

# A Study on Effect of Covid-19 Pandemic on Dietary Habits, Physical Activity and Sleep Patterns Among School Students

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**Abstract:** COVID-19 pandemic has led to various changes in lifestyle of humans. One of such change can be seen in dietary habits, physical activity, sleep pattern and overall health of the individuals. The study Aimed to assess the changes brought by pandemic on basic health, dietary habits, physical activity and sleep pattern among school students. A descriptive Study was conducted at different schools of Hyderabad. The study was conducted on 100 school students. A questionnaire was developed, and interview was done. The data collected was tabulated and analysed statistically using the formula paired t-test. The results shows that the p values are ( $P < 0.100$ ) and it is significant at  $t 0.100$ . Hence the Alternate hypothesis is proved. It is concluded that the COVID-19 pandemic has impact on students dietary choices, Their sleep patterns and physical activity. Students got used to have meals at irregular timings, they lack physical activity and screen time is increased, their sleep patterns were also affected. The changes brought by pandemic are now gradually shifting to normal.

**Index terms-**COVID-19, Pandemic, Dietary habits, physical activity, sleep patterns, school students

## I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019. The disease spread worldwide, leading to the COVID-19 pandemic. India has one of the highest COVID-19 infection rates in the world with over 2.5 million confirmed cases and the death toll on the rise. The first case of COVID-19 was identified on January 30, 2020, in Kerala in a student who had returned from Wuhan, China. However, since March 2020, there has been an upsurge in the spread of the infection. However, since March 2020, there has been an upsurge in the spread of the infection. In response, the Government imposed a nationwide lockdown to prevent community transmission of the

infection. The emergence of the SARS-CoV-2 virus (COVID-19) has led to a worldwide pandemic which was declared a public health emergency on January 30, 2020. This unprecedented challenge led to global Governments enforcing restrictions to help abate the rate of infection, such as limiting participation in normal daily activities, travel and access to many forms of exercise (e.g., gyms were closed, group gatherings were banned, and increased social distancing was recommended). lockdown restrictions began on March 23, 2020, which prohibited people from leaving their home, with the exception of essential activities such as buying food, accessing healthcare and to take part in up to 60 min of outdoor exercise per day. However, despite this provision for physical activity, evidence suggests that people of all ages had significantly reduced levels of physical activity during the COVID-19 pandemic compared to before with subsequent negative impacts on mental health and wellbeing. The COVID-19 pandemic led to lockdowns in several parts of the world and, hence, changed some daily habits, including social interactions, ability to perform in sports, and—possibly—diet.

### 1.1 SYMPTOMS:

Symptoms of COVID-19 are variable, but often include fever, cough, headache, fatigue, breathing difficulties, loss of smell, and loss of taste. Symptoms may begin one to fourteen days after exposure to the virus. At least a third of people who are infected do not develop noticeable symptoms. Of those people who develop symptoms noticeable enough to be classed as patients, most (81%) develop mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging), and 5% develop critical symptoms (respiratory failure, shock, or multiorgan dysfunction). Older people are at a higher risk 3 of developing severe symptoms. Some people continue to experience a range of effects (long COVID) for

months after recovery, and damage to organs has been observed. Multi-year studies are underway to further investigate the long-term effects of the disease.

#### 1.2 COMPLICATIONS:

COVID-19 patients usually present lymphocytopenia upon admission, and thrombocytopenia and leukopenia are frequent among those with serious illness. Furthermore, augmented concentrations of C-reactive protein and proinflammatory cytokines, such as IL-6, were also associated with severity. The body's first reaction against viral infection is the triggering of rapid and synchronized innate immune responses. However, an excessive reaction may cause damage to human tissues. It is postulated that hyperinflammatory aggression of the lungs, induced by disproportionate immune activation and coagulopathy, may be involved in disease progression and aggravation. Nutritional status and diet modulate inflammation and immune function and may be adjusted to impact COVID-19 outcome. A high prevalence of obesity is described among hospitalized patients with SARS-CoV2 infection. Increased concentrations of proinflammatory cytokines in patients with severe SARS-CoV-2 infection are considered to be among the most important causes of acute respiratory distress syndrome and multiple-organ failure. Elderly persons are more susceptible to SARS-CoV-2 infection and experience a poorer outcome when compared with younger patients. Aging is associated with alterations in both the innate and the adaptive immune response, a process known as immune senescence. Hematopoietic tissue, lymphocyte number, proliferative and functional capacity of effector lymphocytes, and activity of NK cells are all reduced in the elderly.

