

Potential of weight gain during COVID-19 community-wide quarantine

Abstract

Recently COVID-19 has become a pandemic affecting almost all countries around the world. There is no cure or vaccine available for this disease. The only public health measures available for prevention are isolation, quarantine, and community-wide quarantine. Community-wide quarantine in the pandemic has forced people to stay indoors which has the potential to cause weight gain (similar to holiday weight gain) due to availability of food, staying at home, emotional distress, lack of physical activity, increased cortisol levels, and altered sleep. Fourth-generation theory-based approaches for preventing weight gain promoting home-based physical activity and healthy eating through online educational programs delivered through schools, worksites and social media online forums are recommended.

Keywords: weight gain, respiratory system, pneumonia, children

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Commentary

Coronaviruses are pathogens that affect the respiratory system. Among these are the severe acute respiratory syndrome (SARS)-CoV, the Middle East respiratory syndrome (MERS)-CoV, and more recently the COVID-19.¹ The first cases of COVID-19 were reported in Wuhan, Hubei Province, China in December 2019.² Since then this disease has become a pandemic and as of April 16, 2020, it had affected 213 countries, areas or territories around the world with 2,078,605 cases and 139,515 deaths.³ The transmission of COVID-19 is by droplets either inhaled or through contact with the typical incubation period ranging from 2-14 days.⁴ It is becoming clearer that the disease is highly contagious with a large number of infected people being asymptomatic. When the symptoms appear they include fever, dry cough, sore throat, shortness of breath, fatigue, and malaise. Usually, in the elderly and those with existing comorbidities such as diabetes or heart disease, it may progress to pneumonia, acute respiratory distress syndrome (ARDS), multi-organ failure and death.⁴

There is no definitive cure for COVID-19 nor is there any vaccine to protect against it. The testing for COVID-19 or its antibodies is also not very accurate and not widely available. In this context, the public health measures are confined to preventing person-to-person transmission of COVID-19 by separating people to disrupt transmission.⁵ Among the approaches that are being used are (1) isolation in which infected persons are separated from non-infected individuals; (2) quarantine and fever surveillance of contacts who have been exposed but are not yet symptomatic (3) community containment in which social distancing and movement of the general public is restricted by efforts such as “stay at home orders” (community-wide quarantine). Due to extended community-wide quarantine in many parts of the world and school closures, workplace closures, work from home, restricted staying at home and other such measures this commentary explores the possibility of weight gain among children and adults due to the COVID-19 pandemic. It also suggests recommendations and approaches to prevent weight gain during this crisis. It is generally well accepted that the holiday season in the Western societies that starts

from mid-November to mid-January is associated with weight gain both in adults and children.⁶⁻¹⁰ This weight gain seems to be more so in those who are already overweight or obese.^{7,10} A narrative review of 15 studies by Díaz-Zavala and colleagues⁶ found that starting from the last week of November to early January among adults a statistically significant ($p \leq 0.05$) weight gain of 0.4 to 0.9 kg was observed.

During the COVID-19 pandemic while there are no festivities, yet people are staying at home and many of them have stocked up on food. The pandemic with its uncertainty is also causing emotional distress. Emotional distress is associated with the liberation of cortisol from the adrenal cortex which is activated by the corticotrophin releasing hormone (CRH) liberated by the hypothalamus and subsequent activation of the pituitary gland. Cortisol, a glucocorticoid hormone, is responsible for regulating glucose metabolism and can lead to appetite stimulation, desire to consume fatty foods, sugary foods which can lead to weight gain.¹¹ Prolonged stay at home can lead to the isolation effect on the parasympathetic nervous system and sustained release of cortisol leading to weight gain. Hence, the triad of abundant availability of food, staying at home, and emotional distress has the potential to cause weight gain among both adults and children. This problem is also compounded by lack of or decreased physical activity¹² and altered sleep time¹³ both of which are important contributors to weight gain.

In order to address holiday weight gain, some health promotion interventions have been designed. An intervention utilizing a randomized controlled trial by Mason and colleagues¹⁴ found techniques such as regular self-weighing, weight management advice by health educators, and physical activity to be efficacious. Daily self-weighing was also found to be a useful strategy to combat holiday weight gain by Kaviani & colleagues.¹⁵ During the COVID-19 pandemic educational interventions should encourage people to monitor their weights, perform regular physical activity in and around their homes, and not resort to emotional eating. A worksite initiated program to combat holiday weight gain found self-monitoring, regular weigh-ins, a team challenge, and organizational support to be effective approaches.¹⁶ During the COVID-19 pandemic when some

professionals are working from home and schools are conducting classes remotely online it would be a good strategy by worksites and schools to also promote messages for healthy eating, regular physical activity, regular weight monitoring, and organizing team challenges to regulate weight.

The educational interventions should be based on behavioral theories to be effective and efficient.¹⁷ The behavioral theories have evolved over the years to present day fourth-generation, multiple theory models.¹⁸ One such framework is the multi-theory model (MTM) of health behavior change.¹⁹ The MTM can be reified to weight management efforts during the COVID-19 pandemic to deliver brief and precise interventions through schools, worksites, and online forums. MTM divides the behavior change into two components: initiation and sustenance or maintenance. For initiating the behavior change, the constructs of participatory dialogue in which advantages outweigh the disadvantages of a behavior change, the behavioral confidence to make the change and changes in the physical environment such as availability and accessibility of resources are crucial. For maintaining the behavior change, the constructs of emotional transformation in which feelings are directed toward goals, practice for change in which constant reminders and reflection on behavior change and changes in the social environment in which social support are important. The interventions need to be tailored around the behaviors of self-monitoring of weight, consuming small portion sizes, not consuming sugar-sweetened beverages, eating fruits and vegetables, and regular physical activity. MTM has already been successfully applied to discerning intentions for changing and maintaining behaviors regarding small portion size consumption,^{19,20} drinking water instead of sugar-sweetened beverages,²¹ and regular physical activity.²² It would be beneficial by health educators, and researchers to apply MTM in promoting these behaviors among the masses during the COVID-19 pandemic.

Conclusion

So we see that the community-wide quarantine during COVID-19 pandemic has the potential of causing weight gain in children and adults around the world. This weight gain may occur due to availability of food, staying at home, emotional distress, lack of physical activity, increased cortisol levels, and altered sleep. Such weight gain is likely to affect those who are already overweight and obese. There is a need to design newer fourth-generation theory based health behavior change online interventions promoting home-based physical activity and healthy eating during the COVID-19 pandemic.

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Conflicts of interest

Author declare that there is no conflict of interest.

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