

END OF PROJECT REPORT

Purpose of End of Project Report

SRP 2022-27 projects provide quarterly progress reports and annual narrative summaries as well as research outcomes throughout the term of the project via the Researchfish platform. This end of project report provides additional information when a project finishes that can be used to summarise what the project has delivered, lessons learned and next steps. This report will be published on the SRP 2022-27 project webpages of SEFARI Gateway or on the Scottish Government website.

All sections must be completed

Project Researchfish ID	RI-B7-4		
Project Name	Investigation of the Covid 19 pandemic on dietary behaviour in Scotland and accompanying health and well-being impacts		
Principal Investigator	Prof. Paul McNamee		
Start Date	25.7.22	Completion Date	24.7.23

Purpose of the project

The health behaviour of people living in Scotland, in terms of the types of food bought, the amount of alcohol consumed, and the amount of physical activity done, is subject to many influences, and the COVID-19 pandemic may have affected these behaviours. Early in the pandemic, Public Health Scotland stated: "Research to track changes in physical activity, diet and weight as COVID-19 control measures ease in the form of high-quality, longitudinal studies within the Scottish population using validated tools would be important to inform the development and targeting of policy in light of the COVID-19 outbreak. It is key that these studies are representative with respect to demographic characteristics." Whilst studies are available to track such changes, most notably from Food Standards Scotland (FSS) via consumer tracking surveys, there is limited evidence on longer-term changes, and how different parts of the population were affected relative to others. In addition, whilst the effects of the pandemic on mental health are now well-known, the link with health behaviours is not as well established, either in Scotland or other parts of the UK. For these reasons, this project aimed to assess how the COVID-19 pandemic changed diets in Scotland, and whether there were any marked impacts on health and well-being. The findings aim to inform current and future policies that seek to change health behaviour within Scotland and the rest of the UK, particularly in relation to proposals on healthy diets being taken forward by the Scottish Government.

Objectives achieved/not achieved

The stated objectives of the project were the following:

1. To quantify the change in dietary behaviour amongst adults aged 16 years of age or over in Scotland following the implementation of COVID-19 pandemic lockdown measures

2. To understand the magnitude of accompanying changes in mental health and life satisfaction amongst those who reported changes in dietary behaviour
3. To estimate the extent of differential impacts between different individuals and households in terms of socio-economic characteristics
4. To calculate the implied monetary values associated with the changes in dietary behaviour and mental health.

The project addressed these objectives using an existing UK wide dataset, the **UK Household Longitudinal Study (UKHLS-Understanding Society)**. This is a repeated survey of thousands of households in Scotland and the rest of the UK. Analysis focused on data collected between 2015-2021. Key variables included fruits & vegetables intake, alcohol consumption, physical activity levels, and mental health, measured by the General Household Questionnaire (GHQ)-12 – a clinically validated tool to detect psychological distress.

The main findings were:

- **Changes in dietary behaviour in Scotland following COVID-19 pandemic lockdown measures (objective 1)**

Overall, there was mixed evidence of changes in dietary behaviour. The unadjusted analysis, which measured average levels of consumption before and after the pandemic, showed an increase in self-reported consumption of fruit and vegetables between the pre-pandemic period and July 2020-January 2021. In addition, there was an increase in the number of days per week that alcohol was consumed, and a greater proportion of people reported that they had high levels of use on single days (“binge-drinking”). The increase in fruit & vegetable consumption was predominately in higher income households, whilst the increase in alcohol consumption was across all income groups.

However, after statistical adjustment for other factors affecting health behaviours, e.g. income and employment, there were no significant changes in dietary behaviours over time within Scotland. Furthermore, there were no significant differences in dietary behaviour changes between Scotland and the rest of the UK. Therefore, to address objectives 2-4, the data between Scotland and the rest of the UK were combined to boost sample size.