#### 1.3 TRANSMISSION:

Covid-19 transmits when people breathe in air contaminated by droplets and small airborne particles containing the virus. The risk of breathing these in is highest when people are in close proximity, but they can be inhaled over longer distances, particularly indoors. Transmission can also occur if splashed or sprayed with contaminated fluids in the eyes, nose or mouth, and, rarely, via contaminated surfaces. People remain contagious for up to 20 days and can spread the virus even if they do not develop symptoms. Several COVID-19 testing methods have been developed to diagnose the disease. The standard diagnostic method is by detection of the virus's nucleic acid by real-time reverse transcription polymerase chain reaction (rRT-PCR), transcription-mediated amplification (TMA), or by reverse transcription loop-mediated

isothermal amplification (RT-LAMP) from a nasopharyngeal swab.

Several COVID-19 vaccines have been approved and distributed in various countries, which have initiated mass vaccination campaigns. Other preventive measures include physical or social distancing, quarantining, ventilation of indoor spaces, covering coughs and sneezes, hand washing, and keeping unwashed hands away from the face. The use of face masks or coverings has been recommended in public settings to minimize the risk of transmission. While work is underway to develop drugs that inhibit the virus, the primary treatment is symptomatic. Management involves the treatment of symptoms, supportive care, isolation, and experimental measures.

#### 1.4 DIETARY CONSIDERATIONS:

Diet being one of the foremost contributors to health, it is conceivable that a situation in which food availability, access to it, and a shift from eating out to mandatory in-house consumption could have changed the dietary profiles of several people. The immune system protects the host from pathogenic organisms (bacteria, viruses, fungi, parasites). To deal with this array of threats, the immune system has evolved to include a myriad of specialised cell types, communicating molecules and functional responses. The immune system is always active, carrying out surveillance, but its activity is enhanced if an individual becomes infected. This heightened activity is accompanied by an increased rate of metabolism, requiring energy sources, substrates for biosynthesis and regulatory molecules, which are all ultimately derived from the diet. A number of vitamins (A, B6, B12, folate, C, D and E) and trace elements (zinc, copper, selenium, iron) have been demonstrated to have key roles in supporting the human immune system and reducing risk of infections. Other essential nutrients including other vitamins and trace elements, amino acids and fatty acids are also important. Each of the nutrients named above has roles in supporting antibacterial and antiviral defence, but zinc and selenium seem to be particularly important for the latter. It would seem prudent for individuals to consume sufficient amounts of essential nutrients to support their immune system to help them deal with pathogens should they become infected. The gut microbiota plays a role in educating and regulating the immune system. Gut dysbiosis is a feature of disease including many infectious diseases and has been described in COVID-19. Dietary approaches to achieve a healthy microbiota can also benefit the immune system. Severe infection of the respiratory epithelium can lead to acute respiratory distress

syndrome (ARDS), characterised by excessive and damaging host inflammation, termed a cytokine storm. This is seen in cases of severe COVID-19. There is evidence from ARDS in other settings that the cytokine storm can be controlled by n-3 fatty acids, possibly through their metabolism to specialised pro-resolving mediators.

