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ORIGINAL ARTICLE

Impact of COVID-19 lockdown on the Dietary Pattern and Physical Activity of People

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ABSTRACT

World Health Organization (WHO) has declared Corona virus disease 2019 (COVID-19) as a pandemic. The human race in the entire world is at risk of getting affected by COVID-19. India stands second in the world with a population of 1.3 billion with one third of women in their reproductive age, malnourished (Narayan, 2018). Malnutrition results in low resistance to infections. Therefore, any pandemic may affect Indian population adversely. Currently, no one in the world has been able to develop any vaccine or medicine for the treatment of COVID-19. Government of India (GOI) and AYUSH (Ayurvedic, Yoga and Naturopathy) gave very simple, home based, guidelines in simple and local languages at appropriate timings regarding immunity boosting foods, warm water intake, healthy diet, physical activity etc. to promote health. A well-structured questionnaire pertaining to diet, activity, and use of herbs before and during COVID-19 lockdown phase-1 was pre tested and then filled by 90 respondents online. Results showed a significant change ($p < 0.01$), in dietary pattern, inclusion of physical activity in daily routine and intake of immunity boosting foods like vitamin C rich lemon water, honey, turmeric milk, warm water etc.

Keywords: AYUSH, COVID-19, diet, Government of India, malnutrition, meals, pandemic, physical activity.

Introduction

Pandemic refers to geographic spread which describes a disease that affects a whole country or the entire world. World Health Organization (WHO b), 2020 has declared Corona virus disease 2019 (COVID-19) as a pandemic. The onset of infection with the first identified case was in early December, 2019. The most common symptoms of Covid-19 are fever, cough and shortness of breath. In the severe cases the symptoms may be worse with pneumonia leading to organ failure and death (WHO, 2020). Soon this virus indiscriminately caused sickness to millions of people worldwide. The outbreak was declared a Public Health Emergency of International Concern on 30 January 2020. The present situation is a medical emergency. The human race in the entire world is at risk of getting affected by COVID-19. The data from various countries shows that this virus may infect people of all ages. However, older people and already sick (may be due to declining immune system) and people with pre-existing medical conditions like diabetes, hypertension, cardiovascular disease, asthma appear to be vulnerable. As of March 2020, cases were reported in at least 140 countries (WHO, 2020a). Currently, no one in the world has developed any vaccine or medicine for the treatment of COVID-19. The public health infrastructure of nations is expected to be short of equipment, staff, and other resources, if preventive measures are not enforced at the earliest. The COVID-19 situation may be grimmer in developing countries with large number of populations, poverty, unemployment, poor sanitation, malnutrition, and lack of medical facilities. In India the worst hit people are the poor and marginalized.

Data from state health departments show a total 1,24,525 confirmed cases with 69,140 active infections and 51,666 recoveries country-wide with a total death toll of 3,720 (The Hindu, 2020).

Among developing countries in the world, India is the largest and educationally, economically, and technologically the fastest growing. At the same time, India stands second in the world with a population of 1.3 billion. According to Population Census 2011 there are nearly 104 million elderly persons in India. India stands second and shares a considerable Global diabetes burden with an estimated 77 million diabetics in the country (Ramya, 2019). As reported by 'India: Health of the Nation's States' by Ministry of Health and Family Welfare (MOHFW), Government of India (GOI), there is increase in the non-communicable diseases (NCDs) from 30% of the total disease burden- 'Disability-Adjusted Life Years' (DALYs) in 1990 to 55% in 2016. A fast epidemiological transition is observed with a shift in disease burden. One in six people with diabetes in the world is from India. In India one third of women in their reproductive age are malnourished (Narayan, 2018) and it bears the burden of more than one-third of world's malnourished children (Smith, 2015). The inter-relationship between malnutrition, infection and immunity is a complex phenomenon. Therefore, any pandemic may affect the Indian population adversely.

