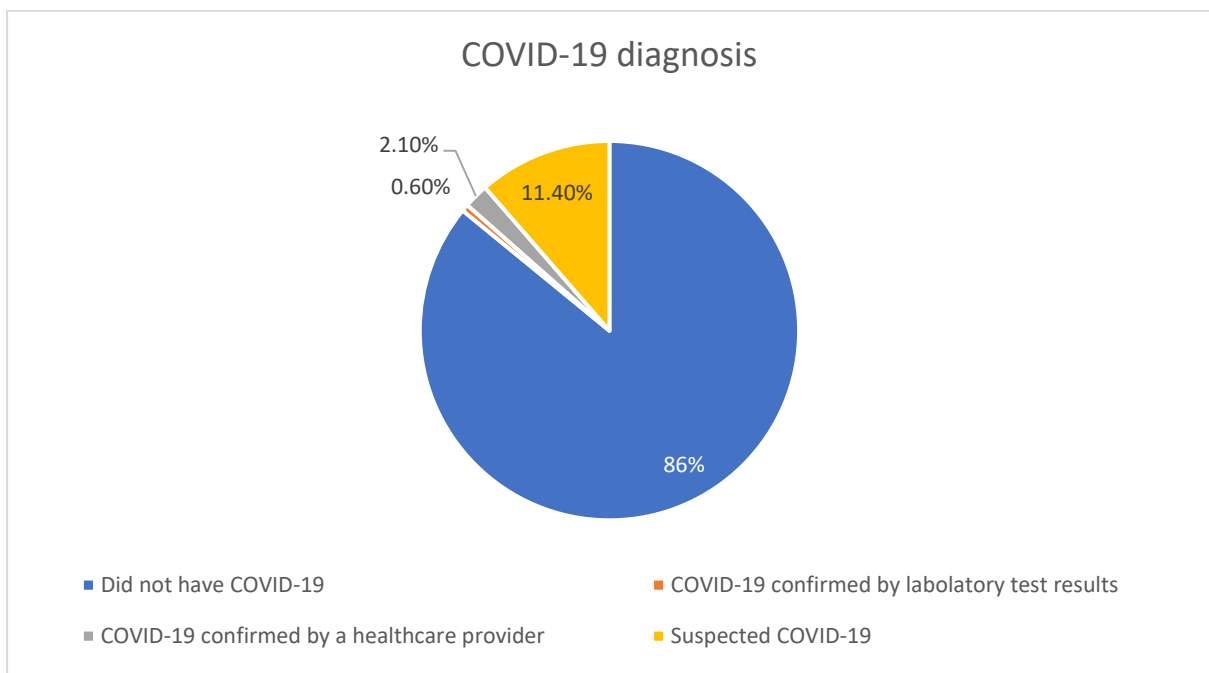
	Lack of companionship	Isolation from others	Loneliness
None or almost none of the time	34.8%	22.5%	29.4%
Some of the time	30.1%	35%	37%
Most of the time	19.7%	23%	20.6%
All or almost all of the time	15.4%	19.5%	12.9%

## COVID-19 diagnosis, symptoms and perceived risk of infection

### COVID-19 diagnosis and symptoms

The vast majority of students, 86%, stated that they did not have COVID-19 at the time of or prior to taking the survey. Less than 1% had received positive laboratory results and 2% was told that they have COVID by their healthcare provider. Further 11.4% thought that they might be infected but their condition was not confirmed by a healthcare provider or a laboratory test.

Figure 12 COVID-19 prevalence amongst the students



However, when students were asked whether they experienced any symptoms such as coughing (which is a symptom of COVID-19), sneezing, or a runny nose (which are rare in COVID-19) during the last month, 33% did experience such symptoms, 60.4% did not, and 6.7% were unsure. Out of those 588 students who experienced the symptoms, 47.2% tried to hide these from other people when in public places. This is reflective of the initial stigmatisation and discrimination of those infected by SARS-CoV-2 stemming from misinformation and anxiety (Bhanot et al., 2021; Sotgiu and Dobler, 2020).

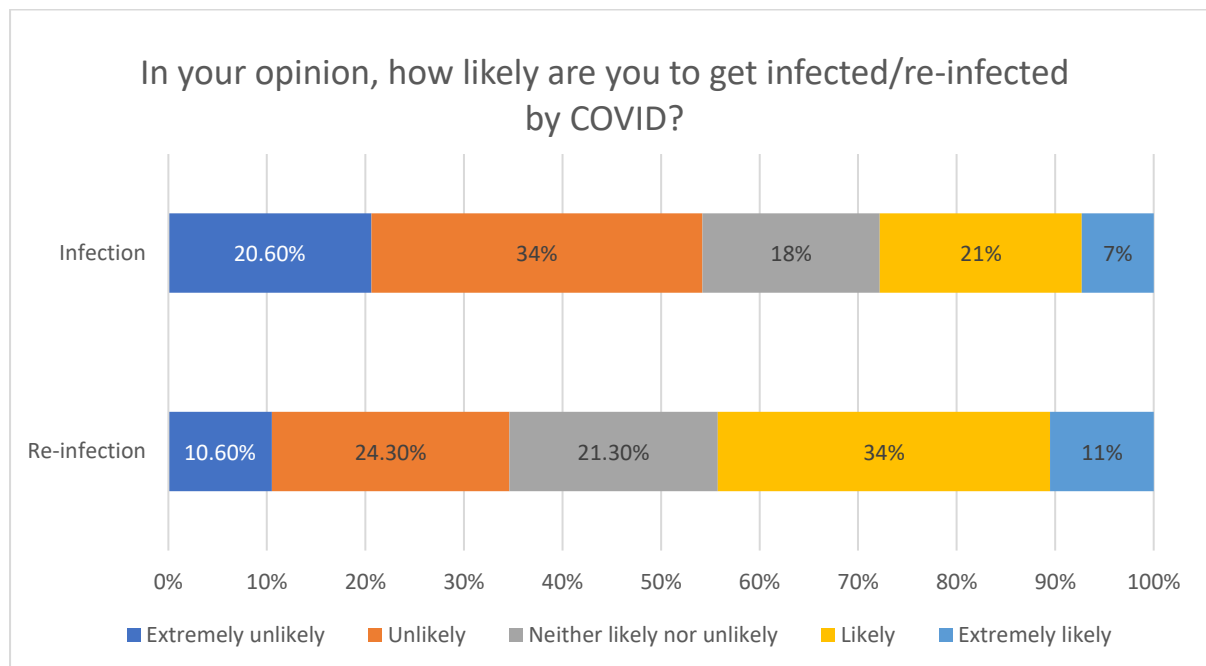
### COVID-19 perceived risk of infection and severe illness- individual

The 47 students who stated that they have or did have COVID-19 (either lab tested or confirmed by their healthcare provider) were asked about the perceived re-infection risk on a scale 0-10. Those who did not have COVID-19 at the time of or prior to taking the survey were asked about their perceived risk of infection on the same scale. For ease of analysis and interpretation the numeric scale was converted into the following answers:

- 0-1 extremely unlikely;
- 2-4 unlikely;
- 5 neither likely nor unlikely;
- 6-8 likely;
- 9-10 extremely likely.

Those who were previously infected, were more likely to believe that they will experience another infection than those who were not. More than half of students who were not previously infected perceived their risk as very low (extremely unlikely and unlikely).