The effect of COVID-19 lockdown both negatively and positively impacted dietary practices throughout the globe, and negative diet habits were associated with other poor lifestyle outcomes including weight gain, mental health issues, and limited physical activity. Both in the short term and if sustained in the long term, these changes may have significant impacts on the health of the population. People suffer from metabolic disorders, along with nutritional burden. More sedentary behaviour increased the chances of stroke, heart disease, obesity, diabetes, hypertension and depression. Physical inactivity becomes a major health concern for occurring life threatening disease. Prolonged sleeping patterns develop lethargy and fatigue behaviour. People also suffer from mental health problem associated with anxiety, depression, psychopathy and obsession. One of the major concerns during the COVID-19 pandemic is malnutrition caused by either overnutrition, under-nutrition, or micronutrient deficiencies. At the community level, access to food was limited leading to lower purchases of fresh fruits in favour of canned food and ultra-processed foods rich in fat, sodium, and sugar.

## II. AIM AND OBJECTIVES

2.1 AIM – To evaluate the effect of COVID-19 pandemic on dietary habits, physical activity and sleep patterns among school going children

2.2 OBJECTIVES-

- To assess the current nutritional status of the children
- To evaluate the changes in their dietary habits during & after pandemic
- To evaluate changes in their mealtime during & after pandemic
- To determine changes in physical activity among these children
- To evaluate changes in sleep pattern

## III. REVIEW OF LITERATURE

A study was done by FAYSAL AHMED IMRAN, MS ESHITA KHATUN in 2020. The study was aimed to determine the changes in food habits,

physical activity, sleeping hours, shopping habits, internet use time and mental status of students. The study participants were 307 Undergraduate students. The study reveals that 21.5% of respondents gained weight, 23.8% lost their weight and 41.7% controlled their weight. Eating of homemade foods decreased after lockdown 76.5% and eating of restaurant food increased after lockdown 23.5%.

A study was done by Wafa Husain & FATEMAH ASHKANANI in 2021. The study was aimed to understand changes in dietary habits and lifestyle behaviours. The study involves 415 samples living in Kuwait the study reveals that the rate of skipping breakfast remained consistent, with a slight increase during the pandemic. Lunch remained the main reported meal before and during COVID-19. Compared to before COVID-19, people were much more likely have a latenight snack or meal during COVID-19. There was a drastic decrease in the frequency of fast-food consumption during COVID-19, up to 82% reported not consuming fast food.

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A study was done by ABID HASAN KHAN et al in 2020, study involved 505 college students in Bangladesh, study reveals that 28.50% of students reported mild to extremely severe stress levels, 33.28% reported mild to extremely severe anxiety levels, 46.92% mild to extremely severe depression levels, and 69.31% mild to severe level of psychological impact occurred by the outbreak.

A study was done by GRACE BENNETT, ELYSIA YOUNG et al in 2020 reveals that people are trending to adopt unhealthy dietary behaviours as they consumed fewer fruits and vegetables, gained weight due to the pandemic, governments around the world have made significant restrictions in the transportation (land, water, and air transport) of goods, as well as in the migration of labour.

## IV. METHODOLOGY

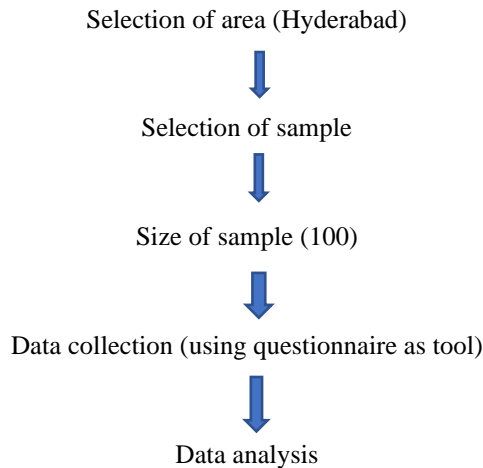
Methodology is the significant part of any research study, which enables the research to produce a

blueprint of the research undertaken. Methodology of present study is discussed under the following heads-

