



# Effect of dietary pattern and physical activity on weight gain in non-working women (30-60yr) during lockdown

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## **Abstract:**

The effects of excess weight on morbidity and mortality have been known for more than 2000 yr. Hippocrates recognized that “sudden death is more common in those who are naturally fat than in the lean, “The cause of obesity is an imbalance between the energy ingested in food and the energy expended. The excess energy is stored in fat cells that enlarge and/or increase in number.

Obesity is a prevalent health hazard, both in developed and developing countries.

To assess food patterns and physical activity, a food frequency questionnaire and international physical activity Questionnaire were used. The subject was between the age group of 30-60 years household women. A total of 50 subjects were involved in this study.

There were no significant changes observed in the dietary pattern. Also due to lack of physical activity sedentary lifestyle was increased and this may lead to Obesity if no preventive measures are taken.

According to the present study, the sedentary lifestyles of household women were increased by two folds (81%) during lockdown as compared to before lockdown (45%) in Household women. Hence it was found that a sedentary lifestyle was increased by two folds during a lockdown and hence this sedentary behaviour can cause unnecessary weight gain.

**Keywords:** Obesity, dietary intake, relationship, household women.

**Aim:** To understand the effect of weight gain on household women (age 30-500) during and before the pandemic.

## **Objectives:**

To assess the changes occurring in the diet pattern of females during the lockdown by using food frequency questionnaires.

To assess the changes in physical activity before and during the lockdown.

To categories her physical activity level.

**Introduction:** The agreed description of obesity is as the body mass index of a person is 25 kg/m<sup>2</sup> or more than that than the person is considered as obese. BMI is also universally considered an indicator for diabetes, and cardiovascular disease risk is also raised because of obesity. Another factor could be the high waist to hip ratio which is also considered as an indicator for obesity. Industrial Revolution and urbanisation with less physical activity and diet elevated with fat are major causes of obesity. Every age, gender, and community is now affected by obesity.

Obesity is a widespread disease that endangers health care resources by rising the cases of diabetes, heart disease, hypertension, and cancer. These consequences of obesity result from two factors: the heightened mass of adipose tissue and the increased secretion of pathogenetic products from enlarged fat cells. This theory of the pathogenesis of obesity as a disease permits a susceptible division of disadvantages of obesity into those produced by the mass of fat and those produced by the metabolic effects of fat cells. And this leads to many disease conditions like sleep apnea that is increased Para pharyngeal fat deposition, and osteoarthritis resulting from the damage on joints from holding a high mass of fat. These metabolic factors are also associated with insulin resistance which leads to diabetes type 2, cardiovascular disease, hypertension and breast cancer. The combined effect of these pathogenetic effects of increased fat reserves is an increased risk of shortened life expectancy. The global epidemic of obesity results from a combination of genetic susceptibility, increased availability of high-energy foods and decreased requirement for physical activity in modern society. Obesity should no longer be regarded simply as a cosmetic problem affecting certain individuals, but an epidemic that threatens global well being.

Now let's discuss two major reasons for obesity, upon which our research is based.

- **Obesity and dietary patterns.**

Dietary patterns and habits influence or may cause the cardiac metabolic risk factors which include glucose-insulin homeostasis, blood pressure, lipoprotein concentration and functions, inflammation, adipocyte metabolism, metabolic expenditure, body weight regulation.

In December of 2019, a severe acute respiratory syndrome caused by a coronavirus due to an outbreak of severe pneumonia across the population due to its rapid increase spread throughout the globe the World Health Organization(WHO) declared the coronavirus as a pandemic. Because the absence of vaccines or drugs at that time led the government to enforce strict measures in their efforts to limit the transmission they imposed the lockdown to control the pandemic condition.

This has influenced the lifestyle of millions of people worldwide leading to lower energy expenditure and also influenced the intake of food, food behaviour of people of all ages. Especially the household women who limited their physical activity purchasing foods were the main reason for individual women to leave their home.

Household women normally do a very small amount of physical activity in pandemic conditions. The level of energy expenditures gets lower than the intake of energy which may affect their health.

All these crucial measures of self-isolation could hurt people's life both on mental health and on lifestyle-

related behaviours

The food system experienced immediate shocks in the first lockdown, resulting from a mixture of stockpiling and the overnight closure of the 'out of home' food sector.

While our supply chains have bounced back and proved relatively resilient. The resilience of individuals to food insecurity and diet-related vulnerability to the virus has been weaker.