- **Differential impacts between individuals and households in terms of socio-economic characteristics, and accompanying changes in mental health (objectives 2 & 3)**

There was evidence of systematic differences in health behaviour between men and women, younger and older people, and people in employment:

- a) **Fruit & vegetable intake:** women significantly reduced their consumption in 2020 compared to men, and this decline continued into 2021.
- b) **Alcohol consumption:** older people (aged 50 years or over) were significantly less likely to report 4 or more days of alcohol consumption in a single week, compared to younger people (aged less than 50 years of age).
- c) **Physical activity levels and overall healthy lifestyle (includes higher fruit and vegetable intake, lower alcohol consumption, and higher physical activity levels):** people in employment were significantly less physically active, and less likely to engage in an overall healthy lifestyle,

compared to people not in employment or retired.

Amongst the above socio-economic groups, the largest differences in health behaviours were found between men and women. Therefore, further analysis focused on the association between changes in health behaviour and mental health for women and how this differed from men. This revealed that the period following the start of the pandemic was associated with a weakening of the protective effect of health behaviours on mental health for women but not for men. Before the pandemic, for women, adopting a healthy lifestyle was associated with a 0.6 point decline in the GHQ-12 Likert score, with each incremental health behaviour associated with a 0.3 point decline. However, following the start of the pandemic, the association between mental health and a healthier lifestyle completely disappeared for women. By contrast, for men, the protective effect of health behaviours remained unchanged. The main explanation for this difference is likely due to larger changes in levels of social interaction and subsequent experiences of greater loneliness and isolation.

- **Implied monetary values associated with the changes in dietary behaviour and mental health (objective 4)**

There was some significant association between household income and changes in dietary behaviour: richer households, where household income was above the average household income, were significantly more likely to have healthier behaviours than poorer households. However, there was no significant association between household income and mental health. The lack of association between household income and mental health meant that it was not possible to estimate implied monetary values from changes in diet and other health behaviours.

Outcomes

The major findings are the following:

- The COVID-19 pandemic period was associated with a larger reduction in healthy behaviour amongst women more than men.
- Before the pandemic, a healthier lifestyle was associated with better mental health amongst women and men.
- After the start of the pandemic, the association between better mental health and healthier lifestyle disappeared amongst women, but not amongst men.
- The findings are robust across different specifications and models estimated on data from the COVID-19 surveys as well as the main UK-HLS datasets.

Arulsamy K, Mendolia S, McNamee P. What effect did the COVID-19 Pandemic have on Scotland's dietary behaviour, and what will be the impact on health & well-being? *SEFARI Gateway Blog Post*. April 2023. <https://sefari.scot/blog/2023/04/06/the-covid-19-pandemic-and-dietary-behaviour>

Arulsamy K McNamee P, Mendolia. The gendered nature of the COVID Pandemic on health behaviours. *Health Economists' Study Group Conference*. University of Oxford. June 2023.

Arulsamy K McNamee P, Mendolia. The gendered impact of COVID-19 on health behaviours: evidence from the UK. *Understanding Society Annual Conference*. University of Essex. July 2023.

Project Insights

The implications of our findings for policy will depend on whether the effects that we observe persist. The cost of living crisis could potentially worsen health behaviours among women who tend to earn less income and work in precarious jobs (Office for National Statistics 2022). Public health implications could be severe if these changes persist and/or worsen. Importantly, policies need to consider and prioritise individuals who might be vulnerable to sustained unhealthy behaviours. The decline in the protective effect of health behaviours on mental health during the pandemic highlights the need for well-designed mental health interventions. General recommendations to exercise, eat well, and drink moderately to cope with psychological distress, which were common during the height of the Covid-19 pandemic, could potentially be less effective during long periods of heightened stress.

The above suggests therefore that a longer project would have provided the opportunity to assess the extent to which the main findings were sustained over a longer time horizon, helping therefore to inform policy in relation to cost of living pressures. Unfortunately however, due to funding constraints, there was a need for the project to be conducted over a shorter one year period.

Next Steps/ Future Plans

- Publication of main scientific article in peer-reviewed economics or social science journal.
- Summary results paper to be disseminated through existing policy networks as advised by members of the project Policy Advisory Group (Food Standards Scotland, Public Health Scotland, Scottish Government).
- Development of follow-on project with more recent data to address whether the main findings are sustained over a longer time period.