- Research design
- Selection of area

- Size of sample
- Data collection
- Data analysis

4.1 RESEARCH DESIGN- Analytical, design of the study in the following flow chart.



4.2 RESEARCH APPROACH- A Descriptive study.

4.3 SELECTION OF AREA- The study performed on schools' students of different schools.

4.4 SELECTION OF SAMPLE- Samples are selected from different schools of Hyderabad.

4.5 DURATION OF STUDY- The duration of study has been carried for a period of 2 months.

4.6 COLLECTION OF DATA-

*Questionnaire-* The questionnaire contains general information, anthropometric measurements, and questions related to dietary habits during and after

pandemic. The questionnaire includes both closed ended and open-ended questions

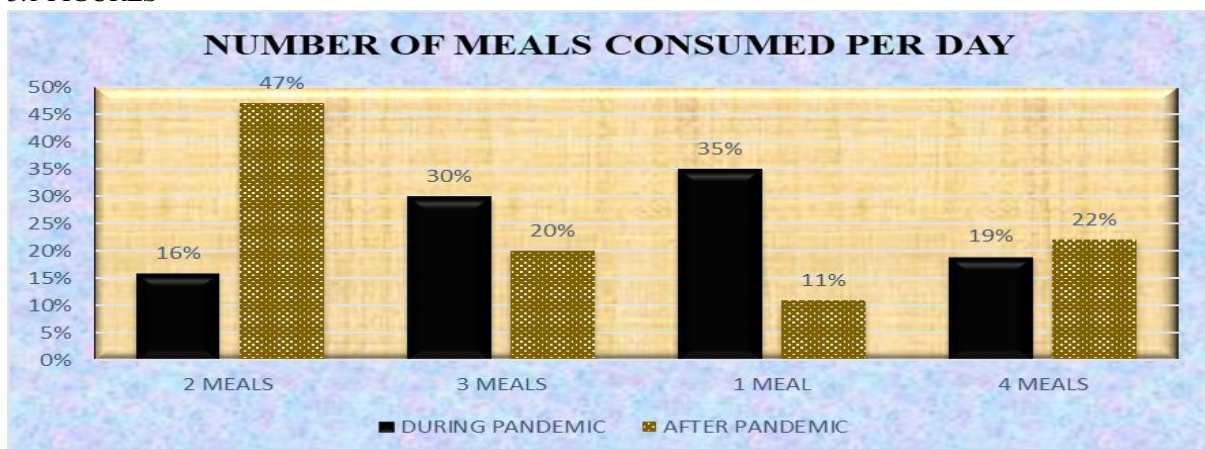
4.7 DATA ANALYSIS- The collected data was analysed statistically by implementing the formula paired t-test

$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}}$$

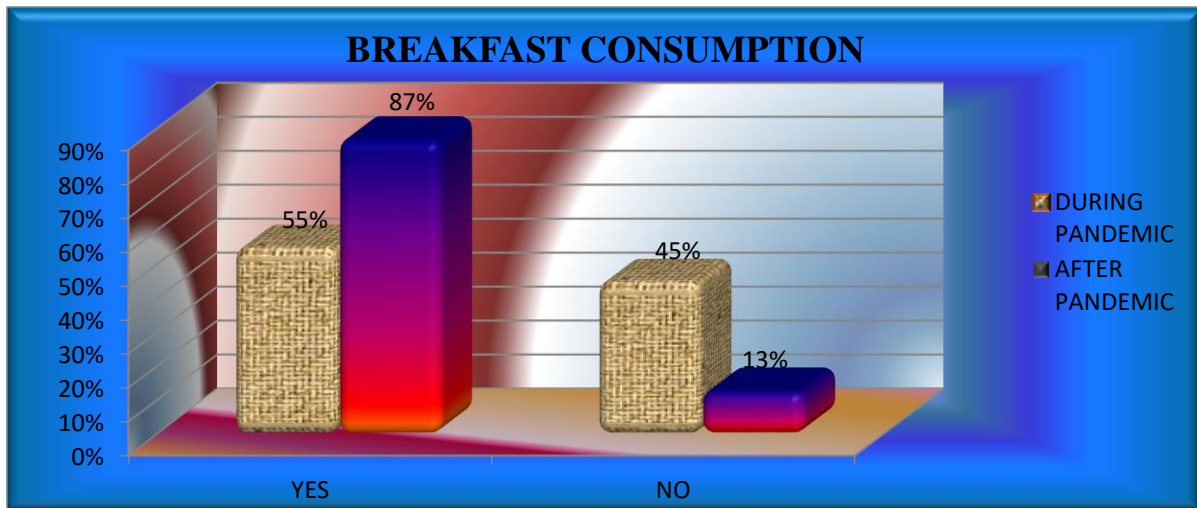
Where d: difference per paired test  
n: number of sample