Diet play an important role in obesity such as personal food choice ( vegetarian, non-vegetarians, Lacto – Ovo vegetarians), food advertising social custom, cultural influences( in the Muslim community eating pork is not allow) as well as food availability they all play an important role in determining the what and how much an individual can eat.

Several other factors are contributing to the high incidence of obesity mostly in women because women have a higher fat mass than men.

1 . Diet quality has influenced a diverse pathway that is related to weight homeostasis, including satiety level, hunger, brain reward, glucose-insulin responses, and hepatic de novo lipogenesis, adipocyte functions, metabolic expenditure, microbiome. All the calories are not created equal because of the long term effects of different foods on these pathways of weight homeostasis. These areas expanded the field to comparisons of the impact of wanting and liking food on intake.

2. Watching television and eating snacks are the most common and main activities during leisure time in household women. Watching while eating may increase the intake of food. Extensive research has confirmed the link between watching TV while eating and obesity.

The risk of developing obesity, diabetes, heart disease.

3. High consumption of energy-dense foods while doing low physical activities imbalance the energy intake and energy expenditure level.

Individuals' health may be negatively affected by the high energy intake.

4. Portion size is the key environmental driver of energy intake, in taking food larger than required could increase the risk of weight gain.

5. Meat consumption according to some case studies its concluded that meat consumption is positively associated with weight gain and increased the risk of obesity in both women and men.

6. Sugar consumption excessive intake of sugar-sweetened beverages such as fruit juice, soft drinks, cold drinks, sports drinks, energy enhanced water drinks, sweetened ice tea, and lemonade will increase the risk of metabolic syndromes which include obesity, diabetes.

7. Stress leads subjects towards overeating, especially comfort foods. Which are mostly higher in sugar. In the pandemic, hearing and reading continuously about the lockdown and coronavirus from the media and on the internet may be stressful. The sensory experience of eating is an important factor in food intake control. Most people eat excess food while they get stressed which may imbalance their energy level.

8. Hormonal imbalance hormones play an integral role in maintaining many important processes within the body.

The hormone is produced and dispersed by endocrine glands; they act as chemical messengers which travel through the body within the bloodstream and act as an important trigger for body functions.

Hormone imbalance occurs when the body has too many or too few specific hormones. A small change in the hormone level can affect the body critically. Estrogen, insulin, testosterone, progesterone, are some important

hormones.

Estrogen imbalance can lead to weight gain, insulin is secreted by the pancreas cells and it's responsible to carry the glucose into the cell. When the body gets resistant to insulin it causes an increased blood glucose level which leads to weight gain.

Testosterone is a sex hormone its help to maintained lipids, burn fats and strengthen the bone, muscles.

If testosterone level imbalance may cause weight gain. Progesterone is also plied an important role in maintaining body function. Weight gain may take place with an imbalance in progesterone level.

- **Obesity and Physical Activity**

Now let's discuss the epidemiological information linking obesity to physical activity. The underlying reasonable hypothesis is that the response from energy expenditure to appetite may be weak at low levels of physical activity and that sedentary lifestyles, therefore, favour positive energy balance and weight gain. Obesity is common in developed countries and seems to have a marked secular trend. An analysis of time–budget surveys reveals that the time required for earning a living and domestic work has decreased appreciably over current decades. This negative secular trend is associated with a significant reduction in the energy spent on these activities. The contraction of work time has resulted in a converse increase in free time, but the bulk of this is spent on passive leisure. Thus, at least for western societies, the overall energy expenditure has fallen for some decades and lifestyles have become increasingly more sedentary. The review of a large data set on energy expenditure under free-living conditions indicates that, despite their phenomenally diverse rates of obesity, there is no systematic difference between developed and developing societies. Multivariate regression analysis of body mass index on physical activity level (PAL) reveals a weak but statistically significant inverse relationship in men but not in women, and establishes that the risk of obesity increases sharply at a PAL of less than 1.80. In conclusion, a critical level of PAL has been identified, below which the chances of being overweight become substantial.

### **Exercise Can Help Control Weight**

“Physical activity” relates to any action that burns calories, whether it's for work or play, daily chores, or the daily commute. “Exercise,” a subcategory of physical activity, refers to -planned, structured, and repetitive-activities intended for enhancing physical fitness and health. It is also sometimes termed as “leisure-time physical activity” or “recreational physical activity” as synonyms for exercise.

Obesity occurs from energy imbalance: too many calories in, too few calories burned. Several factors that influence calories expenditures are age, body size, and genes. But the most variable factor is the number of activities people get each day.

