

**UNDERSTANDING CHANGES IN LIFESTYLE RELATED
BEHAVIOUR IN INDIAN POPULATION DURING
COVID-19 PANDEMIC**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Pharmaceutical Management

by

Ayushi Tandon

Under the Supervision and Guidance of

Prof. Rahul Sharma

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **UNDERSTANDING CHANGES IN LIFESTYLE RELATED BEHAVIOUR DURING COVID-19 PANDEMIC** is the bona fide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

AYUSHI TANDON

Date: 25/06/21

CERTIFICATE OF COMPLETION

This is to certify that **AYUSHI TANDON** in partial fulfilment of the requirements for the award of the degree of **MBA Pharmaceutical Management** from the IIHMR University, Jaipur has successfully completed her dissertation project in IIHMR University during March 22, 2021 to June 19, 2021.

Place: **Hyderabad**

Date: **25/05/21**

Preceptor/Head of the Organization

IIHMR UNIVERSITY, JAIPUR

CERTIFICATE FROM FACULTY GUIDE & SCHOOL DEAN

This is to certify that dissertation titled **UNDERSTANDING CHANGES IN LIFESTYLE RELATED BEHAVIOUR DURING COVID-19 PANDEMIC** is a record of the research work undertaken by **AYUSHI TANDON** in partial fulfilment of the requirements for the award of the degree of **MBA Pharmaceutical Management** from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

Prof. Rahul Sharma

Faculty Guide

IIHMR University, Jaipur

Date: 25/06/2021

Dr. Saurabh Kumar

School Dean

IIHMR University, Jaipur

Date: 25/06/2021

Abstract

Covid-19 has left a lasting impact on lifestyle-related behaviour of people. It's almost been two years since the pandemic has begun and throughout these years, governments and healthcare authorities across the globe have imposed lockdown restrictions.

These lockdown restrictions have heavily impacted the lifestyle of people in terms of diet, physical activity, sleep pattern, anxiety, stress level etc. Since the lockdown has been imposed, people tend to rely on processed food and junk food which is easily available and does not consume cooking time. These kinds of food contain a lot of unhealthy substances which are indirectly responsible for weight gain of individuals.

India having the 2nd largest diabetic population of the world has a higher risk of patients succumbing to COVID-19 infections due to their prior illnesses. Hence, it is very important to maintain a healthy lifestyle to help patients maintain and manage lifestyle related illness which can lead to severe complications and increase the health burden during the pandemic.

This report aims to assess changes in the lifestyle related behaviour of the Indian population during the pandemic.

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I perceive this opportunity as a big milestone in my career development. I will strive to use the gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives.

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Chapter 1: Introduction

With more than 3 million surge in active cases, COVID-19 pandemic has spread throughout the globe like wildfire. The pandemic has had a lasting impact on our lives, affecting not only our physical health and mental health but has also brought in significant changes in lifestyle related behaviour and this impact will be felt for years to come. Norms such as “social distancing”, “self-isolation”, “WFH- work from home” have all become a part of the new normal.

The pandemic has so far crashed economies, disrupted technologies, as well as the healthcare ecosystem and has brought the world to a standstill.

COVID-19 is continually redefining our daily lifestyle habits in a very significant manner, as the pandemic passes through its various stages.

Constant social isolation can lead to development of unhealthy lifestyle such as poor diet, curtailment of exercise, consumption of alcohol and smoking are all adding up to burden of COVID-19. Lifestyle- Behaviour is pivotal in the development and management of Diabetes Mellitus and India is ranked as the 2nd highest diabetic population of the world. Continuum of these unhealthy lifestyle practices and we're not far from the day where we rank the 1st.

Patients that are dealing with chronic illness are not only affected by COVID-19 in a direct manner but also in an indirect manner. The extensive effort to curtail the virus and its mortality and morbidity has adversely affected both the persistence and quality of care with patients dealing with chronic illnesses.

Along with comorbid conditions of the patients, age acts as a major risk factor for patients that succumb to COVID-19. The elderly, most vulnerable group are at a significant risk of infections. Especially, those with underlying heart conditions, COPD, T2DM, cancer patients, transplant recipients etc.