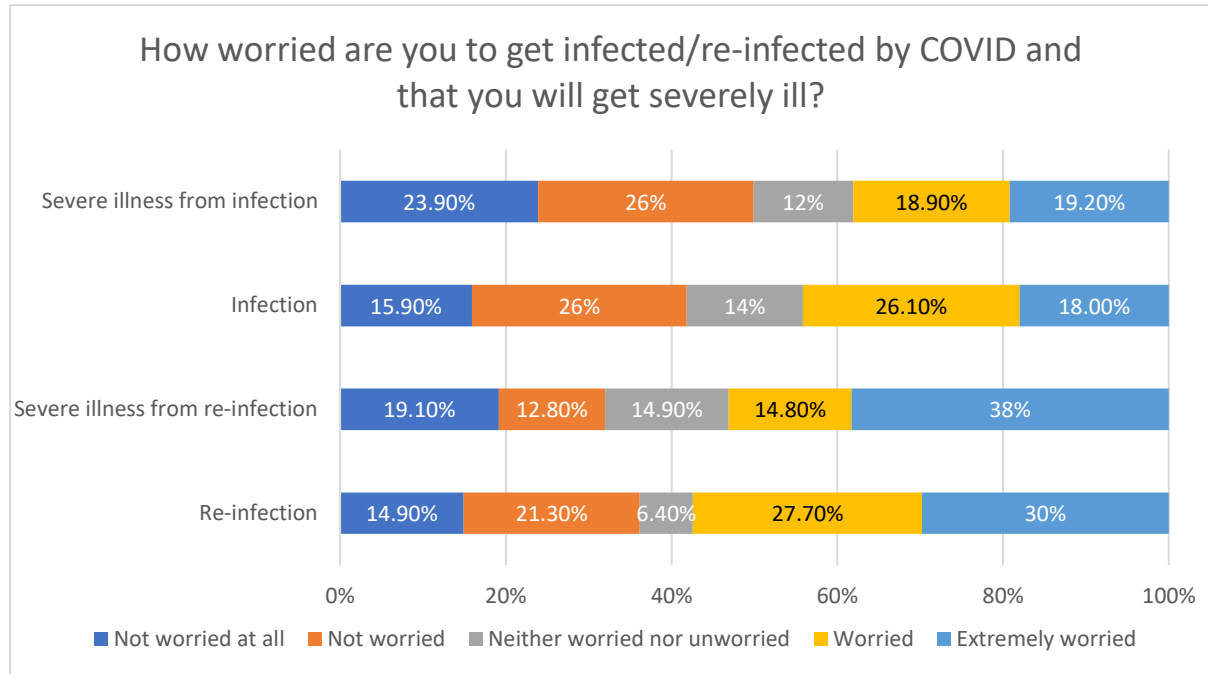
Figure 13- Perceptions of infection or re-infection risk.



Further, the students were asked about their worries regarding infection and being severely ill from the infection. Similarly to the perceived risk of infection, those who were previously infected, were more likely to worry about re-infection and being severely ill from the re-infection than the students who did not experience being ill from COVID-19 prior to taking the survey. As presented on Figure 14

below, half of the non-infected students were 'not worried' or 'not worried at all' being severely ill from the potential infection.

Figure 14- Worries about infection and being severely ill from COVID-19



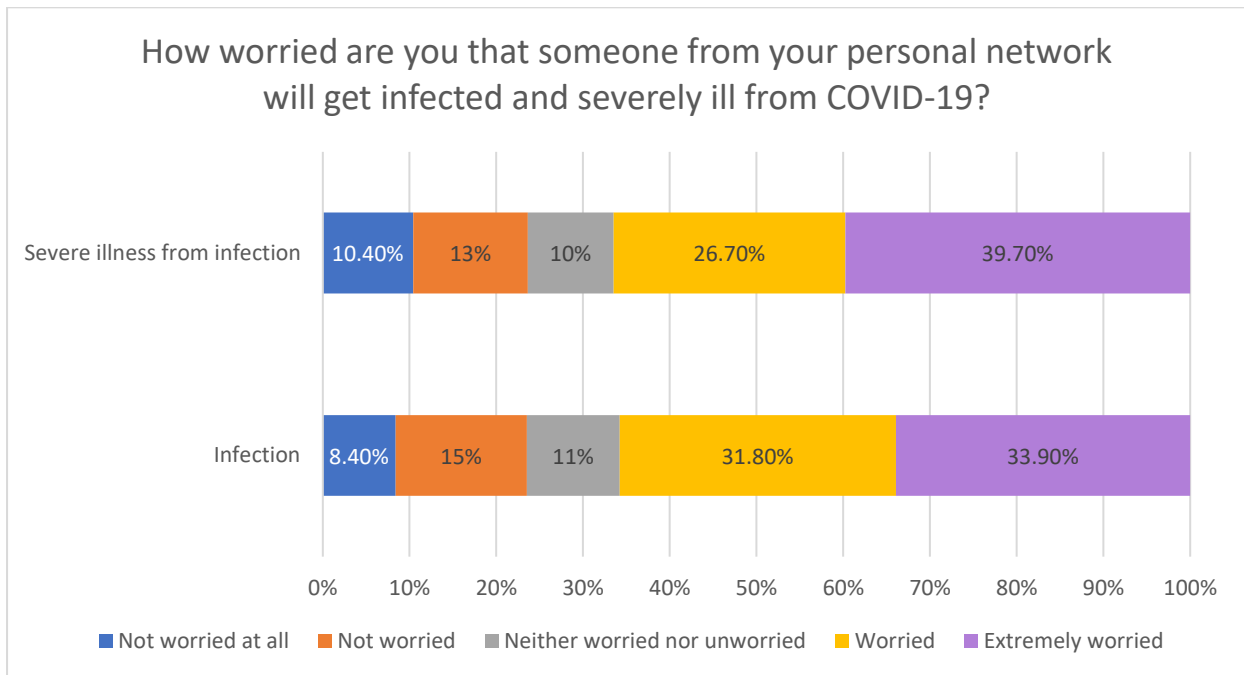
#### COVID-19 Perceived risk of infection and illness- personal network

41.3% of students knew someone in their personal network who had COVID-19. The majority of these acquaintances experienced mild symptoms (27%) or severe symptoms that did not require hospitalisation (35%), 18% required hospitalisation (with and without the provision of intensive care), and 8% passed away from the infection.

Students were also asked how worried were they that somebody from their personal network will get infected and severely ill from COVID-19. While they were not predominantly worried about their own risk, the majority reported being 'worried' and 'extremely worried' about their personal network (see Figure 15 below).