Keeping active can help people stay at a healthy weight or lose weight. It can also lower the risk of heart disease, diabetes, stroke, high blood pressure, osteoporosis, and certain cancers, as well as reduce stress and boost mood. Inactive (sedentary) lifestyles do just the opposite.

The World Health Organization, the U.S. Dept. of Health and Human Services, and other authorities recommend that for good health, adults should get the equivalent of two and a half hours of moderate-to-vigorous physical activity each week.

### **➤ Trends**

Worldwide, people are less active today than they were decades ago. While studies find that sports and leisure activity levels have remained stable or increased slightly, these leisure activities represent only a small part of

daily physical activity. Physical activity associated with work, home, and transportation has declined due to economic growth, technological advancements, and social changes. Some examples from different countries:

### ➤ **How Much Activity Do People Need to Prevent Weight Gain?**

Weight gain during adulthood can increase the risk of heart disease, diabetes, and other chronic conditions. Since it's so hard for people to lose weight and keep it off, it's better to prevent weight gain in the first place. Encouragingly, there's strong evidence that staying active can help people slow down or stave off "middle-age spread": The more active people are, the more likely they are to keep their weight steady; the more sedentary, the more likely they are to gain weight over time. But it's still a matter of debate exactly how much activity people need to avoid gaining weight. The latest evidence suggests that the recommended two and a half hours a week may not be enough.

Researchers found that women in the normal weight range at the start needed the equivalent of an hour a day of moderate-to-vigorous physical activity to maintain a steady weight. Vigorous activities seem to be more effective for weight control than slow walking.

### ➤ **How Much Activity Do People Need to Lose Weight?**

Exercise can help promote weight loss, but it seems to work best when combined with a lower-calorie eating plan. If people don't curb their calories, however, they likely need to exercise for long periods or at a high intensity to lose weight.

More recently, researchers conducted a similar trial with 320 post-menopausal women, randomly assigning them to either 45 minutes of moderate-to-vigorous aerobic activity, five days a week, or to a control group. Most of the women were overweight or obese at the start of the study. After one year, the exercisers had significant decreases in body weight, body fat, and abdominal fat, compared to the non-exercisers.

### ➤ **How Does Activity Prevent Obesity?**

Researchers believe that physical activity prevents obesity in multiple ways:

Physical activity increases people's total energy expenditure, which can help them stay in energy balance or even lose weight, as long as they don't eat more to compensate for the extra calories they burn.

Physical activity decreases fat around the waist and total body fat, slowing the development of abdominal obesity.

Weight lifting, push-ups, and other muscle-strengthening activities build muscle mass, increasing the energy that the body burns throughout the day even when it's at rest-and making it easier to control weight.

Physical activity reduces depression and anxiety, and this mood boost may motivate people to stick with their exercise regimens over time.

Being moderately active for at least 30 minutes a day on most days of the week can help lower the risk of chronic disease. But to stay at a healthy weight, or to lose weight, most people will need more physical activity at least an hour a day to counteract the effects of increasingly sedentary lifestyles, as well as the strong societal influences that encourage overeating.



Keep in mind that staying active is not purely an individual choice: The so-called “built environment”-buildings, neighbourhoods, transportation systems, and other human-made elements of the landscape-influences how active people are. People are more prone to be active, for example, if they live near parks or playgrounds, in neighbourhoods with sidewalks or bike paths, or close enough to work, school, or shopping to safely travel by bike or on foot. People are less likely to be active if they live in sprawling suburbs designed for driving or in neighbourhoods without recreation opportunities.

Local and state governments wield several policy tools for shaping people’s physical surroundings, such as planning, zoning, and other regulations, as well as setting budget priorities for transportation and infrastructure. Strategies to create safe, active environments include curbing traffic to make walking and cycling safer, building schools and shops within walking distance of neighbourhoods, and improving public transportation, to name a few. Such changes are essential to make physical activity an integral and natural part of people’s everyday lives-and ultimately, to turn around the obesity epidemic.

The population statistics of most countries of the world are indicating that industrialization and computerization have been associated with an increase in sedentariness and more recently with a significant shift from a healthy weight to overweight. In general, this change in the overweight/obesity prevalence is attributed by health professionals to suboptimal diet and physical activity practices. Therefore, we will need to reconsider the notion of ‘sedentariness’ which includes several activities having opposing effects on energy balance.

### **Methodology:**

A descriptive-analytical/qualitative study was used in the methodology of this study.