Amidst the pandemic health care providers are grappling to provide chronic care to severely ill patients. Care models need to be more robust changing and progressing the healthcare environment from reactive and fragmented healthcare to a proactive and continuous system where the patient is at the heart of the health care ecosystem.

The disease burden globally has reinforced the significance of telehealth, through its ease of access and improving the quality of healthcare. Previously, the growth of telehealth as a healthcare model was stagnant but the pandemic has reformulated the healthcare ecosystem by reducing the risk of infection and making the process virtual and contact free.

India, in healthcare sector follows the out-of-pocket expenditure model. Hence, it is very important for such tools and platforms to be made accessible, affordable and assurance must play a key role. Looking at the socio- economic background of the country, these healthcare

platforms have and will act as a boon in enabling remote treatment of patients suffering from chronic illnesses.

The objective of this report is to empirically study the effect of Covid-19 pandemic on lifestyle related behaviours and evaluate its changes in Indian population.

During the pandemic norms such as “isolation”, “social distancing” also has significant impact on the lifestyle of individuals. Considering humans as social animals, imposing constraints on their movement can lead to the individuals having a feeling of alienation, anxiety and in extreme cases can also lead to depression etc.

Along with this, the pandemic has a varied impact on individuals belonging to different age groups. For younger children, the challenge of keeping them constantly engaged at home is fairly high while for the elderly, keeping them at bay by avoiding physical contact and constant meet ups is difficult as well.

India- a very diverse cultural country, where religions, festivals and culture play a very important part but the pandemic has brought all the festivities to a standstill. Coming to the economy, which is considered the backbone of any country and in India a good percentage of the economy is driven by farming and other daily wage activities. It is certain, that the pandemic has had a significant impact psychologically on them as well.

This study also explores the perception of general public on the changes in their lifestyle choices during the ongoing pandemic, keeping in mind factors such as diet, sleep patterns, mental health, exercise etc.

Chapter 2: Review of Literature

With the pandemic growing at an unprecedented rate, governments across the world in conjunction with healthcare authorities have come up with new norms such as “quarantine” and “isolation” measures help reduce the spread of infection.

Where the two above mentioned measures are helping to curtail the spread of infection. On the contrary they are also associated with unhealthy changes in lifestyle behaviour, from reporting in increase of weight to burden of stress and insomnia affecting the mental health at large. These multidimensional effects are not only visible locally but also globally. With several restrictions in our daily life, not only has it lead to social isolation but has also made people reach to a point in violating the lockdown norms.

In the beginning of the pandemic the healthcare systems around the world were coming up with the concept of patient centric healthcare, which has now moved up to community centred healthcare.

It is reported that antidepressant drugs were considered as one of the most sold class of drugs during the pandemic along with other chronic disease drugs. In chronic disease conditions such as cardiovascular diseases, diabetes mellitus etc stress has been recognised as one of the most important factor of risk in these conditions.

For a good mental health and wellbeing, studies have shown that aerobic activities can be proven to be very effective in treating disorders such as anxiety, depression, insomnia etc. One of the major fallouts of occurrence of stress during the pandemic is changes in the lifestyle related behaviour of people and this is driven by multiple factors such as unhealthy diet, consumption of alcohol, smoking, irregular sleeping patterns etc.

Several studies and articles have also revealed that women were more likely to have food cravings those on the line of sugar and fat rich foods and were more prone to having a psychological and emotional breakdown leading to increase in obesity and poor mental health. Post menopause there are changes in the metabolism, making obesity as one of the most critical factors in the development of CVD and T2DM. Performing regular aerobic activities helps in controlling the weight gain and reducing the obesity (Vitoria, Maffie, & Sciomer, 2020).

During the lockdown phase of the pandemic, the access to fresh food was circumscribed and this led to people turning to process food which was conveniently available, and which is mostly found to be deficient in nutrients. Furthermore, with millions of people losing their job the boredom caused by this has also made life more stressful and this has led to people indulging in emotional and over eating. Hence, changes in the diet has been widely seen during the lockdown phase of the pandemic. (Galali, 2021)

Patients that have high visceral fat, the pulmonary function is further weakened and this is due to the decline in the diaphragmatic jaunt, does making the ventilation more difficult.