Human body has an inbuilt immune system. The immune system in human body protect it against 'nonself' and elimination of all such substances or organisms.The immune system is expressed as cellular and humoral immunity. A compromised immune system can increase the susceptibility of infections. Malnutrition results in low resistance to infections (Melinda, 2002). Various studies have confirmed that malnutrition and infection aggravate each other (Scrimshaw, 1968). Specific trace elements and vitamin deficiencies may alter the immune state. (Keith and Jeejeebhoy, 1997) Malnutrition, lifestyle diseases like obesity, diabetes and aging can also influence the immune system. Nutrition support, healthy dietary habits, immunity boosting foods along with some exercise may improve the immunity.

There is an uregent quest to re-establish and popularize mix of traditional and novel effective strategies against COVID-19. One of the symptom of coronavirus is common cold. There is neither a cure nor any effective prevention or vaccine for common cold. There is sufficient data suggesting that any condition that affects immune system poses the risk of contracting the common cold. The body's immune system may be compromised under malnutrition, inadequate sleep, physical or psychological stress and lifestyle diseases. It is believed that vitamin C plays an important role in improving immunity and effectively preventing/treating common cold (Douglas et.al. 2004). The effective strategy to combat with COVID-19 may be inclusion of vitamin C rich foods in daily diets. A diet rich in vitamin C and antioxidants rich fresh fruits and vegetables like lemon, orange, gooseberry, grapefruit, tomatoes, papaya, broccoli etc. may help us improve immunity. (Chen et.al, 2020 and Abbasi et.al, 2019).

Majority of nations adopted lockdown to break the chain of virus transmission and observed positive results to break the pace at which the virus spread. Therefore, the only known way to prevent transmission of COVID-19 is by social distancing which can be maintained by lockdown. To announce and limit the movement of the 1.3 billion population of India was the most challenging decision by any government. To prevent the spread of COVID-19 transmission, Government of India announced a nationwide lockdown for 21 days on 24th March, 2020, followed by the next lockdown up to 3rd May, 2020. The announcement of COVID-19, lockdown phase-1 everywhere showed varied, yet similar, human behavior all over the world. The announcement was a historic decision which was never heard or seen in generations. The announcement affected all. A storm of psychological forces affected the mindset of the masses. The first outcome was panic and next was a feeling of control. Almost everybody, rich and poor, tried to exercise control over the uncertainty by purchasing and storing food, essential items, and medicines followed by panic to travel back to near and dears. Pictures of heavy rush on roads, grocery shops, bus stands, trains etc. all over India floating on social media platforms like twitter, Instagram, Facebook etc. affected the mindset further.

The fast-paced changing health scenarios in India are driven by the risk factors and exposure to vectors (Mathur, 2019). Life today is horrifically burdened with the pandemic. Prevention and health promotion by healthy diet, regular physical activity is an easier, cheaper, and a more adaptable solution in the present scenario as compared to curative or isolation services. Government of India (GOI) and Ayurvedic, Yoga and Naturopathy (AYUSH) gave very simple, home based, guidelines regarding immunity boosting foods, warm water intake, healthy diet, physical activity etc. extensively to general population in simple and local languages at appropriate timings. The study was planned with a hypothesis that, the uncertainty, absolute new social situation, panic buying and storage of food items, floating diet and herbal

product related information on various domains, GOI advisories etc. might have affected food choices, activity, awareness level, and mindset of people during the lockdown period.

Methodology

The study was planned by creating a survey using Google forms. A well-structured questionnaire in simple English language was framed with multiple choices, check boxes, and short answers. Questions pertaining to diet, activity, and use of herbs before and during COVID-19 lockdown phase-1 were included in the questionnaire. The critical examination of the survey questionnaire was planned and executed to check its validity and reliability. The pre-testing of the questionnaire was filled by 10 respondents (not included in the final survey) on and before 7th April, 2020. The pre-test of the survey was conducted to pin point problem areas, ensure respondents interpretation correctly, and reduce measurement error. The amendments in the questionnaire were made as suggested/realized. The questionnaire was shared with known personal and professional contacts of authors via email, Whatsapp and Facebook. A total of 90 respondents filled the final survey questionnaire between 11th April and 25th April, 2020. For any query or inappropriate information by respondents, telephone calling was used. Data was analyzed by using appropriate statistical tools.

