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Presumedly Dietary and Lifestyle Changes During Covid-19 and the Subsequent Lockdowns among Indian Elderly Population

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ABSTRACT

The Covid-19 pandemic led to lockdowns in several parts of the world and, hence, changed some daily habits, including social interactions, the ability to perform sports, and—possibly—diet. The Italian government established and promulgated lockdown policies on 9 March 2020. We aim at assessing the effects of Covid-19-induced confinement policies on self-reported food consumption of self-selected Italians by means of a questionnaire that was created and diffused by the Internet. Nearly half, i.e., 49.6% of responders did not substantially modify their diet during the lockdown; however, 46.1% of them reported that they were eating more during confinement, and 19.5% gained weight. In particular, we report an increase in "comfort food" consumption, notably chocolate, ice-cream, and desserts (42.5%) and salty snacks (23.5%). In addition, 42.7% percent of this cohort attributed this increase to higher anxiety levels. Related to this, 36.8% of responders reported a decrease in alcohol consumption, even though 10.1% of them reported an increase. Interestingly, 21.2% of responders increased their consumption of fresh fruit and vegetables. Only 33.5% of those who declared decreased consumption attributed this change of diet to lower availability and ease of purchasing such items. Equally interesting, over half of responders, i.e., 56.2%, admitted that fruit and vegetables did not appeal to them while in lockdown. Purchases of ready-made meals were reduced by nearly 50%. Future large-scale similar studies should be undertaken worldwide and will help public health authorities shape their reactions to future, unavoidable pandemics.

Because of the worldwide spread of a novel coronavirus disease (COVID-19) on January 30, 2020, the World Health Organization (WHO) declared COVID-19 as a global pandemic. Up to June 12, 2020, nearly 8 million confirmed COVID-19 cases, including approximately 426,000 deaths, have been reported in the world, with Poland having approximately 28,577 cases and 1222 deaths [1]. Given the pandemic situation, public health recommendations and governmental measures have resulted in lockdowns and many restrictions on daily living, including isolation, social distancing, and home confinement. On 20 March 2020, the Polish government announced an epidemic status in the Republic of Poland [2], and on May 25, the government ordered social distancing, staying at home for self-isolation, remote work, and closure of preschools, schools, and universities. Gyms and swimming pools have re-opened with some restrictions on 6 June 2020.

While strict preventive measures are necessary to protect public health, they may, however, radically change individuals' daily habits, including lifestyle-related behaviors. Staying and working at home can affect diet, food choice, and access to food and, thus, reduce possibilities and limit the practice of physical

activity (PA). It was found that quarantine negatively affected the PA of the Sicilian active population, especially those of males, overweight people, and senior adults and the elderly [3]. Similarly, an international study indicated an increase in daily sitting time from 5 to 8 h per day during pandemic restrictions [4]. It should be noted that before this pandemic, insufficient PA (low PA or inactivity and excessive screen time) and obesity were described as a global public health problem [5,6]. The current COVID-19 pandemic may further worsen this situation.

INTRODUCTION

Dietary–lifestyle Data

The questions were related to the diet intake during the pandemic and the changes that occurred compared to the pre-pandemic period and included questions on food such as vegetables, fruits, wholegrain cereal products, low fat meat and/or eggs, pulses, fish and seafood, milk and milk products, processed meats, fast foods, salty snacks, confectionary, sweetened spreads, commercial pastry, homemade pastry, ice cream and puddings, sweetened cereals and/or cereal bars, sugar-sweetened beverages, energy drink, alcohol, water, coffee and tea, and homemade meals. Respondents were also asked about the changes in the total food intake and about difficulties in food availability For the analysis, answers were re-categorized as follows: increased intake ("I eat more"); decreased intake ("I eat less"), and no changes (answers: "I eat the same" or "I didn't eat before and during the pandemic").