Patient suffering from COVID-19 tend to be in an inflammatory state, which further builds up into a “*cytokine storm*” and can also lead to multiple organ failure. Hence, it is very important for a patient to adhere to a balanced diet.

This is because, in case of cytokine the expression of genes are heavily altered by the help dietary changes. A combination of both macro and micronutrients is crucial against immune mediated inflammatory responses. (Di Renzo & Pivari, 2020) Food and lifestyle choices does have a significant impact on our health. Sustaining a balanced diet is pivotal especially during a time when the immune system is weakened. Patients that are suffering from high obesity, are considered to be at a higher risk of COVID-19 complications.

(Zhang & Fee Ma, 2020) states that, In addition to this, another vulnerable group that may suffer from COVID-19 complications are pregnant women. Since their immune function is compromised they are most susceptible to developing infections. At such a time, they may even be enduring severe stress, anxiety or may even be dealing with depression. All these factors can even lead to foetal death and these multidimensional effects are mostly occurring in developing countries where access to healthcare is not easy.

According to (Gao & ZHao, 2020) sleep is a very important physiological process and has proven to have potential on immunity. Absence of sleep implies that the body is more susceptible risk of infections. A series of physiological changes indicate that patients that are sleep deprived or are facing insomnia, undergo impaired mitogenic proliferation of WBCs, thus weakening the immune response and making the body most respectable to viruses, making it an individual high risk factor contributing to Covid 19.

Fruits and vegetables rich in vitamin C, D, E are considered as one of the most important factors in protection against the viruses. These vitamins consist of antimicrobial peptides which help in inducing immunity in the body. Patients suffering from COVID-19 are likely to have proinflammatory cytokines, hence consumption of vitamins help to enhance anti inflammatory cytokines, thereby increasing the production of B and T cells.

Chapter 3: Methodology

Objective: The main objective of the report is to assess and understand the impact of COVID-19 pandemic on lifestyle related behaviour in the Indian population.

3.1: Study Design and Rationale:

For this research project an online cross-sectional survey was circulated to the general public to assess and understand the impact of the pandemic on their everyday lifestyle practices which included food habits, sleep pattern, performance of aerobic activities etc. which was all comprised in a web-based questionnaire or google form.

This research was carried out across various states, towns and cities. The data collection tool used for the project was primarily google form and an addition to this telephonic survey was also conducted which mainly targeted the elderly population. (above >60) The online survey was circulated via various social media platforms viz. whatsapp, facebook, linkedin, Instagram, twitter.

A brief of the research project was included in the google form, to help participants understand the objective and purpose of the study being conducted. Also, the form had a section for informed consent. The study constituted participants belonging to different socio-economic backgrounds, different geographic backgrounds, varied age groups etc. to get a holistic overview. For the study, a total of 111 responses were recorded via google form and telephonic survey.

3.2: Research Strategy:

This research study is performed using data collection through a web based survey and from secondary data sources using combination of relevant string and keyword search from articles published on PubMed/ Science Direct/ Ncbi.

The study namely had both inclusion and exclusion criteria:

Inclusion Criteria:

- The research articles and studies used from the secondary sources was mainly looked upon to focus on the Indian population.
- All the articles and thesis covering all aspects of COVID-19 impact on lifestyle such as dietary habits, sleep pattern, aerobic exercises, age factor, comorbid conditions of patients were covered.

Exclusion Criteria:

- Research articles from other country populations

Chapter 4: Result Analysis

4.1. Questionnaire:

The web survey comprised of 14 open ended questions which addressed different aspects related to both lifestyle and behaviour of individuals. Primarily focusing on diet, sleep, junk food consumption, stress level etc.

The total number of respondents that were a part of this study were 111. Out of which 64% of participants belonged to the < than 30 age group, 21% to 30- 60 and 15% belonging to >60 age group. The sample comprised of a higher female response rate accounting to 58% and male 42%. The demography of the participants majorly belonged to North Indian regions contributing to 51%.

4.2. Survey Results:

From the web-based questionnaire, it can be observed that 38% of the respondents have said they gained weight during the pandemic.

