



## Nutritional Behaviour and Perceptions on Staying Well during the First Wave of COVID-19 Pandemic - the Experiences of Students from a University in Birmingham, UK

Fatemeh Rabiee Khan<sup>1\*</sup> and Karolina Biernat<sup>2</sup>

<sup>1</sup>School of Life Sciences, Faculty of Health, Education and Life Sciences, Birmingham City University, UK

<sup>2</sup>Centre for Social Care and Health Related Research, Faculty of Health, Education and Life Sciences, Birmingham City University, UK

\*Corresponding Author: Fatemeh Rabiee Khan, Professor, School of Life Sciences, Faculty of Health, Education and Life Sciences, Birmingham City University, UK.

Received: May 25, 2021

Published: July 06, 2021

© All rights are reserved by **Fatemeh Rabiee Khan and Karolina Biernat**.

### Abstract

The impact of COVID-19 pandemic and related restrictive measures on the health and well-being of the general population have recently been highlighted. This paper emerges from a larger study on the impact of a COVID-19 on health and wellbeing of university students in Birmingham, UK. It focuses on the nutritional aspects and students' perceptions of behaviours that helped them to stay well during a time of uncertainty. A cross sectional study design has been used and data was collected during May and June 2020, via an anonymised online questionnaire. 1784 students completed the questionnaire (F = 1360, M = 418 and Non-binary = 14) with the age range of 18 - 53 (Mean = 25, SD ± 8) years.

Findings indicate a major negative impact of covid-19 pandemic and lockdown measures on students' financial situation, with almost 50% stating decreased in their paid employment. This could have been the reasons for an increased consumption of food out of boredom and anxiety (61.8%), increased purchasing food out of fear (23.8%), consumption of more canned fruits and vegetables (18.6%) and being dependent on social protection measures related to food (10%).

The positive impact however was more home cooking and baking (72.4%), more consumption of fresh fruit and vegetables (50.4%), and an awareness of what to do to stay well.

**Keywords:** Covid-19; Food Behaviour; Health and Well-being; University Students; Lockdown

### Introduction

The Covid-19 outbreak and leading lockdown had a significant impact on the health and well-being of the general population in all countries affected by the pandemic [1,2]. The impact on university students was unique as they were confronted by university-specific measures in addition to the general national measures of lockdown.

Data from previous epidemics, although limited, shows a severe psychological impact of quarantine measures on mental wellbeing

[3]. The initial information from the UK, indicated that Covid-19 outbreak resulted in a number of misconceptions and created anxieties even before the lockdown measures were introduced [4].

The majority of our current knowledge about the influence of the lockdown measures on health and wellbeing of general population and students in particular is stemmed from China, as it was the first country with the Covid-19 outbreak and introduction of lockdown measures of varying severity since January 2020 [5-7]. Like many countries, the UK universities have also been closed, and

online course delivery has replaced face to face teaching to break chains of virus transitions [8]. A quarter of students in China reported mild, moderate, or severe anxiety symptoms, which could have been influenced by students' economic and social circumstances [9].

The extended period of lockdown led to a higher negative psychological impact for students who were faced with shifting to online education and being uncertain about examinations and their academic progression [5,10]. College students in the US also experienced loneliness and depressive symptoms and reported anxiety and fear of the changes in course delivery [11]. Similar results emerged from studies in Nigeria, Russia, and Israel which echoed same conclusions about the negative impact of lockdown on the students' mental health [12,13]. Recent evidence indicate that food and nutrition not only affect physical but also mental health and there is a link between mental well-being and food behaviour [14,15]. Furthermore, the bidirectional relationship between diet and depression has been highlighted previously [16]. Interestingly, positive changes in purchasing and consumption of good quality food during the Covid-19 pandemic has also been reported in Nigeria [17].

The mandatory public measures such as lockdowns and social distancing, had a remarkable impact on public food acquisition and eating behaviours [18]. These sudden changes could have several impacts on students' health status and nutritional behavior, including; overeating, comfort eating and changes in food shopping behaviour [19].

### Aim of the Study

The aims of this study are to identify: a) changes in economic situation. b) changes in food shopping and food behaviour c) actions perceived to enable students to stay well during the Covid-19 pandemic.