### **The subject**

The population of interest for this study is all household women’s aged 30 to 50 years in Mumbai. The Selected subjects were interviewed by a questionnaire via what’s up. Questionnaires used for data collections included: demographic (age, gender), nutrition Dietary intake data was assessed by using FFQ (food frequency questionnaire)and physical activities assessed with the help of IPAQ (International physical activity questionnaires).

Food frequency questionnaires (FFQs) are designed to assess habitual diet by asking about the frequency with which food items or specific food groups are consumed over a reference period. This method can be used to gather information on a wide range of foods or can be designed to be shorter and focus on foods rich in a specific nutrient or on a particular group of foods e.g. fruit and vegetables. FFQs are often designed to assess the ranking of intakes within a study population.

We used FFQ specifically to see the changes occurring in food patterns before and during the pandemic. So that we can understand what all the food-related factors can contribute to obesity and increase the risk of Obesity in household women and also if there are any significant changes in food patterns during the lockdown.

The international physical activity questionnaire (IPAQ) is designed to know the day's physical activity routine of people. This questionnaire can be used internally. We have used this particular Questionnaire to understand the physical activity patterns changes before and during the lockdown. We want to understand if there are any significant changes in physical activity patterns during the pandemic and is there any chance that these factors can increase the risk of Obesity in household women.

**Ethical considerations**

Permission was obtained from the subjects before commencing the procedures of interviewing.

**Sample of questionnaire**

**Food Frequency Questionnaires**

This questionnaire asks for some background information about you, especially about what you eat.

Please answer each question if you are uncertain about the answer then do the best you can.

Please estimate your average food use as best you can, as please answer every question.

please put a tick (○)on every line

Food group (meat. And fish )	Never or less than one month	1-3per month	Once a week	2-4per week	5-6per week	Once a day	2-3per day	4-6 per day	6-7 per day
Beef: roast, steak, mince, stew or casserole				✓					
Beef burger		✓							
Pork: roast, chop, stew									
Lamb: roast, chop, stew			✓						
Chicken or poultry				✓					
Bacon									
Ham									
Corned beef									
Sausage									
Meat pie, pork pie, sausage roll, kidney pie									
Liver, liver pate, liver sausages			✓						
Fried fish		✓							

Fish finger,									
Other white fish, frozen fish, fish as a chips									
Oily fish		✓							
Shellfish									
<b>Food group</b>	<b>Never or less than once/week</b>	<b>1-3 Per week</b>	<b>Once a week</b>	<b>2-4 per week</b>	<b>5-6 Per week</b>	<b>Once a day</b>	<b>2-3 Per day</b>	<b>4-5 Per day</b>	<b>6-7 Per day</b>
Bread and savoury biscuit									
White bread and roll				✓					
Brown bread and roll									
Wholemeal bread and roll									
Cream cracker, cheese biscuits									
Crispbread,									
Cereals one bowl					✓				
Porridge, ready brek				✓					
Breakfast cereals			✓						
Potatoes rice and pasta			✓						
Boiled, mashed or instant or jackets potatoes				✓					
Chips					✓				
Roasted potato									
White rice							✓		
Brown rice									
White and green pasta		✓							



Food group	Never or less than once/week	1-3 Per week	Once a week	2-4 per week	5-6 Per week	Once a day	2-3 Per day	4-5 Per day	6-7 Per day
Dairy products and fats									
Single and sour cream									
Double and clotted cream									
Low-fat Yoghurt, Full fat yoghurt									
Dairy dessert									
Cheese									
Egg as boiled, fried, scrambled				✓					
French dessert									
Other salad dressing									
Cottage soft cheese									
Food group Sweets and snacks	never or less than once/week	1-3per month	Once a week	2-4per week	5-6per week	Once a day	2-3per day	4-6 per day	6-7 per day
Sweet biscuits		✓							
Cakes		✓							
Ice cream		✓							
Buns									
Sweets		✓							
Fruit pies									
Chocolate		✓							
Food group Vegetables	never or less than once/week	1-3per month	Once a week	2-4per week	5-6per week	Once a day	2-3per day	4-6 per day	6-7 per day

Roots ( carrot, potato, radish, onion, beetroot etc)				✓					
Green leafy vegetables (spinach, lettuce fenugreek, etc )				✓					
Tomatoes					✓				
Cauliflower		✓							
Cabbage		✓							
Broccoli									
Green peas		✓							
Green beans									
Mushroom									
Bean sprouts		✓							
Capsicum			✓						
Food group	never or less than once/week	1-3per month	Once a week	2-4per week	5-6per week	Once a day	2-3per day	4-6 per day	6-7 per day
Drinks									
Tea ( black, with milk, masala tea, lemon tea)							✓		
Coffee ( instant, decaffeinated)				✓					
Hot chocolate									
Horlicks									
Wine									
Beet									
Spirits		✓							
Fizzy soft drinks									

