Biotechnology

Stress and confinement during the COVID 19 pandemic: Statistical study of the situation in Morocco (March – May 2020)

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ABSTRACT
The COVID-19 pandemic has resulted in unprecedented restrictions on people's daily lives worldwide in an effort to contain the virus. These restrictions can lead to psychological symptoms such as anxiety, stress, and depression, as well as other side effects on public health. Home confinement, the most widely chosen virus containment measure, can have immediate and long-term impacts on people's mental health and quality of life. It has been associated with depression symptoms, anxiety, and stress during crisis situations, and some chronic illnesses have been observed in the early stages of the pandemic. Stress is a common reaction to catastrophic or emergency situations, and while some geographies have confirmed the effects of isolation due to epidemics, information on stress response and control during a pandemic lockdown is limited. Quarantine can be an unpleasant experience due to separation from loved ones, loss of freedom, uncertainty about illness, and boredom. This can lead to potential psychological impacts of confinement during the COVID-19 pandemic, which may be associated with serious side effects such as heart problems, diabetes, and hypertension. This study aims to assess the impact of confinement on the quality of life of people in Morocco, taking into account differences due to socio-demographic conditions such as gender, age, place of residence, and income level. The study will examine symptoms and/or associated diseases during a three-month period from March to May 2020.

1. Introduction:

The Covid-19 pandemic that emerged in 2020 caught the world by surprise [1]. The exponential increase in patients requiring medical assistance, particularly intensive care, forced governments worldwide to implement corrective measures to curb the spread of the disease [2]. Social distancing and home confinement have been widely used to combat the spread of the virus, effectively slowing the growth curve of infections during the first wave of Covid-19 [3]. While these measures may be necessary in later and ongoing waves, concerns about the psychopathological consequences of prolonged isolation and a sedentary lifestyle have emerged. Stress is considered among the problems that can lead to serious and chronic illnesses such as heart problems, diabetes, and hypertension, which can impact public health [4-5].

Lazarus' (1990) [6] transactional model of stress and coping views stress as the outcome of the relationship between a person's coping resources and the demands of the situation. Understanding the importance of individual differences in the experience of stress, previous studies during epidemics have reported high levels of stress and anxiety in the population,

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leading to non-adaptive and socially maladaptive behaviors. During previous outbreaks, such as the Korean MERS-CoV outbreak in 2015 and the Ebola outbreaks in Sierra Leone in 2014 and the Democratic Republic of the Congo in 2018, medical staff reported high levels of stress and anxiety [7-9].

During the current COVID-19 crisis, moderate to severe anxiety and symptoms indicating the psychological impact of confinement have been recorded globally. Studies have highlighted the role of unpredictability, uncertainty, disease severity, misinformation, and social isolation in the experience of stress and poor mental health [10]. In Morocco, negative effects on well-being and high levels of fear and panic in the general population have been confirmed, with an increased risk for infected patients and their families, people with physical or psychiatric illnesses, and health workers.

This article aims to conduct a preliminary study on the relationship between stress and confinement during the first months of the Covid-19 outbreak (March-May 2020). Specifically, the study hypothesizes that the beneficial effect of symptom engagement and activities on psychopathological health is exerted through a decrease in Covid-19-related stress.

2. Materials and methods:

Between March 2020 and May 2020, we distributed a direct link to the questionnaire through various social media platforms and different media channels, both digital and print, to encourage participation in our study. We adhered to the guidelines set by the Ethics Committee in Research and Teaching of the University of Sultan Moulay Sliman (Morocco) and the Declaration of Helsinki, ensuring that participation was voluntary, anonymous, and that data protection was maintained.

The online survey, which included informed consent, a socio-demographic questionnaire, and questions related to perceived stress and stress control (including diseases and/or activities), was created using the Google Forms platform and took approximately 5 minutes to complete.

We used non-probability exponential snowball sampling to obtain our sample, and the link to the survey was distributed via email, social media (WhatsApp, Facebook, and Instagram), and online print media. The only inclusion criterion was that participants had reached the age of majority in their respective countries, and no exclusion criteria were applied.

Access to the survey was closed on May 19, 2020, three months after the questionnaire link was published.

In addition to reviewing descriptive statistics and relevant inferential analysis (validity and reliability), we also performed analysis of variance (ANOVA) to explore any differences in perceived stress levels during confinement based on a combination of studied variables.

3. Results and discussion:

During the COVID-19 pandemic, many individuals experienced high levels of stress due to the confinement measures imposed in various parts of the world. A study was conducted to examine the stress levels of 159 people during this period and to investigate the impact of stress on their health, particularly in terms of intestinal problems and allergies.

The study participants consisted of 45.2% males and 54.8% females with an average BMI of 34.7±8.2 Kg/m2. The majority of participants were single or married (96.1%), and 89.3% were employed in the public or private sector or were students. Overall, the group had normal health, but 39.0% experienced health issues such as fatigue. Most of the respondents had a normal diet (72.3%) but lacked physical activity (30.2%) and had an average sleep of 8.0±1.9 hours with sleep disturbances. No addictions were observed in the group.The study found that the recorded stress level was 5.6/10, which was observed during the 3-month period of COVID-19 spread and confinement. The stress was directly related to food problems and physical activity, which indirectly led to health issues. Table 1 shows the data collected from the survey carried out between March 2020 and May 2020.

