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Research Article

Mental Health and Diet Changes During the COVID-19 Pandemic in Tunisia: A Lockdown Story

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Abstract

Objectives: The World Health Organization declared SARS-COV2 corona virus outbreak as global pandemic in March 2020. As consequence, several restrictive measures were imposed by number of countries, including Tunisia. Lockdown was the main and the most uncomfortable restriction. The present study aimed to evaluate the physical and mental impact of the lockdown on active Tunisians adults.

Methods: Our study was carried out within company workers both in factory and in office. Periodic medical checkout was performed to the employee before and after the lockdown complemented with a survey to evaluate lifestyle changes.

Results: Our main finding demonstrates a consequent weight gain of our population, especially in the age range of 25-35 years old workers. This phenomenon was a consequence of an increase of food consumption, sedentarity and reduction of physical activities. In more, the lockdown affected psychologically the population with the increase of smoking, sleeping perturbations and anxiety.

Conclusion: Our data confirm the physical and mental health concern of the lockdown adopted in Tunisia after Covid-19 waves. The main consequences were weight gain and psychological worries of a population of employees. These observations encourage us to alarm authorities about the unsuspected negative effects of the lockdown on active adults.

Keywords: Body Mass Index (BMI), COVID-19, dietary habits, lockdown, overweight, obesity

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The World Health Organization (WHO) declared on January 2020 the coronavirus SARS-CoV-2 outbreak as global pandemic.[1] SARS-CoV-2 affects essentially the lungs and causes pneumonitis and severe respiratory syndromes. [2, 3] Moreover, it has been proved that this emerging virus affects others organs and tissues[4] and de facto provokes other disorders including metabolic diseases,[5] diabetes [6] and cardiovascular diseases.[7] As consequence we assisted to an increase of SARS-CoV-2 related deaths and diseases and in many countries, the collapse of health care system.[8]

This situation obliged governments to undertake several actions hoping to stop the virus spread and prevent the consequent public health concern. The major measure was the lockdown and the restriction of people movements,

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closing the public spaces including schools, universities, work offices with the boost of what we call now home office, and the various cultural and sportive areas. The same measures were established in Tunisia since March 2020 with a severe 2 weeks lockdown followed by a curfew and rounds of lockdown every time SARS-CoV-2 positive cases increased. This period of time with all decided measures are summarized graphically in the Inkyfada website (https://inkyfada.com/en/2021/02/26/dashboard-covid-19/)

This de novo lifestyle installed a drastic reduction of physical activity and the increase of unhealthy food and alcohol consumption and smoking. Moreover, the lockdown instauration was correlated with the rise of psychiatric disorders including stress, anxiety, sleeping difficulties among others.[9-12]

SARS-CoV-2 is still considered in 2022 as a major public health concern despite the emergence of less aggressive variants including Omicron.[13] The restrictive measures as thus expected to continue for longer period. It's essential then to study and understand the factors that influences dietary changes and psychological difficulties and how it affects public health.

The present study was carried out in order to explore the dietary and lifestyle changes within a Tunisian population after the lockdown and the consequences on participant's mental and physical health.

Methods

Our study was performed during the emergence of the Covid-19 pandemic, and more precisely between January 2020 and July 2021. During this period, a lockdown was observed in Tunisia between March and April 2020, and followed for months by several restrictive measures reducing people movements. To study the effects of such actions, we analysed medical and psychological tests performed by a physician within a factory workers based in Tunis, Tunisia.

264 workers compose our population and we decide to subdivide them as following: Gender (Male or Female), Job Nature (Factory or Office), Age and by Height and Weight for the Body Mass Index BMI (Kg/m^2).

Moreover, we asked the workers about theirs: 1-Health conditions; 2-Recurrence of physical activity; 3-Daily-eating habits; 4-Smoking routines; 5-Psychological disorder due to lockdown including sleep disorder, stress, depression and others. Statistical analysis was performed using SPSS package and GraphPad software.

Results

The study was performed between January 2020 and July 2021. The company employees were subjected to regular psychological and medial check-up. 230 men and 34 women compose our study pollution. 35 men works in offices and 195 at the factory while 9 women have administrative tasks and 25 works at the factory (Table 1).