Results and Discussion

Table 1 shows the demographic characteristics of the respondents enrolled in the online survey during COVID-19 lockdown phase-1. The combined results of online and telephonic survey were responded by 45.6% males and 54.4% females. Maximum respondents, i.e., 30%, was in the age group of 21–30 years; 21.1% respondents were above the age of 60 years whereas 14.4% respondents were in the age group of 51–60 years. The percentage of the respondents in the age group of 31–40 years and 41–50 years was 16.6 and 17.7, respectively. The maximum number of respondents in the age group of 21–30 years may be due to the lifestyle of youth in the 21st century as nowadays the young generation spends maximum time on technological gadgets and social media. The other reason may be a higher sensitivity level of youth and a desire to perform and contribute by all possible means at the time of crisis. The data showed that 40% respondents were educated up to graduation, 34.4% post-graduation, and 12.2% doctorate. A total of 13.3% respondents were educated in other fields including diplomas, certification courses, etc. but no respondent was under the category of secondary education. 32.2% respondents were single whereas 66.6% respondents were married. Only 1.1% respondents were under the category of divorced. 67.8% families reported that they live in a nuclear family system whereas 32.2% families live in joint family system. The family size of 58.8% respondents was under the category of four to six persons whereas 30% respondents reported a smaller family size of one to three 8.8% families were under the category of seven to

Table 1: Demographic characteristics of the respondents enrolled in survey during COVID-19 lockdown phase-1

Characteristics	Frequency	Percentage
Gender		
Male	41	45.6
Female	49	54.4
Age		
21-30	27	30.0
31-40	15	16.6
41-50	16	17.7
51-60	13	14.4
> 60	19	21.1
Education		
Secondary	-	-
Graduate	36	40.0
Post Graduate	31	34.4
Doctorate	11	12.2
Others	12	13.3
Marital Status		
Single	29	32.2
Married	60	66.6
Separated	-	-
Divorced	1	1.1
Widowed	-	-
Type of family		
Nuclear	61	67.8
Joint Family	29	32.2
Family Size		
1-3	27	30.0
4-6	53	58.8
7-8	8	8.8
>8	2	2.2
Family member more than 60 year age		
Yes	16	17.8
No	74	82.2
Bed ridden/ Critically ill family member		
Yes	3	3.3
No	87	96.6

Percentages are rounded up to nearest decimal point

eight family members and 2.2% respondents were under more than eight members in a family. The joint family system is still prevalent in India. The joint family system not only comforts youth by the presence and help of elderly at home but elderly are also cared, looked after, and feel better when connected. It is important to look after elderly and critically ill family members as a priority during lockdown. 17.8% respondents reported that they have a family member who is more than 60 years of age. As observed in type and age of COVID-19 affected persons worldwide, it appears older people are more at risk to get affected by this virus.

Table 2 shows the percent distribution of respondents based on country, community, region, and income. The online survey gave the scope of enrolling people worldwide. As known contacts from email and social media were used for filling up survey forms to ensure proper information and clear any doubts telephonically, it was observed that 92.2% respondents were from India and 7.7 were from abroad (Figure 1).

Majority of the respondents i.e., 88.8% belonged to the urban community whereas 11.1% respondents belonged to the rural community. In India, maximum respondents (74.4%) were from Punjab, may be because of the recent contacts and as the surveyor belonged to Punjab, followed by 8.9% respondents from Maharashtra, 5.5% from Bihar, 2.2% from Kerala and 1.1% from Gujarat. 53.3% respondents were employed and 46.6% respondents were unemployed. For type of livelihood 18.8% respondents reported private job, 10% government job, 7.7% farming, 3.3% running an industry, 2.2% running a shop as their occupation. 35.5% respondents were under the category of home maker and 12.2% were under the category of student, 6.6% were retired and 3.3 pursuing other occupations. In India, almost all the homes have women as home makers.

Majority of the respondents i.e., 30% were in the monthly income group of 51-75,000/-, 26.6% in the income group of 76-100000/-, 21.1% in the income group of >1,00,000/- 12.2% in the age group of 26-50000/- and 10% in the income group of 10-25000/- Indian rupees.