Pure fruit juice			✓						
Fruit squash		✓							
Liqueurs									
<b>Food group</b>	<b>never or less than once/week</b>	<b>1-3per month</b>	<b>Once a week</b>	<b>2-4per week</b>	<b>5-6per week</b>	<b>Once a day</b>	<b>2-3per day</b>	<b>4-6 per day</b>	<b>6-7 per day</b>
Fruits									
Apple		✓							
Banana				✓					
Orange		✓							
Grapes		✓							
Pears		✓							
Melons			✓						
Strawberry and other berries		✓							
Peaches									
Dried fruit		✓							
Dates				✓					
Tinned fruit									
Chicco		✓							
Pineapple			✓						
Mango			✓						
Pomegranate		✓							
Lemon			✓						
Fig		✓							

### INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE.

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the vigorous and moderate activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

Q1. Think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, chopping wood, shovelling snow, or digging in the garden or yard?

\_\_\_\_\_ days per week

\_\_\_\_\_ No vigorous activity in garden or yard

02. How much time did you usually spend on one of those days doing vigorous physical activities in the garden or yard?

\_\_\_\_\_ hours per day

\_\_\_\_\_ minutes per day

03. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do moderate activities like carrying light loads, sweeping, washing windows, and raking in the garden or yard?

\_\_\_3\_\_\_ days per week

\_\_\_\_\_ No moderate activity in garden or yard

04. How much time did you usually spend on one of those days doing moderate physical activities in the garden or yard?

\_\_\_1\_\_\_ hours per day

\_\_\_30\_\_\_ minutes per day

05. Once again, think about only those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do moderate activities like carrying light loads, washing windows, scrubbing floors and sweeping inside your home?

2   days per week

       No moderate activity inside home

06. How much time did you usually spend on one of those days doing moderate physical activities inside your home?

  1   hours per day

  -   minutes per day

### TIME SPENT SITTING

The last questions are about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television. Do not include any time spent sitting in a motor vehicle that you have already told me about.