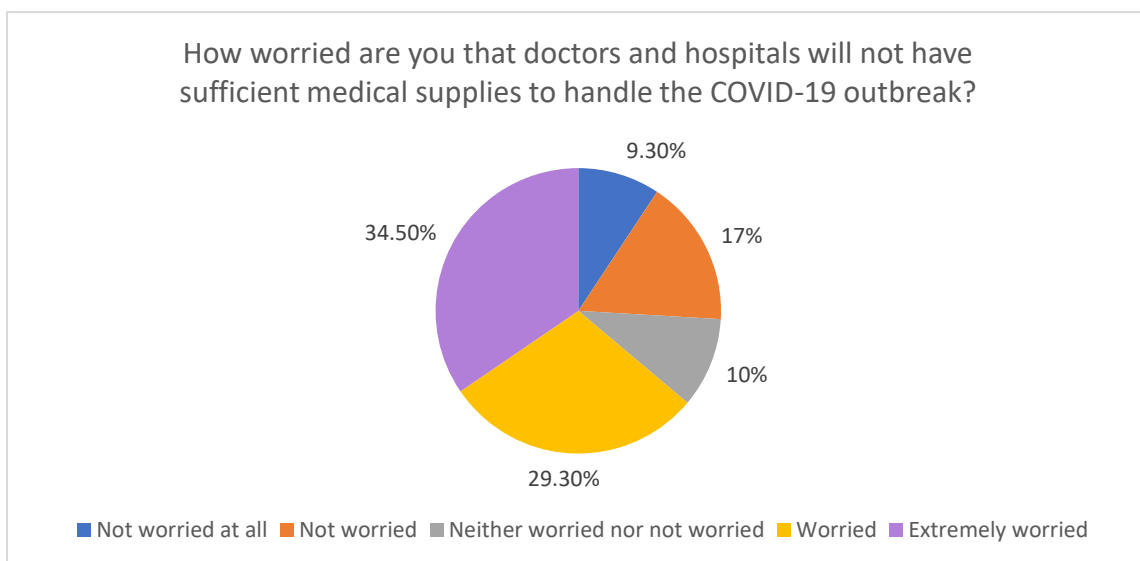
Figure 15- Worries about the health of somebody from the personal network



### COVID-19 Perceived risk of medical supply shortage

The final question on COVID-19 related worries was concerned with the sufficient availability of medical supplies in hospitals and doctor surgeries to handle the outbreak. The majority of students was worried (29.30%) or extremely worried (34.5%) that there will be shortages of medical supplies (see Figure 16 below).

Figure 16- Worries about the shortages in medical supplies



## COVID-19 knowledge

To establish the level of knowledge about the virus, the students were asked to state whether the following questions are true or false:

- The virus survives for days outside the body in open air (FALSE=correct answer)
- The virus survives for a week outside the body on a plastic surface (FALSE=correct answer)
- Most people who get COVID-19 get very ill (FALSE=correct answer)
- A possible vaccine will take around 12 to 18 months to produce (TRUE=correct answer)
- Smokers who get COVID-19 are more likely to get severely ill than non-smokers (TRUE=correct answer)
- You can have the virus without any symptoms (TRUE=correct answer)
- On average, children get less ill from the virus than adults (TRUE=correct answer)
- Only elderly people die from COVID-19 (FALSE=correct answer)

To facilitate the analysis, the incorrect answers and 'don't know' answers were both counted as 0 and so the students could score between 0 (indicating lowest knowledge and no correct answers) and 8 points (indicating highest knowledge and all correct answers). The correctness of answers was assessed based on the scientific literature that was available at the beginning of April 2020.

As presented in Table 8 below, a similar percentage of students scored between 3 -5 and 6 - 7 points (43% and 43.8% respectively). More students scored 8 points (9.2%) than 2 or less points (6%).

*Table 8- COVID-19 knowledge score*

Knowledge score	Percentage of students
0 points	0.9%
1-2 points	5.1%
3-5 points	43%
6-7 points	43.8%
8 points	9.2%

Table 9 and Table 10 summarise the mean score per demographic and academic characteristics of the students. Nationality, immigration status, and citizenship status all appeared to impact the knowledge score in a statistically significant way with those students born in the UK, to non-immigrant parents, and British citizens scoring higher than other groups. While the differences between age groups and within the 'relationship status' categories were statistically significant, the differences were mostly marginal. The field of study also did not appear to have a substantial impact on the knowledge; however, it is notable (but not surprising) that those studying health subjects scored the highest.

Table 9- COVID-19 knowledge- average score by socio-economic characteristics

	Mean	S.D
<b>Gender</b>		
Male	5.43	1.74
Female	5.41	1.68
X	4.79	1.89
<b>Age group *</b>		
Under 20	5.44	1.62
21-25	5.27	1.71
26-30	5.18	1.84
31-50	5.81	1.55
Over 51	6.31	1.84
<b>Relationship status *</b>		
Single	5.19	1.76
In a relationship	5.63	1.60
It is complicated	5.41	1.74
<b>Is this your first year of education?</b>		
Yes	5.17	1.78
No	5.55	1.63
<b>Were you born in the UK? *</b>		
Yes	5.62	1.59
No	4.92	1.83
<b>Were your parents born in the UK? *</b>		
Yes	5.78	1.47
No, one of my parents was born outside the UK	5.28	1.91
No, both parents were born outside the UK	4.91	1.79
Do not know	4.33	2.27
<b>Status in the UK *</b>		
Citizen	5.59	1.60
Permanent resident	5.47	1.64
Temporary resident for one year or less	4.39	1.42
Temporary resident who is enrolled at the university for more than one year	4.61	1.95
<b>From how many people could you borrow £500 within two days?</b>		
6-10	5.37	1.69
11-15	5.50	1.72
16-20	5.66	1.53
21-24	4.57	1.99

Table 10- COVID-19 knowledge- average score per academic characteristics

<b>Field of study</b>		
Education	5.24	1.85
Art	5.44	1.61
Humanities	5.60	1.26
Language	5.42	1.70
Social and behavioural science	5.44	1.65
Journalism, media, and communication	5.52	1.50
Business and administration	4.77	1.84
Law	5.08	1.86
Natural sciences, mathematics, and statistics	5.57	1.71
Information and communication technologies	5.16	1.87
Engineering and manufacturing	5.24	1.64
Architecture, construction, and agriculture	5.46	1.62
Health	5.73	1.50
Welfare	5.32	1.81
Security and other <sup>1</sup>	4.38	1.82
<b>Importance of education vs other activities</b>		
More important	5.32	1.71
Equally important	5.49	1.65
Less important	5.69	1.92
<b>Is this your first year of education?</b>		
Yes	5.17	1.78
No	5.55	1.63
<b>Study programme</b>		
Bachelor	5.47	1.60
Master	5.03	1.97
Doctorate	6.33	1.50
Other	5.50	1.60
<b>Source of tuition</b>		
Not relevant/ Publicly funded tuition	5.37	1.60
Parents	4.61	1.92
Self-funded	5.26	1.97
Bank loan or student loan	5.54	1.60
Scholarship	5.89	1.73
Other <sup>2</sup>	5.46	1.69

<sup>1</sup> Text answers for other included subjects such as: sport, exercise science, real estate, film production, English, Criminology, art education.

<sup>2</sup> Text answers for 'other' included sources such as: apprenticeship, student loan, bursary, government, current employer, family (including spouse and other non-parent members).