The study found that the group had normal health, but 34% of participants experienced intestinal problems, and 18% experienced allergies. Stress can affect our digestive system through its impact on the sympathetic and parasympathetic systems. The sympathetic system affects the production and emptying of stomach secretions, and its dysfunction is associated with significant and long-lasting anxiety. The parasympathetic system affects heart rate, sphincter contraction, and digestive secretions. When stress is linked to a quick action, such as avoiding an obstacle, the parasympathetic system is activated, resulting in short-lived stress that only affects the body temporarily. Repeated stress can cause various digestive pathologies, including irritable bowel syndrome, which involves abdominal pain, transit disorders, and bloating. Digestive disorders such as gastrointestinal reflux, peptic ulcer, and inflammatory bowel disease can also be caused by stress [11-12]. In the other hand, Stress is known to be an aggravating factor in people who suffer from allergies. Studies suggest that the increase in allergic reactions could be linked to the stress hormone corticotropin [13-14].
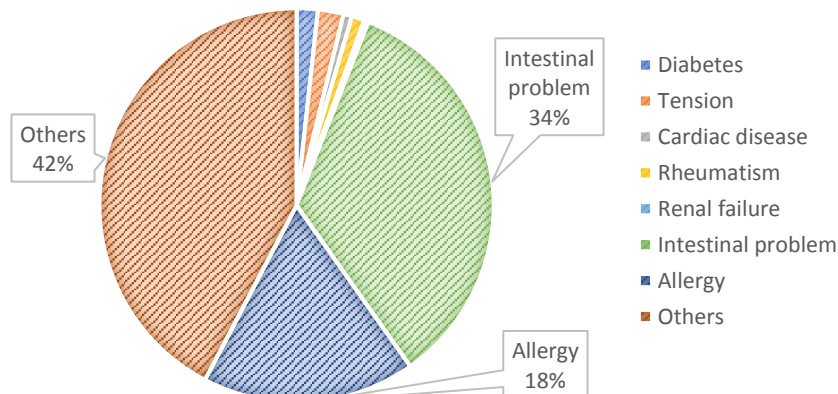
Finally, the study found that stress levels were relatively high during the COVID-19 confinement period, and this stress was directly related to food problems and physical activity, which indirectly led to health issues. Specifically, the study found that stress can affect our digestive system through its impact on the sympathetic and parasympathetic systems, leading to various digestive pathologies. Furthermore, stress can also aggravate allergies, with studies suggesting that the stress hormone corticotropin may be responsible for this effect. These findings highlight the importance of managing stress during times of confinement and the need to pay attention to our diet, physical activity, and sleep to maintain good health.

Table 1. Survey data during the COVID-19 lockdown period (March 2020- May 2020)

Characteristic	Study group (n = 159)
Age (years)	31.9 ± 11.5
Sex. n (%)	Male 72 (45.2)
	Female 87 (54.8)
BMI (Kg/m^2)	34.7±8.2
Residence n (%)	Casablanca 52 (32.7)
	Others in Morocco 107 (67.3)
Family situation n (%)	Single 98 (61.6)
	Married 55 (34.5)
	Divorce 5 (3.1)
	Widower 1 (0.6)
Level of studies n (%)	Superior 157 (98.7)
	Others 2 (1.3)
Professional activity n (%)	Employee 29 (18.2)
	State worker 52 (32.7)
	Student 61 (38.4)
	Unemployed 17 (10.7)
Health level	Good health 97 (61.0)
	Tired 60 (37.7)
	Sick 2 (1.3)
Food habit n (%)	Normal 115 (72.3)
	Diet 17 (10.7)
	High 11 (6.91)
	Weak 16 (10.0)
Sport n (%)	48 (30.2)
Addiction n (%)	Cigarette 6 (3.8)
	Dope 1 (0.6)
	Alcohol 2 (1.3)
	others 5 (3.1)
hours of sleep	Mean ± SD (8.0±1.9)
	Sleep disorders 78 (49.1)
Rating of stress level from 1 to 10	Mean ± SD (5.6±2.1)

Table 2. Survey data of health problems among respondents.

Diseases	n
Diabetes	5
Tension	6
Cardiac disease	2
Rheumatism	3
Renal failure	1
Intestinal problem	98
Allergy	50
Others	121
None diseases	132

Figure1. Distribution of illnesses among respondents during confinement in the period March 2020 - May 2020.

4. Conclusion

This study examined the impact of COVID-19 confinement on stress levels and health issues among 159 people. The results showed that the majority of respondents had normal health, but 39% experienced fatigue and stress levels were recorded at 5.6/10. The study found that stress was directly related to food problems and physical activity, which indirectly led to health issues. The most common health problems reported were intestinal problems and allergies. Stress can also affect the digestive system, causing various pathologies including irritable bowel syndrome, gastrointestinal reflux, peptic ulcer, and inflammatory bowel disease. Additionally, stress is known to be an aggravating factor in people who suffer from allergies. This study highlights the importance of addressing stress management during confinement periods to prevent negative health outcomes.

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