07. During the last 7 days, how much time did you usually spend sitting on a weekday?

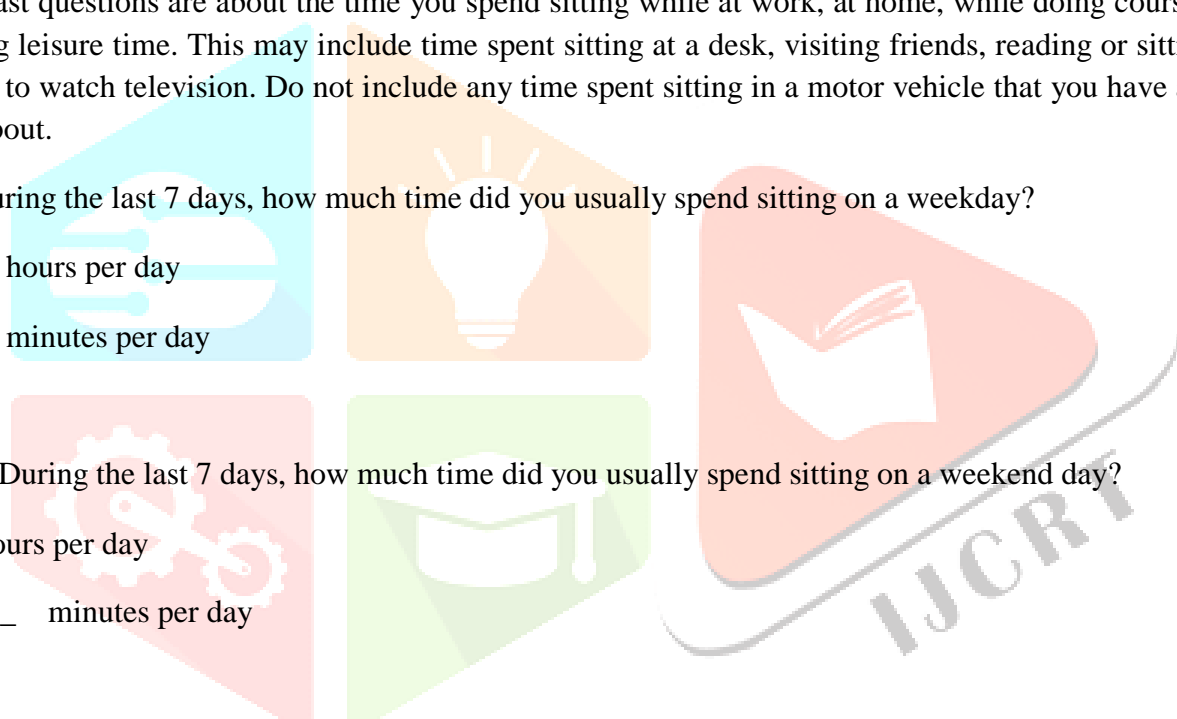
  4   hours per day

       minutes per day

08. During the last 7 days, how much time did you usually spend sitting on a weekend day?

  6   hours per day

  -   minutes per day



**Results:-**

**Table 0.1:basic food group consumption during and before lockdown in household women's**

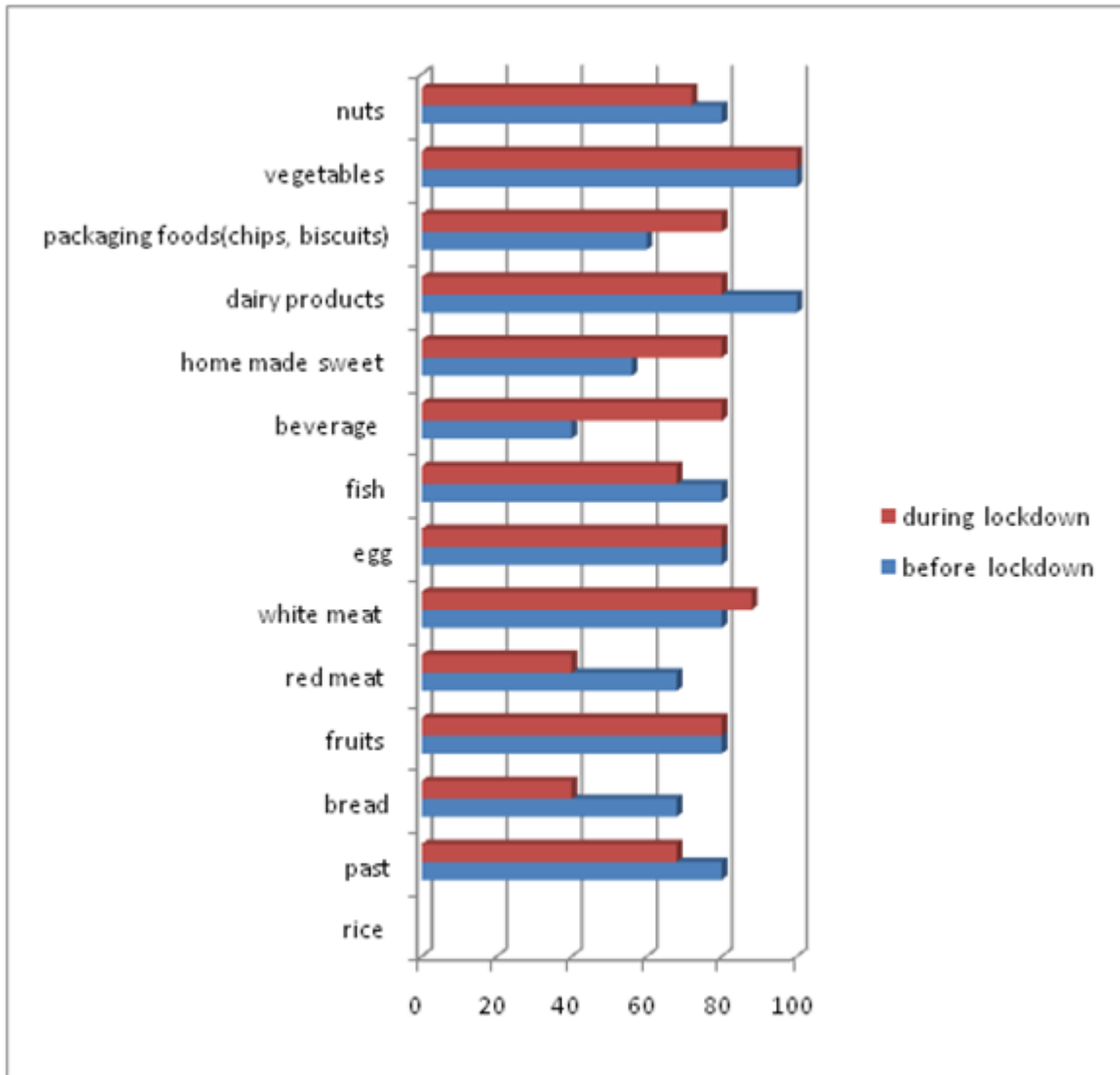


Table 0.1:The Dietary intake of the household women was measured by food frequency questionnaires  $\leq$ Once/week, 2-4 times/week, 5-6 times/week,  $>$ 6 times/week. Basic food groups consumption as stated in frequency per week in the questionnaire was revealed that the female consumed more servings of fruits, vegetables, dairy products, including milk and milk products, sweets, eggs, red meat, white meat, rice pasta, non-alcoholic beverages where they consume a slightly higher amount of rice, pasta, where consumption of fruits. Food intake gets high, fish and nuts consumption gets lower. The consumption of white meat gets higher than red meat during the lockdown.