The data in table 3 demonstrates the dietary practices of respondents before and during COVID-19 lockdown phase-1. Zarocostas, 2020 reported that there is a need for people to attain and apply health information, and adapt their behavior at the soonest due to rapid and unprecedented development of the coronavirus disease into a pandemic. 62.2% respondents used to eat non-vegetarian food before the lockdown but during the COVID-19 lockdown phase-1 only 20% respondents consumed non-vegetarian food. Change in the choice of food was observed. 37.7% respondents were not consuming non-vegetarian food before the lockdown. The percentage of respondents not consuming non-vegetarian foods significantly increased (80%, $p<0.001$) during phase one of the lockdown. The association between non-vegetarian food consumption and COVID-19 lockdown phase-1 was statistically significant ($p<0.001$). This may be due to the unavailability of fresh cut meats and closure of butchery shops or personal choice. The lower consumption of non-vegetarian food by the non-vegetarians during the lockdown period may also be due to the floating speculations, myths, and facts on social media about the start of the COVID-19 outbreak from

Table 2: Percent distribution of respondents based on country, community, region, and income

Variable	Frequency	Percentage
Country		
India	83	92.2
Abroad	7	7.7
Community		
Rural	10	11.1
Urban	80	88.8
Region		
Punjab	67	74.4
Maharashtra	8	8.8
Gujarat	1	1.1
Kerala	2	2.2
Bihar	5	5.5
Occupation		
Employed	48	53.3
Unemployed	42	46.6
Type of occupation		
Home maker	32	35.5
Private job	17	18.8
Govt. Job	9	10.0
Industry	3	3.3
Shop	2	2.2
Farming	7	7.7
Retired	6	6.6
Student	11	12.2
Others	3	3.3
Family income		
10-25000	9	10.0
26-50000	11	12.2
51-75000	27	30.0
76-100000	24	26.6
>100000	19	21.1

Percentages are rounded up near decimal point

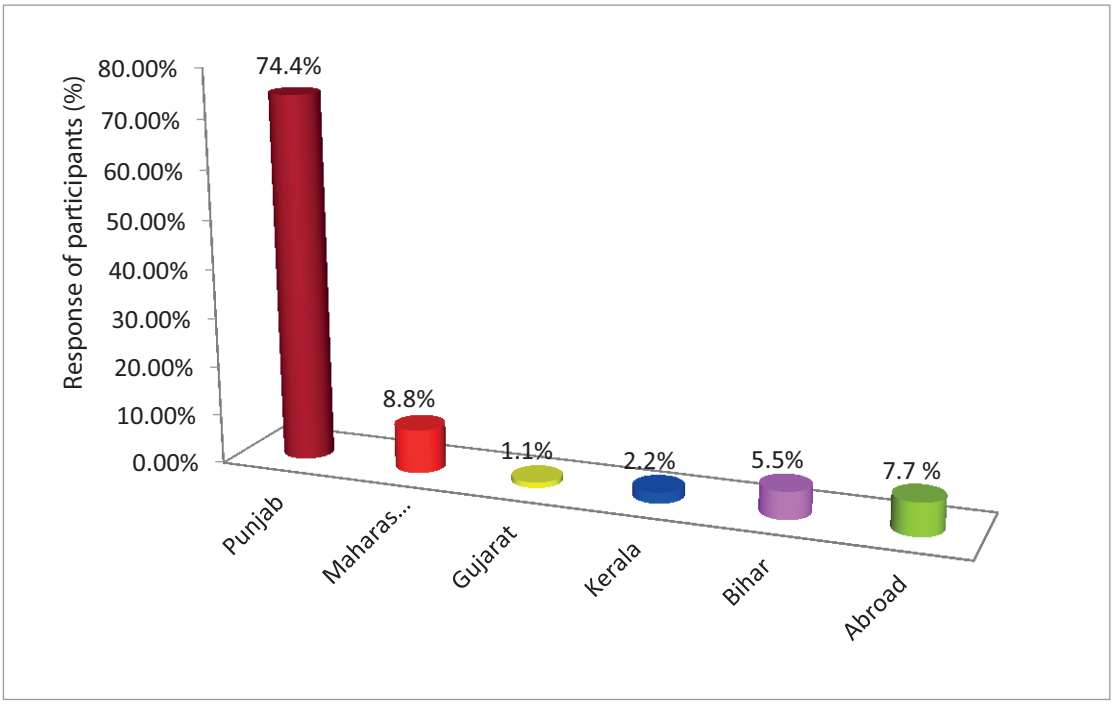

Figure 1: Response of people from different states of India and abroad during survey for COVID-19 lockdown phase-1