## V. RESULTS AND DISCUSSION

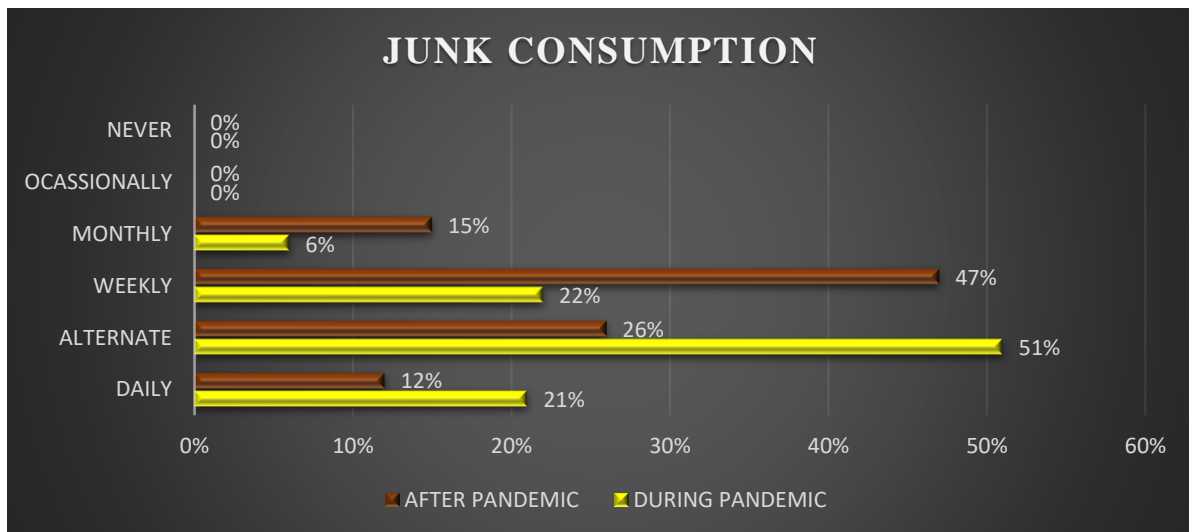
### 5.1 FIGURES



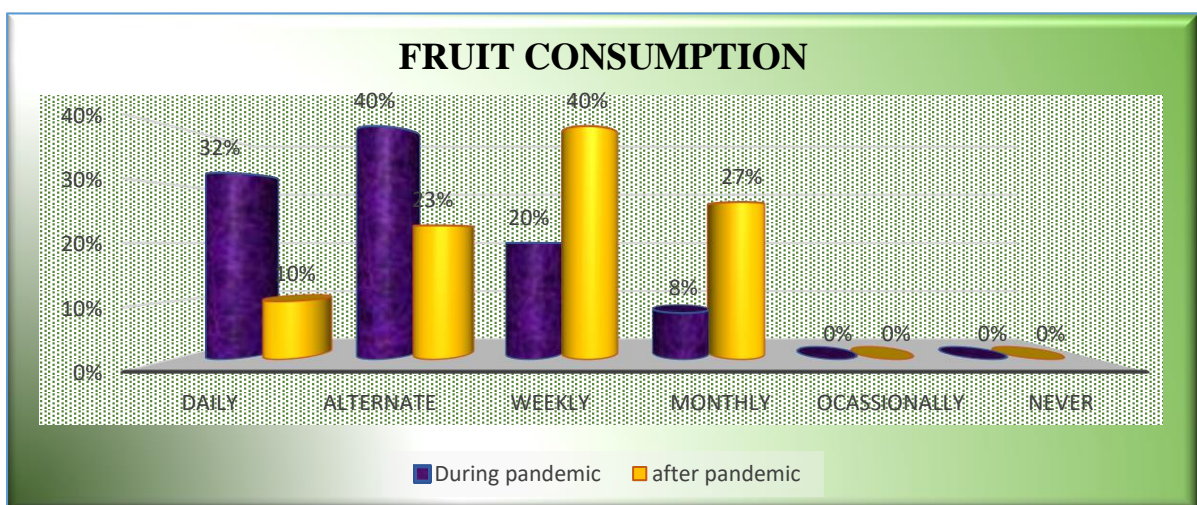
5.1 The above figure shows the number of meals consumed per day