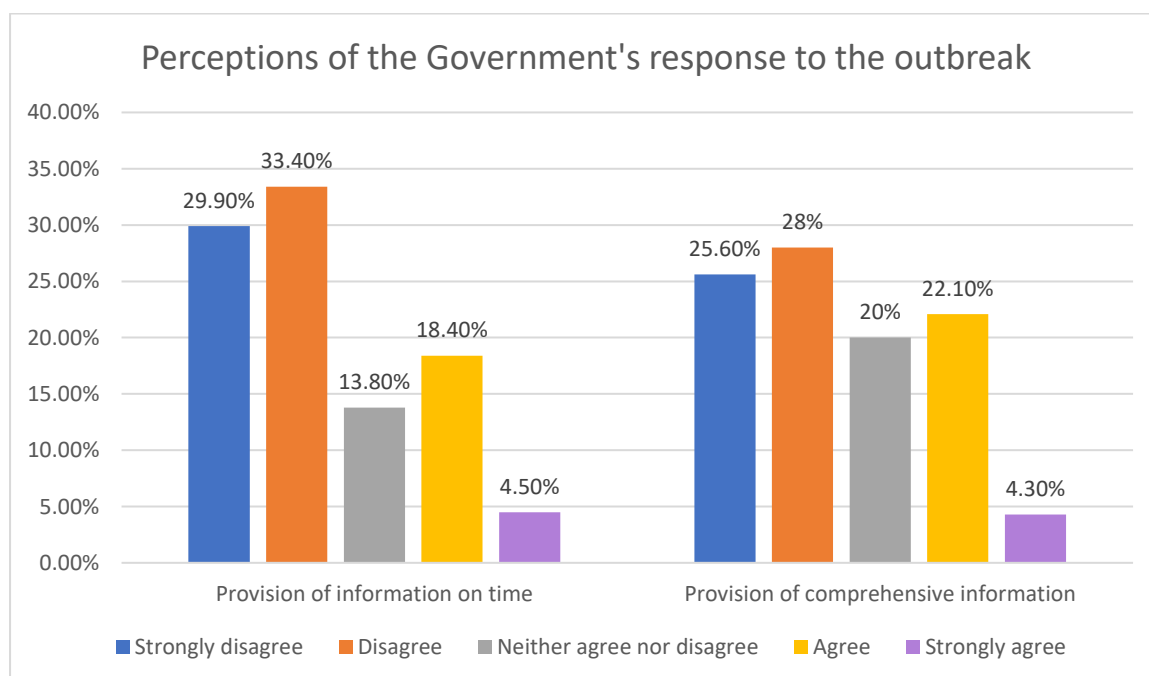
## The perceptions of and compliance with COVID-19 measures

The students were asked about their perceptions of the Government's response to the outbreak. They rated their perceptions on a scale from 'strongly agree' to 'strongly disagree' in response to the following statements:

- The government provided information concerning the COVID-19 outbreak on time;
- The government provided comprehensive information concerning the COVID-19 outbreak.

The majority of students (see Figure 17 below) strongly disagreed or disagreed with the above statements. The disagreement rate for the 'provision of information on time' was particularly high at 63% of all responses. Less than 5% of the students strongly agreed that the information was comprehensive and provided on time. In relation to demographic characteristics, statistically significant differences in agreement with the statement were noted for citizenship status (with citizens being more likely to agree than non- citizens), year of education (non-first years being more likely to agree), and place of birth (those being born in the UK were more likely to agree). However, these differences between groups were largely marginal (less than 1 point when assessed based on mean scores).

Figure 17 Perceptions of the Government's response to the outbreak



The students were asked about their adherence to the COVID-19 measures introduced by the Government which were in place at the time of the survey. They rated their compliance with the measures on a scale from 0 (complete non-compliance) to 10 (complete compliance). A third of the

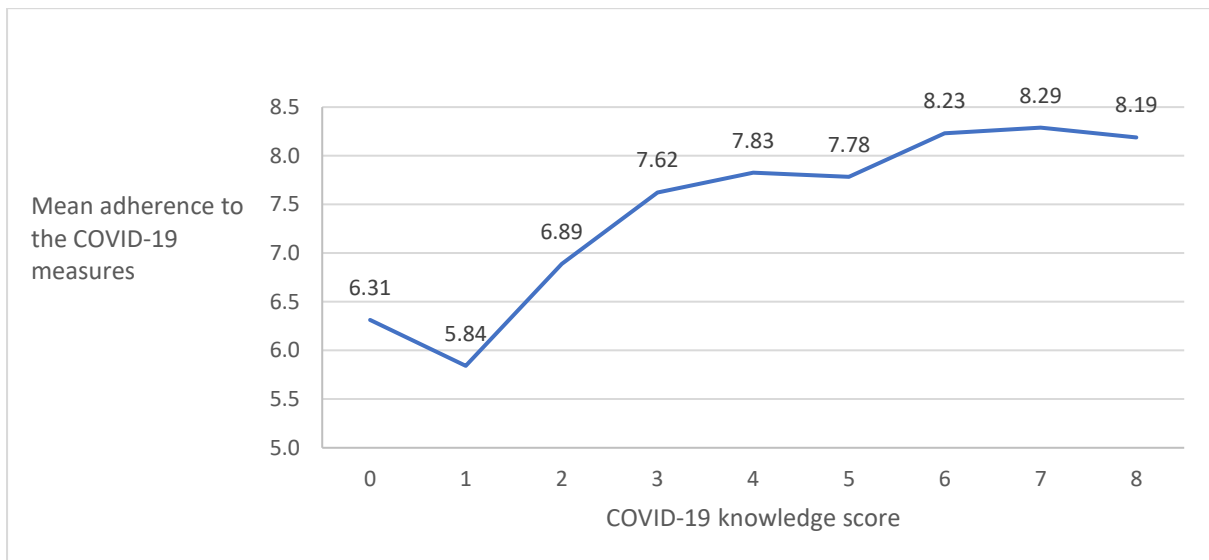
students rated their compliance as 10 and almost a half (46%) scored between 7 and 9. Table 11 below provides a detailed breakdown per each adherence degree.

*Table 11- Degree of adherence to the Government’s COVID-19 measures*

Adherence degree	Percentage of students
0	1.4%
1	1.6%
2	2.1%
3	2.6%
4	2.9%
5	4.5%
6	5.3%
7	8.4%
8	17.8%
9	20.3%
10	33.2%

There was a statistically significant relationship between the knowledge score (see previous section) and the degree of adherence to the measures. As illustrated by the Figure 18 below, those with higher COVID-19 knowledge scores were generally more likely to indicate a higher adherence to the rules.

*Figure 18- Correlation between knowledge score and the degree of adherence to the Government’s measures*



Similar to the knowledge scores, the nationality, immigrant status, and citizenship status had the most notable statistically significant impact on the adherence with the Government’s COVID-19 measures and those studying health-related subjects also had the highest mean adherence. Table 12 and Table 13 below summarise the differences in adherence scores for the demographic and academic sub-groups.