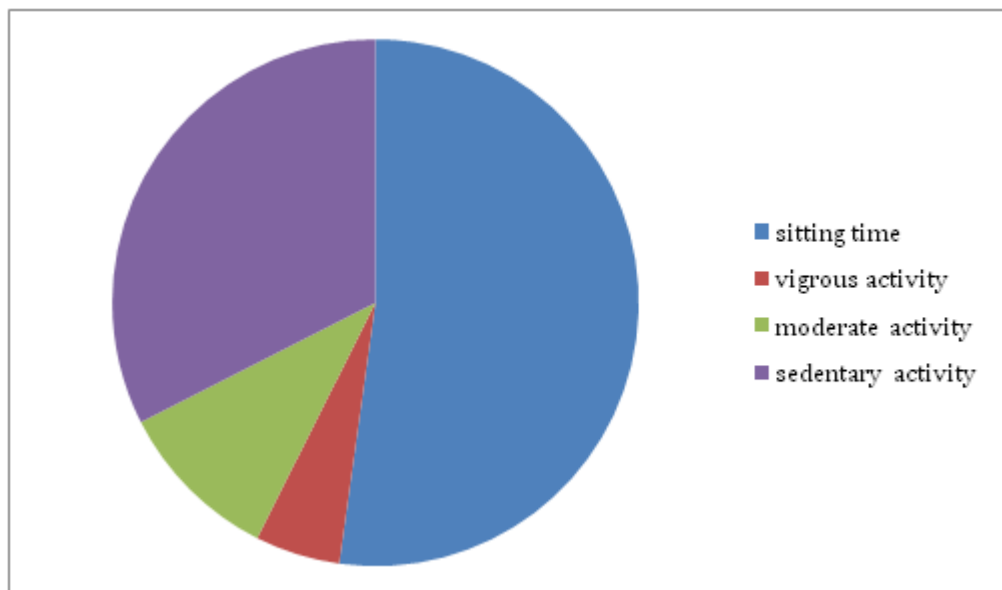


Figure 0.2 physical activities before lockdown

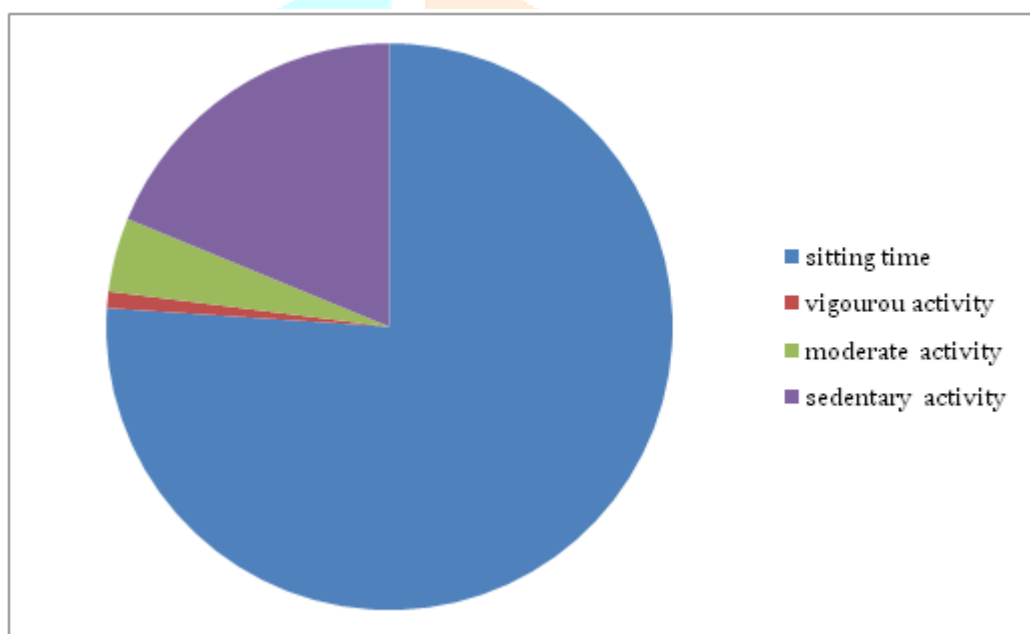


Figure 0.3 physical activities during lockdown

In figure 0.2, the sitting hours 45% sedentary lifestyle of household women was 28.8% before lockdown and 4.5% vigorous, 8.7% moderate activities.

In figure 0.3, the sitting hours was increased around 36% sedentary activity decreased by 8% and vigorous activity get 1% round 3% was get decreased

Lack of physical activity is the main concern in lockdown. Before lockdown women used to go walking or for outings they used to travel more, they used to go jogging and brisk walking with their friends and neighbours, shopping and playing ground with their children and dropping and picking up their children from school and tuition. But due to the outbreak of pandemics and lockdown, all these places are being closed and women are now mostly in the house just doing house chores. Due to closed schools and colleges, their workload also gets reduced because cooking, laundry and other work get reduced at some point and sitting time significantly increases. The whole family in lockdown watching movies together or playing together and during

watching and playing binge eating is also occurring along with more sitting.

Sitting and binge eating can increase the risk of Obesity. a significant increase in sitting hours and physical activity is being observed. And hence these significant increases in a significant increase in a sedentary lifestyle can increase the risk of Obesity in household women's

Lifestyle changes during COVID-19 emergency With regards to lifestyle changes during the COVID-19 lockdown, most of the population declares not to have changed in dietary habits where the sedentary lifestyle increases during the pandemic.

## **Discussion**

Physical activity and Dietary patterns have a huge impact on Obesity. The more the person is involved in exercise and physical activity the lesser chance to get overweight and obese. And proper nutrition is equally important. Food intake should be equal to the body's needs and not more than Requirements or else expenditure of energy will be lesser and it will lead to Obesity. And in such pandemic situations where sedentary lifestyles increase the risk of being obese is also increased. Our finding suggests a link between change in diet pattern and obesity is that there is a slight change in the dietary intake during the pandemic where there is a huge difference in the physical activities. Lack of physical activity is the main concern in lockdown. Before lockdown women used to go walking or for outings they used to