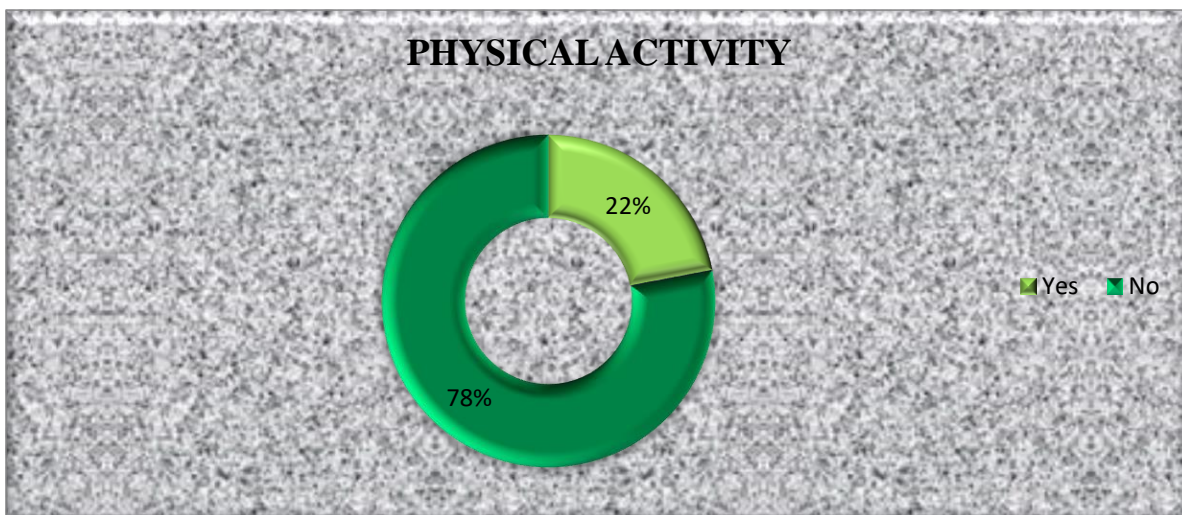
5.2 the above figure shows the breakfast consumption among samples



5.3 the above figure shows the junk consumption pattern



5.4 the above figure shows fruit consumption pattern



5.5 the above figure shows the physical activity during pandemic

5.2 TABLES:

5.1 The below table shows skipping of breakfast

Category	DURING PANDEMIC		AFTER PANDEMIC	
	Frequency	Percentage	Frequency	Percentage
Yes	57	57%	48	48%
No	43	43%	52	52%

5.2 The below table shows the sleeping time

Category	DURING PANDEMIC		AFTER PANDEMIC	
	Frequency	Percentage	Frequency	Percentage
10Pm	9	9%	29	29%
11pm	13	13%	16	16%
12am	12	12%	27	27%
After 12am	66	66%	28	28%

5.3 The below table shows the amount of weight gain during pandemic

Category	Frequency	Percentage
1-2kg	21	21%
5kg	20	20%
7kg	21	21%
More than 7kg	38	38%