Table 12- Average adherence to the Government's COVID-19 measures by demographic characteristics

	Mean	S.D
<b>Gender *</b>		
Male	7.47	2.75
Female	8.09	2.27
X	8.21	2.12
<b>Age group *</b>		
Under 20	8.01	2.32
21-25	7.83	2.44
26-30	7.64	2.57
31-50	8.23	2.38
Over 51	9.21	1.05
<b>Relationship status *</b>		
Single	7.77	2.53
In a relationship	8.19	2.20
It is complicated	7.29	2.66
<b>Is this your first year of education? *</b>		
Yes	7.83	2.52
No	8.02	2.33
<b>Were you born in the UK? *</b>		
Yes	8.21	2.12
No	7.32	2.88
<b>Were your parents born in the UK? *</b>		
Yes	8.33	1.96
No, one of my parents was born outside the UK	7.83	2.55
No, both parents were born outside the UK	7.41	2.81
Do not know	7.08	3.20
<b>Status in the UK *</b>		
Citizen	8.21	2.14
Permanent resident	7.46	2.85
Temporary resident for one year or less	7.26	3.19
Temporary resident who is enrolled at the university for more than one year	6.93	2.91
<b>From how many people could you borrow £500 within two days?</b>		
6-10	7.98	2.40
11-15	7.95	2.35
16-20	7.71	2.48
21-24	5.71	4.35

Table 13- Average adherence to the Government's COVID-19 measures by academic characteristics

<b>Field of study</b>		
Education	7.77	2.56
Art	8.04	2.40
Humanities	6.20	3.26
Language	7.39	2.83
Social and behavioural science	7.77	2.37
Journalism, media, and communication	7.96	2.39
Business and administration	7.38	2.71
Law	7.95	2.56
Natural sciences, mathematics, and statistics	7.70	2.45
Information and communication technologies	7.67	2.60
Engineering and manufacturing	7.11	2.83
Architecture, construction, and agriculture	7.69	3.04
Health	8.31	2.05
Welfare	7.95	2.47
Security and other <sup>1</sup>	6.43	4.67
<b>Importance of education vs other activities</b>		
More important	7.94	2.47
Equally important	8	2.28
Less important	7.45	2.89
<b>Is this your first year of education?</b>		
Yes	7.83	2.52
No	8.02	2.33
<b>Study programme</b>		
Bachelor	8.02	2.32
Master	7.39	2.80
Doctorate	8.66	1.64
Other	8.48	2
<b>Source of tuition</b>		
Not relevant/ Publicly funded tuition	7.74	2.47
Parents	6.82	3.10
Self-funded	8.10	2.28
Bank loan or student loan	8.14	2.19
Scholarship	8.27	2.37
Other <sup>2</sup>	8.18	2.19

<sup>1</sup> Text answers for other included subjects such as: sport, exercise science, real estate, film production, English, Criminology, art education.

<sup>2</sup> Text answers for 'other' included sources such as: apprenticeship, student loan, bursary, government, current employer, family (including spouse and other non-parent members).



## Mental wellbeing during the COVID-19 outbreak

### 8-item depression scale

The students' mental wellbeing during the pandemic was measured using the 8-item abbreviated version of the Centre of Epidemiological Studies-Depression Scale (CESD 8). The answers ranged from 0 (none or almost none of the time) to 3 (all or almost all of the time). The maximum score was 24 and a higher score indicated a more depressed state. The students provided answers to the following statements:

How much of the time during the past week...

- ... did you feel depressed?
- ... did you feel everything you did was an effort?
- ... was your sleep restless?
- ... were you happy?
- ... did you feel lonely?
- ... did you enjoy life?
- ... did you feel sad?
- ... were you unable to get going?

Students' responses per each question are summarised in Table 14 below. The majority of students reported feelings of depression, loneliness, sadness, and anxiety at least some of the time. They also found that their sleep was restless, they could not get going, and were frustrated with things in general. All of the items were moderately or strongly correlated with each other (Pearson correlation between 0.3 to 0.5 for moderate and 0.5 to 1 for strong, all significant at  $p = 0.000$ ) and the strongest correlations were between feelings of sadness and depression, enjoying life and being happy, feeling that everything you do is an effort and feelings of depression and not being able to get going.

Table 14- CESD 8-item depression scale: percentage of answers per individual questions

Please indicate how much of the time during the past week...	None or almost none of the time	Some of the time	Most of the time	All or almost all of the time
...you felt depressed?	23%	47.6%	20%	9.3%
... you felt that everything you did was an effort?	17.7%	39.5%	28.5%	14.3%
... your sleep was restless?	19.7%	33.4%	26.5%	20.5%
... you were happy?	8.6%	51.9%	32.7%	6.8%
... you felt lonely?	29.4%	37%	20.6%	12.9%
... you enjoyed life?	16.4%	48.8%	27.2%	7.7%
... you felt sad?	14.6%	54%	21.7%	9.7%
... you could not get going?	19.3%	39.7%	26.6%	14.3%

## Demographics

The average depression score per each demographic sub-group is presented in Table 15 below. The statistically significant differences in scores between groups are highlighted by \* symbol ( $p < 0.05$  based on one way ANOVA analysis or independent sample T-test analysis).

Women and nonbinary students, younger age groups, and native UK students scored marginally higher than their male, older, and non-native counterparts. Those with a stronger social capital and network (the ability to borrow money from a number of people) scored lower than those with a smaller social capital. Those who were single or in complicated relationship scored higher on average than those in a permanent relationship. Citizenship status, nationality, and whether the student was in the first year of their course did not appear to have a strong influence on the depression score.

Table 15- CESD-8 item scale means per demographic characteristics

	Mean	S.D
<b>Gender*</b>		
Male	10.35	5.16
Female	11.41	5.27
Nonbinary	13.50	4.62
<b>Age group*</b>		
Under 20	11.46	5.36
21-25	11.65	5.30
26-30	11.38	5.10
31-50	9.60	4.70
Over 51	8.40	4.98
<b>Relationship status*</b>		
Single	11.40	5.36
In a relationship	10.75	5.12
It is complicated	13.57	5.02
<b>Were you born in the UK?</b>		
Yes	11.30	5.25
No	10.91	5.28
<b>Were your parents born in the UK?*</b>		
Yes	11.18	5.16
No, one of my parents was born outside the UK	12.07	5.74
No, both parents were born outside the UK	10.82	5.18
Do not know	15.17	5.77
<b>Status in the UK</b>		
Citizen	11.26	5.32
Permanent resident	10.63	5.07
Temporary resident for one year or less	11.55	4.45
Temporary resident who is enrolled at the university for more than one year	11.04	5.16
<b>Parental education- mother</b>		
Less than secondary	11.78	5.55
Secondary	11.27	5.33
Higher	10.84	5.09
Not known	12.04	5.31
<b>Parental education- father</b>		
Less than secondary	11.41	5.24
Secondary	11.15	5.17
Higher	10.88	5.30
Not known	12.31	5.42
<b>From how many people could you borrow £500 within two days?*</b>		
6-10	11.77	5.33
11-15	9.98	4.88
16-20	9.51	4.76
21-24	8.29	5.88

## Physical health

The presence of pre-existing health conditions that could be risk factors for severe illness from COVID-19 as well as the number of conditions had significant impact on the depression score. While certain diseases (such as a recent cancer diagnosis or a kidney disease) appeared to indicate a higher depression score, this relationship was not statistically significant. Similarly, a non-significant impact on mental wellbeing was noted in regard to the COVID-19 diagnosis: those who had a positive COVID-19 laboratory test scored higher than those with suspected illness and those who did not contract the virus prior to the survey; see Table 16.