### Materials and Methods

A cross-sectional study design was used, an anonymous online questionnaire was utilized to collect data from the students. The questionnaire was presented using Qualtrics online survey software (Qualtrics, Provo, UT). This is part of a larger Covid-19 International Students Well-Being study (COVID-19 ISWS), in 133 higher education institute in 26 countries. The first author is one of the collaborator of the COVID-19 ISWS Consortium led by the University of Antwerp who has developed a questionnaire to measure

the impact of the COVID-19 pandemic on health and wellbeing of student populations [1]. The questionnaire measured changes resulting from the lockdown and preventative measures in students' workload, lifestyle behaviours, social interactions, mental wellbeing, perception of and adherence to the Government's measures as well as their perception of the university's response.

For the UK study, students were asked few extra questions about their food behaviour and what tips they have for staying well during the pandemic [20]. To provide insight into the impact of the outbreak on food security and consumption, the questionnaire included questions regarding the changes in students' food behaviour including positive changes such as:

- Do you eat more fresh/frozen fruits/or vegetables?
- 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).

Birmingham City University (BCU) (Faculty of Health, Education and Life Sciences) ethics committee granted the ethical approval for this study (REF:7378/R(A)/2020/Apr). The online form included with the survey provided information sheet and an opportunity to express informed consent prior to the start of survey. Participant information sheet clearly explained that student can participate voluntarily and withdrew from the study any time they decide. No identifying personal details were collected to ensure participant anonymity. While there was no risk of harm to participants, students were offered information about the university well-being support.

All students within the university were invited to participate in the survey. The data was collected for three weeks during May and June 2020, and it took about 15 minutes to complete the questionnaire.

Data was cleaned, coded and analysed using IBM SPSS version 25 statistical software package [21]. Descriptive and analytical statistical analysis were carried out as appropriate. For data presented

in this paper Pearson's chi-squared test was utilised. Results with a p-value lower than 0.05 were considered statistically significant.

## Results and Discussion

### Socio- demographic characteristics of study population

In total, 2251 responses were received from students across all faculties of Birmingham City University (BCU). This represents 9.4% of (approximately) 24,000 students from a diverse ethnic and socioeconomic background. However, 467 (20.75%) of the returned questionnaires were incomplete, so we utilised 1784 (79.25%) questionnaires for data analysis.

The demographic details of participants who participated in the survey are presented in table 1. The mean age of participants was 25 (SD ± 8) years. The sample was predominantly female (76%) and a higher proportion of them were between 21 and 25 years old (40%). The second largest age group included students under 20 years old (31%). However, the 'mature' student population was also well represented with almost a third of the sample being over 25 years old (29.4%).

Almost 53% of the respondents were native British and 18% were also born in the UK to non-British parents. 34.9% of the second-generation migrants 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. 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.

No information about students' religious background or ethnicity was asked, however the top 5 countries where their parents were born stated as: Pakistan (8.4%), India (7.9%), Bangladesh (2.4%), Nigeria (2.1%), and China (2%).

To assess students' socioeconomic status, and their social capital, they were asked about their parents' education level and the number of people they could borrow £500 within two days. All participants were able to do so from at least 6 people and 68.3% stated that they know 6 -10 people who would lend them this amount.

First year students represented 36.1% of the sample and majority (72%) was enrolled in an undergraduate bachelor course. Almost 20% of the students were working towards a master level qualification, 3% were PhD students.

Over 50% of the students borrowed from a student loans service or a bank to cover their tuition fees. Most students were studying towards a qualification in Health (27%), followed by Art (17%), social and behavioural sciences (13%), Education (12.2%), Business and administration (11.8%), Architect, Engineering and Construction (9%), and others which included law and IT (10%).

		N	%
Gender	Male	410	23
	Female	1360	76.2
	Non-Binary	14	0.8
Age group	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
Relationship status	Single	841	47.1
	In a stable relationship	861	48.3
	Complicated	82	4.6
Status in the UK	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
Parental education- mother	Less than secondary	177	9.9
	Secondary	753	42.3
	Higher	748	41.9
	Not known	106	6
Parental - father	Less than secondary	194	10.9
	Secondary	752	42.2
	Higher	672	37.7
	Not known	166	9.3
The number of people they could borrow £500 from within 2 days	6-10	1226	68.7
	11-15	474	26.6
	16-20	77	4.3
	21 and over	7	0.4

Table 1: Demographic characteristics of the students.