We first calculated the Body Mass Index (BMI) of the employees before and after the lockdown (January 2020 and January 2021) (Fig. 1). The first observation was that a majority of the employees were already in overweight class. Indeed, before the lockdown, 38% of the workers suffer overweight meaning a BMI range from 25.0 to <30 and 14% were obese with a BMI range 30.0 or higher (Fig. 1). After the lockdown, 70% of the company workers gained

Table 1. Characterization of the study sample (n=264)

	Frequency	Percentage (%)
Gender		
Female	34	13
Male	230	87
Workstation		
Administration		
Female	9	3
Male	35	13
Factory		
Female	25	10
Male	195	74
Age group		
<30	57	22
<35	85	32
<45	94	36
≥45	28	10

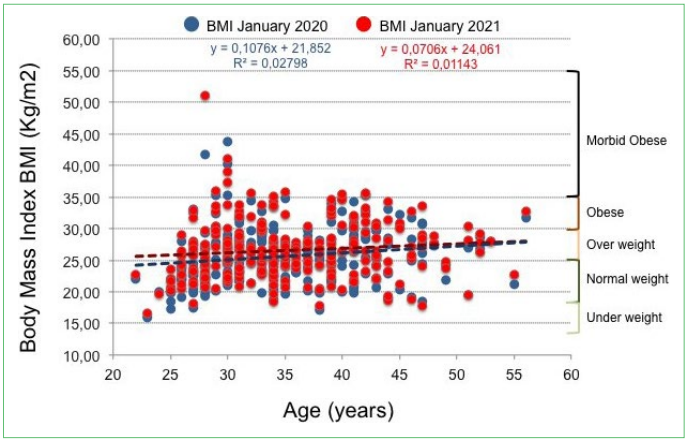

Figure 1. Consequence of the lockdown on Body Mass Index (BMI) of the company employee.

Scatter plot of the company employees' body mass index (BMI) against age in years before and after the lockdown. Blue points represent BMI at January 2020 while red points at January 2021. Trend line of 2020 data is showed in bleu and 2021 in red. The different BMI categories are showed (Under weight, Normal weight, Over weight, Obese and Morbid obese).

weight, while 17% lost mass and 13% did not registered any weight change. Overweight and obese employees fraction increased from 38% to 41% and 14% to 20% respectively. Moreover, the major weight fluctuation was registered within the age group 25 to 35 years old (Fig. 2). In order to investigate any correlation between the gender or the occupation of the employees and the weight gain, we performed computations and we found that there was no statistical significance between the fact of being male or female, and having an office or factory task at the workplace (Fig. 3).

Based on recent studies showing that a lockdown associated with a pandemic leads to dietetic changes, increase of food consumption and snacking[9] in addition of mental health troubles like stress and depression,[14, 15] we decided to check if there any correlation between the lockdown and the weight uptake observed in our workers population. We prepared a survey based on behaviour questions and we collected the employees' answers.

We noted that a majority of the employees had dinner as main meal (65.6%), giving some light about the overweight that they suffer. Moreover, they confessed an increase of food consumption in general (69.7% of the interviewed). They admitted consuming fatty products more than usual (65.2%), soda and others sugary drinks (63.4 %) and sweets (65.9%). These dietary changes were significantly correlated with weight gain (Chi 2 test; $p<0.001$).

In parallel of the food consumption increases, the employees declared a diminution of physical activities including exercises, walks or the factory work it self. Indeed, 55.3 % of the interviewed worker declared an increase of sedentarily in front of the TV and 49.2 said that they exercises less, all type of exercise included. This life changes were also significantly correlated with weight gain (Chi 2 test; $p<0.05$).

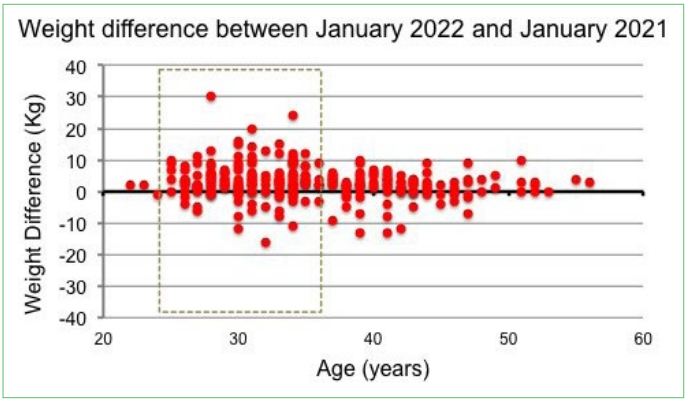

Figure 2. Weight difference between January 2022 and January 2021.

Weight difference in Kg between January 2020 and January 2021. Box in the middle represents the age range of 25 to 35 years where the main weight uptake was remarked.

In order to study behaviour troubles due to the lockdown, we also interrogated the company workers about their smoking habitudes. It's admitted that Tunisian population have a healthcare tribulations with smoking.[16] 56.1 % declared being active smokers in our population of study and 35.6% of them admitted having increased Tabaco consumption during the lockdown. Also, lockdown affect the interrogated workers deeply concerning their sleeping habitudes. 62.5% of the interviewed declared having experienced sleep problems and 10.2% developed chronic sleeping troubles. Emphasizing with these answers, almost all the interviewed admitted being strained and tense, 48.8% most of the time and 45.8% often.