Table 16- CESD-8 item scale means and physical health

	Mean	S.D
<b>COVID-19 diagnosis</b>		
Yes, lab testes	13.40	5.48
Yes, confirmed by a healthcare provider	11.97	5.38
Suspected by the student but not confirmed	12.03	5.57
No	11.04	5.20
<b>Presence of pre-existing health conditions*</b>		
Yes (including 'prefer not to say' answers)	12.24	5.53
No	10.95	5.17
<b>The number of pre-existing health conditions*</b>		
None	10.95	5.17
One	12.29	5.56
Two	10.75	5.67
Three or more	11.92	5.53
Prefer not to say	13.07	5.25
<b>Pre-existing health conditions type</b>		
A recent cancer diagnosis	13	7.94
Diabetes	11	5.25
Heart disease	9.54	5.41
High blood pressure	10	5.42
Immunocompromised condition	10.38	5.78
Kidney disease	12.80	5.55
Lung disease	12.32	5.66
Obesity	12.87	5.25

## Physical activity and food behaviour

Changes in vigorous and moderate physical activity were significantly correlated with the depression score. Those who decreased the frequency of at least 30 minutes of PA, were more likely to score higher on the depression scale than those who increased or maintained the frequency. Those who participated in cycling and walking during the outbreak also scored lower on the depression scale than those who did not engage in such activities. Food behaviour was also significantly correlated with the depression score and students who bought more food out of fear, ate more due to anxiety, ate more

canned fruits and vegetables and relied on social protection measures scored higher than the students who did not report these behaviours. Eating more fresh and frozen fruits and vegetables as well as cooking and baking more, were the positive behaviours associated with a lower depression score (see Table 17).

*Table 17- The impact of changes in physical activity and food behaviour on the depression score*

	Mean	S.D.
<b>Reported change in vigorous physical activity frequency*</b>		
Decrease	12.33	5.28
Increase	10.38	5.21
No change	10.59	5.09
<b>Reported change in moderate physical activity frequency*</b>		
Decrease	12.33	5.30
Increase	10.42	4.81
No change	10.37	5.34
<b>Participation in walking during the outbreak*</b>		
No	11.51	5.45
Yes	10.69	4.92
<b>Participation in cycling during the outbreak*</b>		
No	11.33	5.25
yes	8.69	4.77
<b>Do you buy more food out of fear?*</b>		
Yes	12.15	5.10
No	10.88	5.28
<b>Do you eat more food out of boredom/ anxiety?*</b>		
Yes	11.96	5.06
No	9.93	5.35
<b>Do you eat more fresh/ frozen fruits /or vegetable?*</b>		
Yes	10.54	4.90
No	11.85	5.53
<b>Do you eat more canned fruits/or vegetables?*</b>		
Yes	12.36	5.24
No	10.92	5.23
<b>Do you cook/ bake more?</b>		
Yes	10.96	5.03
No	11.76	5.79
<b>Are you relying on social protection measures related to food? *</b>		
Yes	12.38	5.51
No	11.05	5.22

## Social support

Having more or maintaining the level of contact with family members and friends appeared to have a protective impact on the mental wellbeing with students scoring lower on the depression scale as per Table 18 below. Students who had somebody to discuss their personal matters with also reported a lower degree of depression. As presented in Figure 19 below, there was a linear relationship between the depression score and feelings of isolation and the lack of companionship. Students who contacted the student counselling or social services did score higher on the scale than those who did not seek such support.

Figure 19- Mean depression score in relation to feelings of isolation and lack of companionship

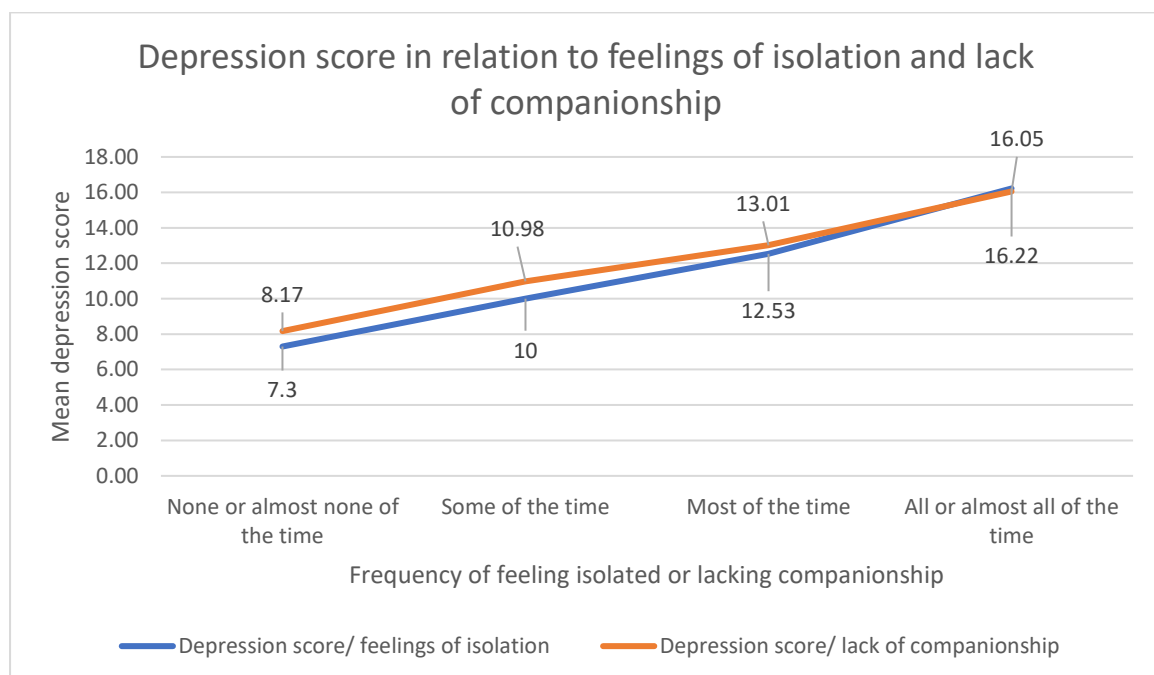


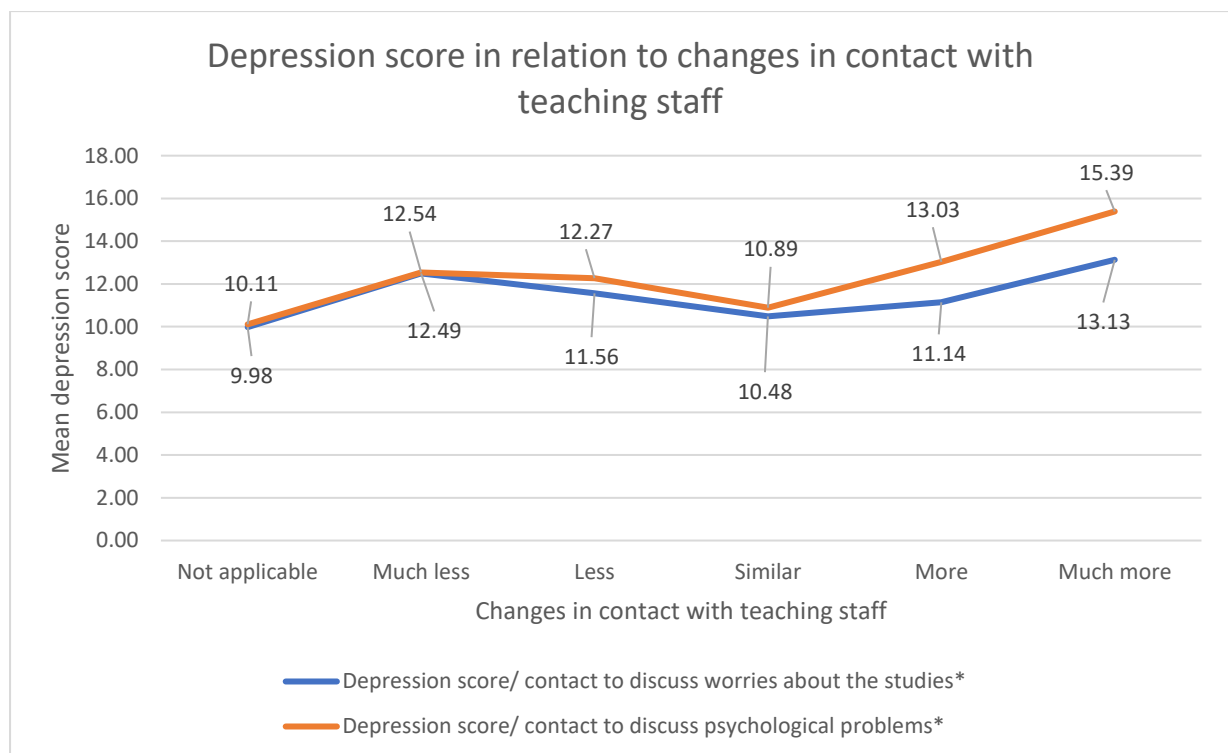
Table 18- CESD-8 item scale means and social support