### Changes in life resulting from Covid-19 outbreak

The biggest changes in students' life was a shift from face to face teaching to online teaching. This required development of new

skills at short span of time which could lead to extra stress and anxiety.

Students' financial situation was impacted by the pandemic. The proportion of students who had sufficient resources to cover their monthly costs has therefore reduced from 76% to 56% and 15% more students begun to struggle with financial stability (Figure 1). Due to lockdown and closure of a number of service industry our students also mentioned 47.8% decrease in paid employment. The mean number of employment hours changed from 10.13 (SD ± 12.2) to 5.5 hours (SD ± 11.8). This change is in line with the impact of the pandemic on socio-economic situation in the UK [23]. However, it is important to consider the particular challenges faced by the students to ensure that appropriate support measures are made available.

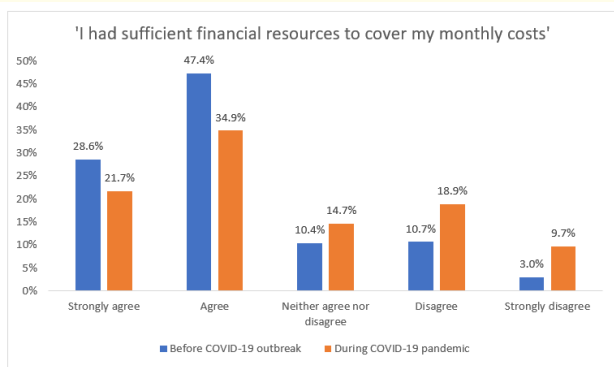


Figure 1: Changes in financial situation.

### Food behaviour

Both negative and positive changes were noted in students' food behaviour. 23.8% purchased more food out of fear and majority (61.8%) ate more food out of boredom and anxiety. 18.6% consumed more canned fruits and vegetables, and 10% relied on social protection measures related to food (Figure 2). Our findings are echoed by other researchers [23,24]. In the early months of lockdown there was a general panic in purchasing food and non-food items [10,19,25], our participants also followed that pattern.

Potentially beneficial changes were noted with a majority of students increasing their home cooking and baking - thus potentially consuming healthier meals- and eating more fruit and vegetables [23].

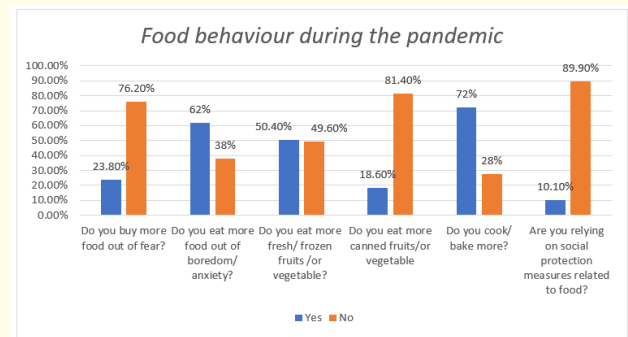


Figure 2: Food behaviour during the pandemic.

Those who relied on social protection measures related to food also ate more food out of anxiety/boredom but no further clear negative impact was observed. In addition, this group was more likely to cook more and consume more fresh and frozen vegetables. Using the Pearson's chi-squared test, results that were statistically significant at  $p < 0.05$  are highlighted by an Asterisk (\*) in figure 3.

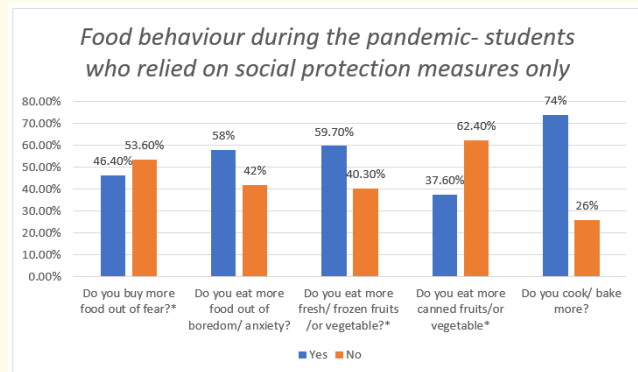


Figure 3: Food behaviour during the pandemic- students who relied on social protection measures only.

\*- Statistically significant at  $p < 0.05$ .