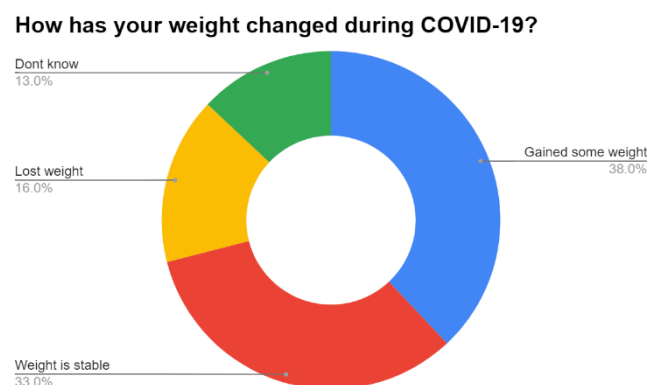


Fig 1. Weight changed during COVID-19

Along with this a very substantiate amount of respondents claim to have been skipping at least one of the main meals, also the consumption of snacks between meals and meal size (proportion) has significantly changed.

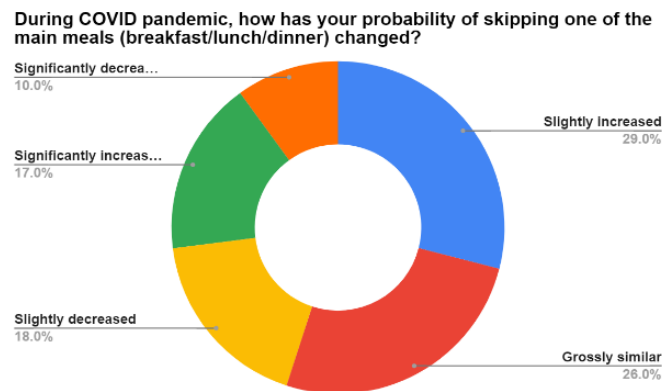


Fig 2 Probability of skipping meals during pandemic

We found that approximately three-fourths of the participants reported either an increased or a similar intake of main meals, snacking between meals, portions of meals/snacks and a balanced diet including whole wheat, pulses, legumes, eggs, nuts, fruits and vegetables.

On the other hand, the overall intake of fast food/junk food/fried food, sugar-sweetened beverages, sweets, chocolates has been found to be either similar or decreased, however, the intake of unhealthy foods out of boredom or stress has been found to be a bit increased by around 48% of participants.

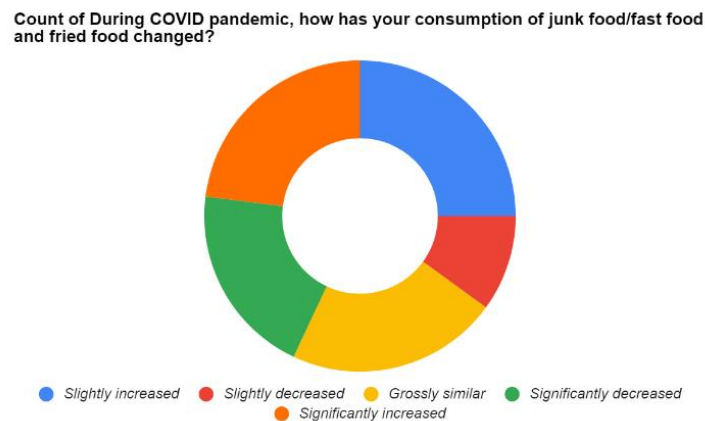


Fig 3 Consumption of fast food during the pandemic

In nearly 32% of respondents, it was found that slightly increased pattern of immunity boosters were consumed and for 24% of the respondents there was significant increment in the consumption pattern as well.

During COVID pandemic, how has your intake of nutrition supplements to boost immunity changed?