	Mean	S.D.
<b>Reported change in contact with family *</b>		
Increase	10.64	5.16
No change	10.81	5.13
Decrease	12.51	5.37
<b>Reported change in contact with friends *</b>		
Increase	10.74	5.30
No change	10.69	5.03
Decrease	11.74	5.35
<b>Having somebody to discuss intimate and personal matters with *</b>		
Yes	10.43	5.00
No	14.31	5.16
<b>Participation in (distanced) social activities during lockdown</b>		
None	11.31	5.32
Four or five activities	10.33	4.78
<b>How often did you lack companionship during the last week? *</b>		
None or almost none of the time	8.17	4.43
Some of the time	10.98	4.27
Most of the time	13.01	4.55
All or almost all of the time	16.05	5.00
<b>How often did you feel isolated from others during the past week? *</b>		
None or almost none of the time	7.30	4.17
Some of the time	10.00	4.13
Most of the time	12.53	4.34
All or almost all of the time	16.22	4.64
<b>Contact with student counselling services or social services at the university *</b>		
Yes	13.14	5.43
No	11.02	5.21

## Academic characteristics

As presented in Figure 20 below, the students who did not change the amount of contact they had with teaching staff had the lowest depression scores out of all groups (except for those who selected 'not applicable'). In addition, higher depression scores were noted for the more extreme changes in the contact including both much more and much less. These findings were significant for both reasons for contact. It appears therefore that the students reacted differently to the situation with some withdrawing from contact (which could further contribute to depressive feelings) and some resulting to contacting their teachers more- most likely to relieve some of the stress and anxiety or to address their concerns related to the probable impact of poor mental wellbeing on their studies.

Figure 20- Depression score in relation to changes in contact with teaching staff



There did not appear to be a significant relationship between depression scores and changes reported due to COVID-19 in: type of accommodation, the number of people students lived with, the number of hours spent in online and offline teaching, personal study time or paid jobs. There was also no significant or substantial differences in the depression scores based on the source of tuition, study programme, whether the student was a first or not, and the reported importance of education in relation to other areas of life. However, there was significant differences between the amount of contact with teaching staff to discuss issues related to their study or psychological problems and depression score. Students studying health subjects on average had the lowest score in comparison to other fields (see Table 19 below).



Table 19- CESD-8 item scale means and academic characteristics

	Mean	S.D.
<b>Importance of education vs other activities</b>		
More important	11.29	5.33
Equally important	11.07	5.10
Less important	11.21	6.59
<b>Is this your first year of education?</b>		
Yes	11.16	5.24
No	11.20	5.27
<b>Study programme</b>		
Bachelor	11.35	5.38
Master	10.93	4.83
Doctorate	9.59	5.18
Other	10.84	5.04
<b>Source of tuition (significance not tested)</b>		
Not relevant/ Publicly funded tuition	11.91	5.52
Parents	11.31	5.13
Self-funded	10.53	5.21
Bank loan or student loan	11.45	5.18
Scholarship	9.65	5.62
Other <sup>1</sup>	10.36	5.21
<b>Field of study (significance not tested)</b>		
Education	11.94	5.42
Art	11.75	5.05
Humanities	10.90	4.12
Language	11.55	4.61
Social and behavioural science	11.71	5.16
Journalism, media, and communication	11.98	5.04
Business and administration	11.42	5.2
Law	11.07	5.58
Natural sciences, mathematics, and statistics	11	5.68
Information and communication technologies	10.38	5.41
Engineering and manufacturing	11.11	4.42
Architecture, construction, and agriculture	10.67	5.03
Health	10.48	5.13
Welfare	10.89	5.54
Security and other <sup>2</sup>	11.32	5.03

<sup>1</sup> Text answers for 'other' included sources such as: apprenticeship, student loan, bursary, government, current employer, family (including spouse and other non-parent members).

<sup>2</sup> Text answers for other included subjects such as: sport, exercise science, real estate, film production, English, Criminology, art education.

## The perception of changes in university workload and university's response to the COVID and impact on mental wellbeing

Those who agreed with the negative statements and disagreed with the positive statements regarding the university's response to the outbreak, on average, had a higher depression score. Scores for each level of agreement per each question are presented in Table 20 below. All these relationships were statistically significant.

*Table 20- Depression score in relation to the agreement with statements about the university's response to the outbreak*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
(a) My university/college workload has significantly increased since the COVID-19 outbreak.*	13.20 (5.68)	11.83 (5.19)	10.71 (4.99)	10.23 (4.94)	10.35 (5.47)
(b) I know less about what is expected of me in the different course modules/units since the COVID-19 outbreak.*	13.09 (5.36)	11.26 (4.92)	10.15 (5.13)	9.74 (5.03)	10.01 (5.74)
(c) I am concerned that I will not be able to successfully complete the academic year due to the COVID-19 outbreak.*	13.71 (5.25)	11.37 (4.64)	10.06 (4.70)	9.67 (5.01)	8.37 (5.37)
(d) The university/college provides poorer quality of education during the COVID-19 outbreak as before.*	13.16 (5.41)	11.33 (5)	10.74(5.02)	9.95 (5)	9.73(5.71)
(e) The change in teaching methods resulting from the COVID-19 outbreak has caused me significant stress.*	14.02 (4.92)	11.22(4.62)	9.01(4.56)	8.62(5.03)	8.09(5.18)
(f) The university/college has sufficiently informed me about the changes that were implemented due to the COVID-19 outbreak.*	10.75(5.62)	10.66(4.86)	11.85(5.19)	12.46(5.56)	13.91(6.02)
(g) I am satisfied with the way my university/college has implemented protective measures concerning the COVID-19 outbreak.*	9.99 (5.32)	10.68 (5.02)	11.61 (5.09)	12.66 (5.26)	13.19 (6.15)
(h) I feel I can talk to a member of the university/college staff (e.g., professor, student counsellor) about my concerns due to the COVID-19 outbreak.*	9.59(5.19)	10.13 (4.92)	11.33 (4.95)	12.34 (5.1)	14.88(5.38)

## Students' tips for staying well

The students were asked to share their three tips for staying well during the pandemic. Their answers were analysed thematically and data saturation has been reached after 300 answers with no new themes emerging. The answers from outliers for age (mature students over 50), gender (those who selected other gender), and programme of education (other than Bachelor, Masters, or Doctoral) were checked separately and the themes were representative of their views with no new prevalent themes. Students' tips were grouped under the main themes of physical health, mental wellbeing, relationships, hobbies and interests, work life balance, preventative measures, spending time in nature. The top five tips are presented in **Error! Reference source not found.** below and Table 21 summarises all of the above themes.