5.4 The below table shows the pulses consumption

Category	DURING PANDEMIC		AFTER PANDEMIC	
	Frequency	Percentage	Frequency	Percentage
Daily	40	40%	35	35%
Alternate	55	55%	47	47%
Weekly	5	5%	18	18%
Monthly	0	0%	0	0%
Occasionally	0	0%	0	0%
Never	0	0%	0	0%

5.5 The below table shows the vegetable consumption

Category	DURING PANDEMIC		AFTER PANDEMIC	
	Frequency	Percentage	Frequency	Percentage
Daily	7	7%	5	5%
Alternate	42	42%	20	20%
Weekly	46	46%	49	49%

Monthly	5	5%	26	26%
Occasionally	0	0%	0	0%
Never	0	0%	0	0%

## VI SUMMARY AND CONCLUSION

Coronavirus disease (COVID-19) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus-2 (SARS-COV-2). The first known case was identified in Wuhan, China, in December 2019. The disease spread worldwide, leading to pandemic. The COVID-19 pandemic led to lockdown in several parts of world and hence changed daily habits, including social interactions, ability to perform sports and diet.

Diet being one of the foremost contributors of health, it is conceivable that a situation in which food availability, access to it and a shift from eating out is mandatory in-house consumption could have changed the dietary profiles of several people.

- The first objective of the study is to evaluate the changes in dietary habits during and after pandemic. The results revealed no change in consumption of cereal and cereal products. Results shows that 70% of sample consumed cereals on daily basis, 30% of samples consumed cereals on alternate basis during and post pandemic respectively. The consumption of pulses decreased from 40-35% daily, 55-47% alternately, it has increased from 5-18% weekly during and post pandemic respectively. The consumption of vegetables decreased from 7-5% daily, 42-20% alternately, 5-26% monthly, it has increased from 46-49% weekly during and post pandemic respectively. The consumption of fruits decreased from 32-10% daily, 40-23% alternately, 20-40% weekly. It has increased from 8-27% monthly during and post pandemic respectively. The consumption of junk has decreased from 21-12% daily, 51-26% alternately, it has increased from 22-47% weekly, 6-15% monthly

- The next objective of the study is to determine changes in mealtime

The results revealed that 18% and 83% have breakfast in between 8-8:30am, 12% and 17% have breakfast in between 8:30-9am during and after pandemic whereas 155 sample consumed breakfast after 9am, 55% samples have breakfast in between 10:30-11am during pandemic, 15% of the sample consumed lunch at 12-1pm, 9% of the sample consumed lunch at 1:30-2pm, 16% of the sample consumed lunch at 2-3pm, 60% of the samples consumed lunch at 3:30-4pm during pandemic and

after pandemic respectively. 11 and 10% of samples have dinner in between 8- 8:30pm, 13 and 30% samples have dinner at 9pm, 27 and 50% samples have dinner at 10pm, 50- 10% samples have dinner at 11pm during and after pandemic respectively. There was an increased consumption of mid night snacks during pandemic.

- The next objective of the study is to evaluate changes in sleeping pattern

The results revealed that 66% of the samples sleeps after 12am, 13% of the sample sleep at 11pm, 12% of the samples, 9% of the sample sleep at 10pm during pandemic, 29% sample sleeps at 10pm, 16% samples sleeps at 11pm, 27% samples sleeps at 12am, 28% samples sleeps after 12am after pandemic, 19 & 77% wake up between 8-9am, 12 & 19% sample wakes up at 10am, 8 & 7% samples wakes up at 12pm, 61 & 7% samples wakes up after 12pm during and after pandemic respectively.

- The next objective of the study is to evaluate changes in physical activity

The results reveals that only 22% of samples were involved in different kinds of physical activity like running, walking, jogging most of the samples are involved in playing games online and very few were involved in indoor games like carrom & chess during pandemic. An increased in physical activity is seen after pandemic 67% of the samples are involved in cricket, football, kho-kho.

## REFERENCE

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