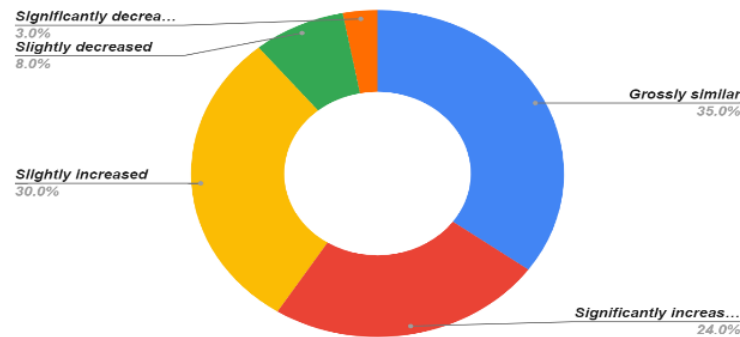


Fig 4 Intake of immunity boosters during the pandemic

In case of performing physical activity/ aerobic exercises, 3/5th of respondents has claimed that their participation in exercise has either significantly or slightly increased during the pandemic.

Majority of the respondents have reported that their sitting and screen time has drastically increased as compared to pre pandemic.

During COVID pandemic, how has your sitting and screen time changed?

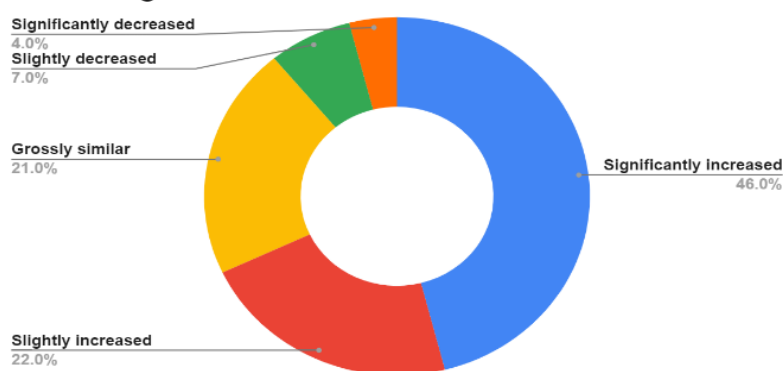


Fig 5 Sitting and screen time during the pandemic

For sleep pattern and the quality of sleep- 35% of respondents have reported that their hours of sleep have been grossly similar and their quality of sleep has also been reported to be slightly similar. Finally, stress and anxiety levels for majority of the respondents have significantly increased.

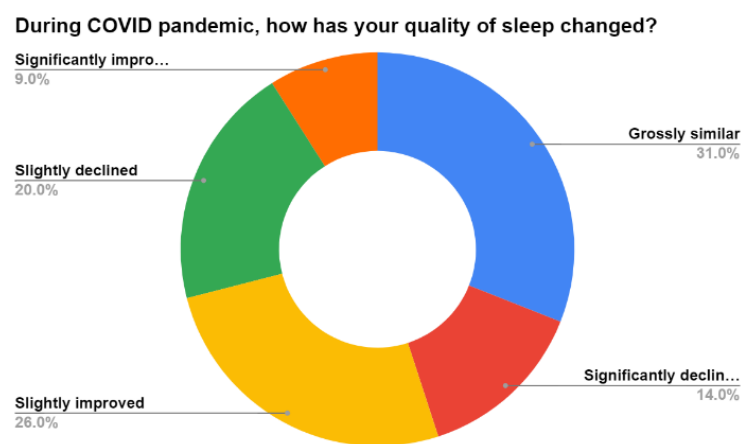


Fig 6 Quality of sleep during the pandemic

Chapter 5: Discussion

Ever since the pandemic has begun lockdown restrictions have been imposed by government and healthcare authorities throughout the country to control the risk of spread of infections, this has caused a serious and significant changes in carrying out daily routine activities.

This study focuses to understand the changes in lifestyle related behaviour in the Indian population. From this study, it can be gathered that alteration in an existing healthy diet and lifestyle can act as a risk in development of diabetes.

Looking at the dietary pattern from the survey results suggests that individuals have found their weight to have somewhat increase during the lockdown. This can be because, access to fresh food was limited due to lockdown restrictions, which made people more reliable on processed foods and junk foods which maybe a reason for increase in weight and the portion sizes of meals being changed/ increased.

Directly or indirectly, diet influences the overall behavior of individual. Sleeping patterns and participation in aerobic exercises is also greatly affected. From the survey, it can be seen that for most of the respondents the quality and hours of sleep are grossly similar but there is proportion of participants who have said that quality of sleep has been declined along with the hours of sleep and this has primarily been observed in individuals belonging to age group of >60 i.e. elderly patients. These patients may be suffering from some chronic diseases, which maybe negatively impacting their quality of sleep. Patients may also be suffering from post-traumatic stress; in case they have been infected with covid19.