It could be argued that the increased fear and anxiety of Covid-19 has enforced this positive change for consumption of healthy food as students might have believed that eating more fruit and vegetables and home cooking is related to good health and could increase immune system of the body [17]. Home cooking is also cheaper, and this explain further the shift in behaviour for particu-

larly those students who were on social protection measures related to food.

### 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 [26] and data saturation has been reached after 300 answers with no new themes emerging. Seven main themes emerged, they included: physical health, mental wellbeing, relationships, hobbies and interests, work life balance, preventative measures and spending time in nature. Figure 4 presents the top five tips mentioned by students.



Figure 4: Top 5 tips for staying well.

During the data collection period, the lockdown restrictions that were in place in England included severe limitation on socialisation with people from different households. This was reflected in students’ answers as they commonly included tips on socialising and maintaining regular contact with friends and family (n = 124). These ranged from broad suggestions such as ‘talk to people’ and ‘keep in contact with family and 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’. Tips to exercise and engage in physical activity (n=126) also reflected the Government’s messages. In particular, the tips often concentrated on outdoors physical activity which at the time was one of the limited reasonable excuses for leaving one’s home. 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 2 provides detailed information about these themes.

The maintenance of social interactions appeared to be very important to the students to enable them to overcome feeling of loneliness, isolation and lack of companionship, this also echoed findings from US college students [11].

Students’ tips for staying well corresponded well with the government guidelines [27]. In addition, participating in pre-existing and new hobbies was frequently recommended by the students which could be interpreted that despite the hardship and anxiety, the pandemic provided them with a unique opportunity to engage more on activities that bring them happiness and wellbeing.

Theme	Tips
Physical health	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
Mental wellbeing	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
Relationships	Avoiding excessive media (news and social) consumption
	Staying in regular contact with friend and family
	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



Hobbies and interest	Engaging in pre-existing hobbies
	Exploring new hobbies
	Moderately indulging in 'guilty pleasures' such as watching TV series and movies
	Reading for pleasure
	Learning new skills
Work-life balance	Setting up and maintaining a routine
	Allowing time for breaks and relaxation
	Continuing with university coursework
	Setting achievable daily goals
	Being productive
Preventative measures	Following the Government guidelines
	Using protective equipment
	Increasing hand washing frequency
	Maintaining social distancing
	Not leaving home unless necessary
Spending time in nature	Staying safe
	Exercising or walk outside
	Making use of your garden
	Spending time outside to 'get fresh air'

**Table 2:** Students' tips for maintaining wellbeing.

## Conclusion

The lockdown and restrictive measures introduced by the government and university in response to the pandemic had both positive and negative effect on students' life. Apart from restrictions imposed on university life and changes from face to face teaching to online teaching and increasing personal study time, there was a negative impact on students' financial situation with nearly a quarter of them not having sufficient money to cover their monthly costs and 10% of all respondents being dependent on social protection measures to acquire food. The lockdown also increased the proportion of students who are eating more food out of boredom and anxiety, and shopping more food due to fear. The positive impact was more home cooking,

Students' tips for staying well corresponded with the government and University advice and reflected their awareness on how to look after themselves during social isolation and a stressful situation.

## Acknowledgements

We are thankful to all participants of this study for giving their time and sharing the impact of Covid -19 lockdown on their health

and well-being, as without their involvement this research would not have been completed. Our gratitude also to Dr Robert Cook, Research Fellow in Medical Statistic at BCU for his support and advice regarding statistical analysis. Last but not least we are grateful to the Covid-19 International Student Well-being Survey Consortium and Prof Sarah Van De Velde from Antwerp University, Belgium and her team for developing the study protocol and leading this international research project.

## Conflict of Interest

There is no conflict of interest and no external funding for this piece of research has received.

## Bibliography

1. Van de Velde S., *et al.* "The COVID-19 International Student Well-being Study". *Scandinavian Journal of Public Health* 49 (2021): 114-122.
2. Rajkumar RP. "COVID-19 and mental health: A review of the existing literature". *Asian Journal of Psychiatry* 52 (2020): 102066.
3. Books SK., *et al.* "The psychological impact of quarantine and how to reduce it: rapid review of the evidence". *The Lancet* 395.10227 (2020): 912-920.
4. Geldsetzer P. "Knowledge and Perceptions of COVID-19 Among the General Public in the United States and the United Kingdom: A Cross-sectional Online Survey". *Annals of Internal Medicine* (2020). doi.org/10.7326/M20-0912
5. Zhai Y and Du X. "Mental health care for international Chinese students affected by the COVID19 outbreak". *The Lancet Psychiatry* 7.4 (2020): e22.
6. Wang C., *et al.* "Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China". *International Journal of Environmental Research and Public Health* 17.5 (2020a): 1729.
7. Rajkumar RP. "COVID-19 and mental health: A review of the existing literature". *Asian Journal of Psychiatry* 52 (2020): 102066.
8. Sahu P. "Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff". *Cureus* 12.4 (2020): e7541-e7541.