Discussion

After a period of lockdown due to the coronavirus SARS-CoV-2 spread globally, and de facto in Tunisia, physical and mental concerns were observed in active adults population. In the present study, we investigated the mentioned behaviour changes on a company employee's based in Tunis, Tunisia.

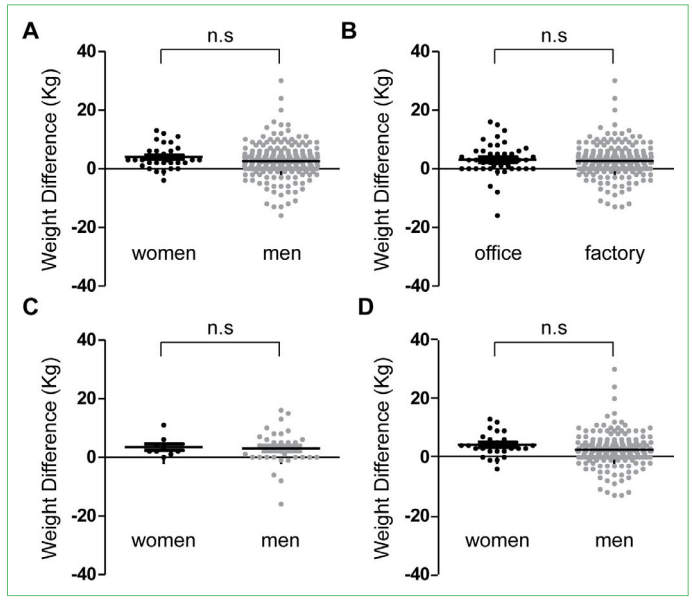

Figure 3. Weight uptake difference dependent of the sex and work nature of the company employee's.

(a) Representative data of weight difference between January 2020 and 2021 in women (34) and men (230). **(b)** Representative data of weight difference between January 2020 and 2021 in office (44) and factory workers (220). **(c)** Representative data of weight difference between January 2020 and 2021 in women working in office (9) and men working in office (35). **(d)** Representative data of weight difference between January 2020 and 2021 in women working in factory (25) and men working in factory (195). n.s indicates non significant difference between all the compared conditions (ANOVA).

We notified an important weight gain within our population of study, independently of gender, nature of the tasks (administration and/or factory work), or age. However, the most weight uptake was observed within the age range of 25 to 35 years. When interrogated, a majority of the employees reported having an increase of food consumption in general, with a growth of sugary, fatty and industrial components of the meals. Workers confessed also that they snakes frequently during the day, having dinner as main meal and the increase of sedentarity especially being set in front of the television and having less occasions to exercise, like walking for instance. In addition of this physical and dietary new practices, lockdown engendered some compartmental changes like the intensification of smoking and mental worries, essentially anxiety and sleeping disorders.

In the recent years, we observed lifestyles changes within Tunisian population, especially in big cities like Tunis (capital of Tunisia). Due to changes of the dietary habit, the slow abandonment of the Mediterranean diet and the increase of industrial, fatty and sugary food, Tunisian BMI is increasing.[17] That was already clear when we calculated the employee BMI before the lockdown. Indeed, the majority of the workers were already in overweight condition. It's well documented that overweight and obesity are majors' risk factor for serious diseases, especially cardiovascular diseases, diabetes, and cancers.[18-21]

The lockdown and the different restriction measures aggravated the situation with the increase of industrial, fatty and sugary food consumption, both as snack or main meal and the difficulty of having fresh fruits and vegetables imposed by the situation. It was well reported that these dietary practices enhance the weight gain and provoke obesity.[22-24] Furthermore, the lockdown increased sedentarity and bad habit behaviour like eating in front of the TV, which also was associated with weight gain and obesity.[25-27] A recent meta-analysis documented globally the decrease of physical activities independently of gender or age during the Covid-19 pandemic[28] confirming the correlation of weight gain and lockdown in our population.

Our investigation showed some psychological concerns within the studied population. Workers declared that they have sleeping troubles. This problem can be an indirect consequence of weight gain.[29] Moreover, it was also widely described as a mental effect of the lockdown and restrictive measures.[30-32] Anxiety and nervousness was also correlated with the Covid-19 and the related restrictions.[33-36] More notably was also the increase of smoking within our population, another behaviour that was correlated with the lockdown globally.[37, 38] Widespread media and social media coverage of the pandemic increased without doubt the psychological issues and physical disorders.[39]

Conclusion

Here, we provide extra arguments in support of the negative effects of the Covid-19 lockdown-related on physical and mental health, despite how essential it was in minimizing the coronavirus SARS-CoV-2 spread globally and in Tunisia. We are conscious that our cohort needs to be enlarged in order to be more relevant for epidemiologists. However, we truly believe that our data will be useful to Tunisian public health administration and support the need of national strategy to improve healthy diet and life style in addition of a imperative measures to promote mental health within the population.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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