In the next part, the questions were related to the PA, sleep, and screen time. We asked about time and self-assessment of lifestyle changes during the pandemic. -Physical activity was assessed using two questions: one on the average time spend actively and the other on change in PA during the pandemic. In the first question, respondents chose one of four categories describing their activity time which was re-categorized as follows for the analysis of this variable: low PA (<0.5 h); average PA (0.5–2 h); and high PA (>2 h). In the second question, respondents could choose one of five categories describing change in PA which were re-categorized analogically to the questions about changes in food intake for further analysis: increased PA ("my physical activity increased"); decreased PA ("my physical activity decreased"); and no changes (answers: "it has not changed, my physical activity was low before isolation and it is now the same"; "it has not changed, my physical activity was moderate before isolation and it is now the same"; "it has not changed, my physical activity was high before isolation and it is now the same").[1]

In questions on sleeping time, the respondents chose one of three categories describing their sleeping time or sleeping time change: "decreased," "increased," or "it has not changed".

Screen time was assessed using questions on the time spend in front of the screen of a computer, TV, tablet, and/or telephone during working or non-working day as well as based on self-assessment of screen time changes during the pandemic. The respondents chose one of five categories describing their screen time, which was further re-categorized as follows: <4 h; 4–8 h; >8 h; screen time changes as: "decreased", "increased", "it has not changed." If a respondent declared increased screen time, the next multiple-choice question: "Increase in the time spent in front of the screen (computer, TV, tablet, phone) is related to" concerned following the cause of it: work, entertainment, learning, boredom, or the need to help children in lessons/homework.

Our study aimed to investigate the immediate impact of the COVID-19 pandemic on eating habits and lifestyle changes among the Italian population aged ≥ 12 years. The study comprised a structured questionnaire packet that inquired demographic information (age, gender, place of residence, current employment); anthropometric data (reported weight and height); dietary habits information (adherence to the Mediterranean diet, daily intake of certain foods, food frequency, and number of meals/day); lifestyle habits information (grocery shopping, habit of smoking, sleep quality and physical activity). The survey was conducted from the 5th to the 24th of April 2020.[2]

A total of 3533 respondents have been included in the study, aged between 12 and 86 years (76.1% females). The perception of weight gain was observed in 48.6% of the population; 3.3% of smokers decided to quit smoking; a slight increased physical activity has been reported, especially for bodyweight training, in 38.3% of respondents; the population group aged 18–30 years resulted in having a higher adherence to the Mediterranean diet when compared to the younger and the elderly population ($p < 0.001$; $p < 0.001$, respectively); 15% of respondents turned to farmers or organic, purchasing fruits and vegetables, especially in the

North and Center of Italy, where BMI values were lower.

This study has identified associations between socio-demographic factors, COVID induced change and health behaviors, and differences in negative mood dependent on changes to health behaviors. With the exception of alcohol and sleep, health behaviors were inter-related. Changes in diet, sleep, and physical activity had the clearest link to negative mood states.

Given previous links between mental health, mood, and alcohol (Birnbaum et al., 1983; Parker et al., 1987; Howland et al., 2010; Alford et al., 2020), it was predicted that those who were drinking more during lockdown would have higher negative mood scores. This prediction was not borne out in the analysis. Whilst changes in alcohol consumption were correlated with changes in other health behaviors (with the exception of sleep), it is not possible to associate better mood with a reduction in alcohol consumption during COVID-19 lockdown. There is some evidence to suggest that for social drinkers, under certain specific situations, alcohol can have a positive effect on emotion (Sayette, 2017), hence it is possible that under the short-term strict conditions alcohol consumption can improve the emotional state of some individuals. Overall, more participants in this study reported increases in drinking behavior in comparison to previously published data (Alcohol Focus Scotland, 2020).[3]