travel more, they used to go jogging and brisk walking with their friends and neighbours, shopping and playing ground with their children and dropping and picking up their children from school and tuition. But due to the outbreak of pandemics and lockdown, all these places are being closed and women are now mostly in the house just doing house chores. Due to closed schools and colleges, their workload also gets reduced because cooking, laundry and other work get reduced at some point and sitting time significantly increases. Whole families in lockdown watching movies together or playing together and during watching and playing binge eating is also occurring along with more of sitting and binge eating can increase the risk of Obesity So significant increase in sitting hours and physical activity is being observed (figure 0.2, 0.3). And hence these significant increases in a sedentary lifestyle can increase the risk of Obesity in household women's

Dietary intake of the included household women was measured as frequency of eating  $\leq$ Once/ week, 2-4 times/week, 5-6 times/week and  $>6$  times/week. Basic food groups consumption as stated in frequency per week in the questionnaire revealed that: females consumed more servings ( $>6$  times/ week) of fruits; vegetables; and dairy products, including milk and milk products, sweets, eggs, red meat, white meat, rice pasta, non-alcoholic beverages where they consume a slightly higher amount of rice, pasta, where consumption of fruits intake get high, fish and nuts consumption get lower. The consumption of white meat gets higher than red meat during lockdown (figure 0.1)The research shows the effect of dietary pattern and physical activity on household women and risk of Obesity, but for more clear understanding other factors which can cause obesity such body composition (weight, height, BMI and Waist Hip Ratio) can be more useful. But due to lockdown, these factors can't be used because of less accuracy. But in future along with dietary patterns and physical activity, these body composition factors can also be assessed and more clear results can be administered.

## Conclusion

In this study, we have provided data on the household women's population (age range 30-60) physical activity, and diet pattern during the COVID-19 lockdown and according to our study Lifestyle changes during COVID-19 emergency most of the population declares not to have changed in dietary habits where the sedentary lifestyle increase And hence these significant increases increase in a sedentary lifestyle can increase the risk of Obesity in household women's.

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