As for participating in physical activity, it can be observed from survey results that even though with several restrictions from lockdown and gyms and fitness centres remaining closed. People are still engaged in physical activities. Nowadays, several fitness centres such as Cult fit are offering fitness training such as yoga, Zumba and other physical exercises at the comfort of home of people through their respective apps.

Chapter 6: Conclusion

While the pandemic had brought the world to a standstill, but with the disruptions in healthcare and technology along with vaccines being administered to individuals around the world. There is a hope of restoring the normalcy globally, perhaps the new normal.

To enhance the ever-growing burden of the pandemic, it is very important to maintain a healthy balance in our lifestyle.

The changes in people's lifestyle and behaviour is a sum of various components such as culture, economic, environment, demographic etc. and with all these inter changing components during the pandemic, it is imperative to build strong public health strategies to curtail the healthcare burden.

With the help of progressing technology, the government and healthcare authorities must spread awareness about lifestyle behaviour.

In conclusion, the survey results conclude a mix of precautionary measures which can be adopted by individuals to maintain their lifestyle behaviour. Even though, through the survey there was an improvement in participation of exercise of individuals, but the study was done for a small sample. It cannot be assumed the same pattern for the entire Indian population.

Uncontrolled eating behaviour, consumption of junk and processed food can lead to increase in body weight and can also increase risk of metabolic diseases such as T2DM, CVD etc. Hence, healthcare authorities must conduct regular assessment of population to curtail the burden of other lifestyle related diseases.

COVID-19 marginally improved the eating behaviour, yet one-third of participants gained weight as physical activity declined significantly coupled with an increase in screen and sitting time. Mental health was also adversely affected. A detailed understanding of these factors can help to develop interventions to mitigate the negative lifestyle behaviours that have manifested during COVID-19.

6.1. Limitations:

Some limitations to this study were:

1. Inadequate representativeness from lower socio-economic strata, although efforts were made to include a diverse population
2. possibilities of reporting bias due to web-based survey
3. inability to establish predictive and concurrent validity which would require a long-term follow-up.

6.2. Practical Recommendations

1. Main findings and recommendations that can be gathered from the reference studies and survey conducted is that there must be focus under pandemic restrictions should be moved toward home-based PA programs, which should be supervised in vulnerable individuals.
2. Use of wearable technologies (activity trackers through smartphones/smartwatches), which have been widely suggested to provide an overview of daily activities and to help reduce inactivity and ensure improvements in cardiovascular parameters.
3. Potential of digital community exercise programs in motivating individuals and reducing their feeling of loneliness. Government actions should promote these PA programs as a health-care priority, especially for vulnerable individuals

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Annexures

Dissertation Questionnaire

Topic: Assessment of Lifestyle Related Behaviour during COVID -19 Pandemic

****Instructions:** For question numbers 1-10 select one of the following options as your response: (a) Significantly increased (b) Slightly increased (c) Grossly similar (d) Slightly decreased (e) Significantly decreased

- **Age (in years)-** <30
 - 30 – 60
 - 60 and above
- **Gender:**
 - Male
 - Female
- **Place of Residence:**
 1. During COVID pandemic, how has your probability of skipping one of the main meals (breakfast/lunch/dinner) changed?
 2. During COVID pandemic, how has your habit of snacking between meals changed?
 3. During COVID pandemic, how has your quantity/portions of meals and snacks changed?
 4. During COVID pandemic, how has your consumption of junk food/fast food and fried food changed?
 5. During COVID pandemic, how has your intake of immunity-boosting foods (lemon, turmeric, garlic, citrus fruits and green leafy vegetables) in the diet changed?
 6. During COVID pandemic, how has your intake of nutrition supplements to boost immunity changed?
 7. During COVID pandemic, how has your sitting and screen time changed?
 8. During COVID pandemic, how have many hours of sleep have you been getting?
 9. During COVID pandemic, how has your quality of sleep changed?
 10. During COVID pandemic, how have your stress and anxiety levels changed?