Changes in work status were associated with changes in diet, those who had changed their work status due to the COVID-19 pandemic reported that their diet had been unhealthier. It was clear that those with an unhealthier diet had higher NMS. Poorer mental health has previously been linked to unhealthy diets (Sánchez-Villegas et al., 2009; Jacka et al., 2010; Parletta et al., 2017), and unhealthy diets have been linked to higher levels of life stress (Greeno and Wing, 1994; Ball and Lee, 2000). This suggests that COVID-19 related stress may have led to a change to less-healthy eating habits which could have led to development of more negative mood over lockdown. However, the current data set is limited as no conclusions can be drawn with respect to the causal relationship between negative mood and the health behaviors.[4]

Shielding was the only COVID-19-related factor which was associated with changes in sleep quality. Those who were shielding during the COVID-19 lockdown were experiencing poorer sleep quality. As predicted, those who were sleeping more poorly during the lockdown were also found to have higher NMS. Links between stress and poor sleep (Sanford et al., 2014) are consistently reported, and NMS for those experiencing poorer sleep during this time would suggest complex interplay between stress, sleep disturbance, and mental health during COVID-19 lockdown.

DISCUSSION

Student status was associated with changes in physical activity, with those studying full-time seeing a greater reduction in their physical activity. Households where COVID-19 had been experienced or suspected were associated with a lot more physical activity, whilst households with no experience or suspicion of COVID-19 maintained physical activity or were a little more active. Those who were doing a lot less physical activity had significantly higher NMS than all other groups, with the exception of those doing a little less physical activity. It is clear that a reduction in the level of physical activity is associated with higher NMS. It is possible that this reduction is having an influence on participants' mental health as being physically active has been shown to improve mood (Hartescu et al., 2015; Fritz and O'Connor, 2016), and is positively associated with mental wellbeing (Cerin et al., 2009). However, it is also possible that those experiencing high negative mood has reduced participants level of physical activity, which could support previously seen reduced levels of physical activity when feeling socially isolated (Robbins et al., 2018; Werneck et al., 2019). 35.9% of the participants reported having increased levels of physical activity during lockdown in comparison to 47.4% of the participants who had decreased their level of physical activity during lockdown. These results are in contrast to studies from Italy (Di Renzo et al., 2020) and Spain (López-Bueno et al., 2020) where participants generally reported an increase in activity during lockdown. This may reflect a trend for physical inactivity within Scotland (Murray, 2013). During and after lockdown periods, we recommend that physical activity – even within the home (da Cunha de Sá-Caputo et al., 2020; Mattioli et al., 2020) – and healthy diet should be promoted to combat sedentary behavior.[5]

Lockdown conditions were associated with higher negative mood overall. This is compatible with previous research indicating that reduced, or the perception of reduced, social contact and health-based fears are related to poor wellbeing (Bai et al., 2004; Hawryluck et al., 2004; Cacioppo and Hawkley, 2009; Chen and Feeley, 2014) as well as

previous research on psychological effects of quarantine or lockdown conditions (Brooks et al., 2020; Ozamiz-Etxebarria et al., 2020). Our results show that improvement in negative mood states were found quite quickly after the easing of lockdown conditions. Differences were found two weeks after lockdown conditions were relaxed. No further differences were found two weeks later, but this may reflect the relatively small differences in lockdown restrictions made during this time. Data on health behaviors was not collected at later timepoints for comparison.[6]

Spending time in lockdown conditions has had a negative impact on mood, and this is in line with previously published work on the effects of COVID-19 lockdown on mental health (Ozamiz-Etxebarria et al., 2020). These results add to the growing body of literature on health and wellbeing during and after the COVID-19 pandemic and demonstrates that changes to health behaviors during this time may be to come extent responsible for poorer mood, anxiety and depression. However, the impact of these changes may be transient and persist primarily during the strictest lockdown conditions. The current study is somewhat limited in that potential co-variant health factors (i.e., pre-lockdown body-mass index, smoking / changes in smoking behavior) were not examined. Our sample – although large and representative – is somewhat limited in that only active internet users were recruited; COVID-19 lockdown was ongoing during recruitment; thus it was impossible to recruit outwith the online domain.