Figure 21- Top 10 tips for staying well



At the time of data collection, the lockdown restrictions in England prevented people from meeting friends and family from different households. Therefore it is not surprising that the tips on socialising and maintaining regular contact with friends and family were one of the most common with 124 students including them in their answers. These ranged from broad suggestions to *'talk to people'* and *'keep in contact with family friends'* to more specific recommendations such as *'In terms of Mental Health, do not be afraid to talk about how this pandemic has affected you to your friends and family because, trust me, they're probably going through similar emotions and they might also need someone to talk to'*. Another common advice was to exercise and engage in physical activity (126 answers) which is also reflective of the Government's messages. In particular, the tips often concentrated on

partaking in physical activity outdoors and at the time the guidelines suggested that exercise is one of the limited reasonable excuses for leaving one's home. Interestingly, the tips on following a healthy diet and staying hydrated (n=106) were more common than those about adhering to lockdown guidelines and preventative measures (n=86).

Table 21 Students' tips for maintaining wellbeing

<b>Theme</b>	<b>Tips</b>
<i>Physical health</i>	Engaging in regular physical activity (indoor or outdoor)
	Following a healthy diet and limiting the intake of unhealthy snacks and sweets
	Drinking plenty of water to stay hydrated
	Sleeping at least 8 hours each night and going to bed at an appropriate time
<i>Mental wellbeing</i>	Maintaining a positive outlook
	Praying and engaging in other religious practices
	Practicing mindfulness and meditation
	Adapting a 'keep calm and carry on' approach to the situation
	Acknowledging that feelings of stress and anxiety are understandable and accepting that some days might be more difficult to get through than others
	Taking the time for self-care and pampering
	Avoiding excessive media (news and social) consumption
	Staying in regular contact with friend and family
<i>Relationships</i>	Reaching out to talk when feeling mentally unwell
	Playing online games with friends and family
	Approaching the lockdown as a unique opportunity to spend more time with family
	Engaging in pre-existing hobbies
	Exploring new hobbies
<i>Hobbies and interest</i>	Moderately indulging in 'guilty pleasures' such as watching TV series and movies
	Reading for pleasure
	Learning new skills
	Setting up and maintaining a routine
	Allowing time for breaks and relaxation
<i>Work-life balance</i>	Continuing with university coursework
	Setting achievable daily goals
	Being productive
	Following the Government guidelines
	Using protective equipment
<i>Preventative measures</i>	Increasing hand washing frequency
	Maintaining social distancing
	Not leaving home unless necessary
	Staying safe
	Exercising or walk outside
<i>Spending time in nature</i>	Making use of your garden
	Spending time outside to 'get fresh air'

## Summary of findings and conclusions

The lockdown and restrictive measures introduced in response to the pandemic were reflected in changes in the students' lifestyle, workload, and living conditions. Due to the restrictions imposed on universities in terms of face to face teaching, students reported a reduction in offline teaching and spent more time in online classes and for personal study. In line with findings by Wang et al. (2020b), students felt increased stress and confusion about their workload and course requirements. However, at the same time, they appeared to appreciate the university's response to the pandemic.

The majority did not change their primary accommodation type which could be related to the BCU's student profile of a high proportion of students from the region and living at home rather than student accommodations. However, certain groups of students, notably international and those living in student halls, reported a change in accommodation type and the number of people they lived with.

The pandemic also had an impact on the financial situation of the students with 20% fewer students having sufficient costs to cover their monthly costs and 10% of all respondents relying on social protection measures to obtain food. While this is reflective of the wider societal issues and the impact of the pandemic on poverty rates in the UK (Power et al., 2020), it is important that the particular challenges faced by university students are considered and appropriate support measures are put in place. This is currently being addressed by the university through a Hardship Fund of £2.6 million (including £1.4 million allocated from the Government) which will provide the students with financial support towards accommodation, IT and connectivity, and food and essentials.

The restrictions appeared to have a negative impact on students' physical activity rates with reductions noted for approximately half of the students for both vigorous and moderate physical activity. Another negative lifestyle outcome was noted through changes in students' food behaviour as a large proportion of them ate more food out of boredom and anxiety. However, positive health behaviour changes were also noted with a majority of students reducing their alcohol intake and engaging in more cooking and baking at home- thus potentially consuming healthier meals (Lachat et al., 2012).

The maintenance of social interactions was important to the students as reflected in their tips for staying well. However, while approximately 40% of the students increased their contact with family, more than 45% reported a decrease in contact with friends. They relied on the phone and video calls and engaged in other social activities online. Nevertheless, the majority reported feelings of loneliness, isolation, and lack of companionship which was also the case among US college students (Tasso et al., 2021). The significance of personal relationships was also reflected in the fact that the

majority of students were more worried about somebody from their close network contracting the virus and experiencing severe symptoms than they were for their own health.

The majority of the students had moderate to high knowledge scores about COVID-19, however, the score appeared to be linked to both nationality and citizenship status. In line with findings by Taghrir et al. (2020) and Saddik et al. (2020), those studying health subjects had the highest knowledge score. The students worried about shortages of medical supplies and while the majority felt that the Government's response was lacking speed and accuracy, the self-reported rates of adherence to the lockdown rules were generally high. Importantly for future initiatives trying to reduce the spread of communicable diseases, there was a relationship between the knowledge score and the level of adherence to lockdown rules and guidelines.

In terms of students mental wellbeing, in line with the findings from China (Cao et al., 2020), the student's social and economic status appeared to be strongly linked with the depression scores. Students with stronger social capital and those who maintained or increased their contact with friends and family scored lower on the CESD 8 scale. Unsurprisingly, higher depression scores were noted for the students who felt isolated and those who did not have anybody to discuss their personal matters with. In addition, there was a notable increase in the score for those with one or more pre-existing health condition, those who reduced physical activity, bought and ate more food out of fear and boredom, and relied on social protection measures to obtain food. Those with higher depression scores appeared to react differently to the situation in terms of contacting the teaching staff: some of them increased their contact with staff to discuss course-related and personal matters while others experienced a reduction in contact with teaching staff. Students with the lowest depression scores did not change the amount of contact with the teaching staff.

Students' tips for staying well corresponded with the government and the university guidelines and suggestions. They also reflected the areas of life that appeared to have an impact on their mental wellbeing in the questioner such as physical activity and nutrition and staying connected with friends and family. In addition, participating in pre-existing and new hobbies was frequently recommended by the students which could intake that despite the hardship and anxiety, the pandemic provided them with a unique opportunity to spend more time on activities that bring them joy.

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