9. Cao W., *et al.* "The psychological impact of the COVID-19 epidemic on college students in China". *Psychiatry Research* 287 (2020): 112934.
10. Wang C., *et al.* "A longitudinal study on the mental health of general population during the COVID-19 epidemic in China". *Brain, Behavior, and Immunity* 87 (2020b): 40-48.
11. Tasso AF, *et al.* "COVID-19 disruption on college students: Academic and socioemotional implications". *Psychology Trauma* 13.1 (2021): 9-15.
12. Ojewale LY. "Psychological state and family functioning of University of Ibadan students during the COVID-19 lockdown". *medRxiv* (2020). DOI: 10.1101/2020.07.09.20149997. 2020.2007.2009.20149997
13. Yehudai M., *et al.* "COVID-19 "Fear, Mental Health, and Substance Misuse Conditions Among University Social Work Students in Israel and Russia". *International Journal of Mental Health and Addiction* (2020). DOI: 10.1007/s11469-020-00360-7.47
14. Lesani A., *et al.* "Eating breakfast, fruit and vegetable intake and their relation with happiness in college students". *Eat Weight Disorder* 21 (2016): 645-651.
15. Khalid S., *et al.* "Is there an association between diet, and depression in children and adolescents? A systematic review". *British Journal of Nutrition* 111.12 (2016): 2097-2108.
16. Felice N Jacka., *et al.* "Does reverse causality explain the relationship between diet and depression?" *Journal of Affective Disorders* 175 (2015): 248-250.
17. Bilal Celik and Senol Dane. "The effects of COVID-19 Pandemic Outbreak on Food Consumption Preferences and Their Causes". *Journal of Research in Medical and Dental Science* 8.3 (2020): 169-173.
18. Ben Hassen T., *et al.* "Impact of COVID-19 on Food Behavior and consumption in Qatar". *Sustainability* 12 (2020): 6973.
19. Scacchi A., *et al.* "COVID-19 Lockdown and Self-Perceived Changes of Food Choice, Waste, Impulse Buying and Their Determinants in Italy: Quarant Eat, a Cross-Sectional Study". *Foods* 10 (2021): 306.
20. Rabiee F and Biernat. "Student Well-being during the first wave of Covid-19 pandemic in Birmingham, UK: Results from the C19ISWS survey". Student well-being during the first wave of COVID-19 pandemic in Birmingham, UK | Zenodo (2021).
21. IBM Corp. "IBM SPSS Statistics for Windows, Version 25.0". Armonk, NY: IBM Corp (2017).
22. Power M., *et al.* "How COVID-19 has exposed inequalities in the UK food system: The case of UK food and poverty". *Emerald Open Research* 2 (2020): 11.
23. Lachat C., *et al.* "Eating out of home and its association with dietary intake: a systematic review of the evidence". *Obesity Reviews* 13.4 (2012): 329-346.
24. Braden A., *et al.* "Eating when depressed, anxious, bored, or happy: are emotional eating types associated with unique psychological and physical health correlates?" *Appetite* 125 (2018): 410-417.
25. Sam Meadows. "Fears of a return to panic buying as shoppers are urged to be considerate and buy as normal" (2021). <https://www.telegraph.co.uk/news/2021/01/06/fears-return-panic-buying-shoppers-urged-considerate-buy-normal/>
26. Braun V and Clarke V. "Thematic analysis". In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, and K. J. Sher (Eds.), *APA handbooks in psychology*. APA handbook of research methods in psychology, Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological. American Psychological Association (2012): 57-71.
27. PHE. Guidance for the public on the mental health and wellbeing aspects of coronavirus (COVID-19)-Updated 19 May 2021 (2021).

**Volume 5 Issue 8 August 2021**

**© All rights are reserved by Fatemeh Rabiee Khan and Karolina Biernat.**