Future research should focus on establishing more specific details of the likely bidirectional causal relationship between poor mental health and changes in health behaviors during lockdown. Overall results suggest that those who had made small positive changes were demonstrating less negative mood. It is then suggested that were lockdown conditions to be reintroduced due to COVID-19 or another pandemic, wellbeing may be linked to making small improvements in diet, sleep and physical activity.[7]

Physical activity

Young people aged 5-17 years: Children and adolescents should do at least an average of 60 min/day of moderate-to-vigorous intensity, mostly aerobic, physical activity, across the week. Vigorous intensity aerobic activities (e.g. running), as well as activities that strengthen muscle and bone (e.g. jumping, lifting weights), should be incorporated at least 3 days a week. Children and adolescents should limit the amount of time spent being sedentary, particularly the amount of recreational screen time such as social media and video gaming.

Adults and older adults, including people living with chronic conditions and disabilities: For substantial health benefits, adults should engage in 150-300 minutes of moderate-intensity aerobic physical activity (e.g. brisk walking), or 75-150 minutes of vigorous activity (e.g. running) throughout the week, or equivalent combinations of both where 1 minute of vigorous activity is roughly equivalent to 2 minutes of moderate activity. Examples of aerobic activities include brisk walking, stair climbing, cycling, swimming, or running.[8]

- Provided that there are no contraindications resulting from certain severe chronic conditions, additional health benefits can be gained by taking part in more activity than the recommended amounts of 300 min, or 150 min of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate-intensity and vigorous-intensity activity throughout the week.
- In addition to aerobic physical activity, adults should also do muscle strengthening activities that involve large muscle groups on at least two days per week. Such activities may involve lifting weights or own bodyweight exercises (e.g. push ups, chin ups, sit ups) and can be done at home, in the gym, or in the community, such as public green spaces.
- Older adults, defined as those aged 65 years and older, are also encouraged to engage in "multicomponent" on three or more days a week. Examples of multicomponent activities include dancing, which improves aerobic capacity and balance; or standing on one foot while doing bicep curls to concurrently improve balance and upper body muscle strength.
- Adults should limit sedentary time and try to replace it with movement of any intensity (including slow walking or moving about). People who, for whatever reason, spend long periods of time being sedentary (e.g. long commuting hours, work-imposed sitting) can help counter some of the harmful effects of too much sitting by exceeding the upper thresholds of the recommended amounts of

>300 min, or >150 min of vigorous-intensity aerobic physical activity.

- Physical activity during pregnancy and after giving birth: The antiquated belief that "pregnant women should rest" no longer stands. In the absence of specific medical contraindications, regular physical activity throughout pregnancy can improve health outcomes for the mother and the baby.
- During pregnancy and in the period after birth, women should aim for at least 150 minutes of moderate intensity physical activity per week, including a variety of aerobic, muscle-strengthening, and stretching activities. Women who regularly did vigorous-intensity activities before pregnancy can maintain these activities safely during and after their pregnancy. [9]

CONCLUSIONS

A study conducted in 2020 found a significant reduction in the likelihood of developing severe COVID-19 among infected patients who had consistently met the recommended physical activity guidelines in the preceding couple of years. Furthermore, COVID-19 patients who had engaged in less physical activity than recommended had lesser risks of developing severe disease outcomes or dying, than COVID-19 patients who were consistently inactive.During the COVID-19 pandemic, being physically active will be a challenge for all of us but it is critical that we find and plan ways to be active and reduce our sedentary time. Although our movement around our neighbourhood, town, city, country and the world might be restricted, it remains critical that we all move more and sit less.:

- Physical activity enhances immune function and reduces inflammation therefore it could reduce the severity of infections.
- Physical activity improves common chronic conditions that increase the risk for severe COVID-19 (i.e. Cardiovascular Disease, Diabetes).
- Physical activity is a great stress management tool by reducing symptoms of anxiety and depression.
- Physical activity helps bring cortisol levels in balance. Stress and distress (such as during a pandemic) creates an imbalance in cortisol levels and this negatively influences immune function and inflammation.[10]

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