an animal market in Wuhan, China. WHO, 2003 suggested that the world is living dangerously because either it has little choice or because it is making wrong choices. Data illustrate a significant decline ($p<0.1$) in the percentage of respondents who used to order home delivery of food as per desire/requirement from 57.7% to 4.4% during the lock down period. 42.2% respondents were not placing orders for home delivery before the COVID-19 lockdown phase-1. During the COVID-19 lockdown phase-1 period 95.5% respondents did not order food from home delivery services. Therefore, on line home delivery food orders were observed to have decreased during COVID-19 lockdown phase-I and their association was significant ($p<0.1$) at 10%. This data clearly shows the understanding of respondents about the concept of lock down and the significance of social distancing. The people who ordered food from outside may be old or due to absolute requirement. A healthy diet along with physical activity are the two most important and efficient tools to prevent disease and promote health.

Data gathered showed that there is a significant statistical ($p < 0.001$) relationship between salad intake and COVID-19 lockdown phase-1. The daily salad intake was reported by 74.4% respondents before lockdown which increased to 93.3% during lockdown. There was a significant increase ($p < 0.001$) in the percentage of respondents for daily intake of salads during lockdown period. 25.5% people were not eating salad on daily basis before the lockdown. This percentage significantly decreased ($p<0.001$) to 6.6 during lockdown.

Honey is considered as natural food with medicinal value. The daily intake of honey was reported by 7.7% respondents before the COVID lockdown phase-1, which increased to 84.4% during this lockdown. However the change in number of respondents taking honey remained insignificant. 87.7% respondents were not consuming honey in any form before the COVID -19, lockdown phase-1 and during the lockdown period 12.2% respondents were not taking honey in their daily diets in any form.

There was a significant rise ($p < 0.1$) in the number of respondents consuming lemon water during COVID-19 lockdown phase-1. As compared to 14.4% respondents consuming lemon water daily earlier, 80% respondents reported consumption of lemon water during the lockdown period. 85.5% respondents did not consume lemon water daily before the lockdown and percentage of respondents (20%) not consuming lemon water daily decreased significantly ($p < 0.1$) during the lockdown. All the advisories, awareness messages and doctors' interviews insisted on consuming vitamin C rich foods. It is an established fact that Vitamin C boosts immunity. Lemon is easily available and used. March end in India is the start of summers; the availability of lemons is easier as compared to *Amla* (Gooseberry) at that time.

Table 3: Dietary practices and adoption of immunity boosting foods by the respondents before and during COVID-19, lock down phase-1

Variables	Before lockdown		During lockdown		Value	Associated p-value
	N	N%	N	N%		
Non-Vegetarian Food					13.6***	0.000
Yes	56	62.2	18	20.0		
No	34	37.7	72	80.0		
Ordered home delivery food					3.1**	0.08
Yes	52	57.7	4	4.4		
No	38	42.2	86	95.5		
Daily Salad intake					18.7***	0.000
Yes	67	74.4	84	93.3		
No	23	25.5	6	6.6		
Daily intake of honey					1.4 NS	0.237
Yes	7	7.7	76	84.4		
No	83	92.2	14	15.5		
Daily intake of Lemon water					3.8**	0.051
Yes	13	14.4	72	80.0		
No	77	85.5	18	20.0		
Turmeric Milk					4.8*	0.029
Yes	2	2.2	27	30.0		
No	88	97.7	63	70.0		
On any diet					38.1***	0.000
Yes	13	14.4	6	6.6		
No	77	85.5	84	93.3		
Consumption of warm water					17.9***	0.000
Yes	4	4.4	73	81.1		
No	86	95.5	17	18.8		
Daily gargling due to COVID-19					3.5**	0.060
Yes	—	—	20	22.2		
No	90	100	70	77.7		
Daily intake of honey					1.4 NS	0.237
Yes	7	7.7	76	84.4		
No	79	87.7	11	12.2		

*5% level of significance and ***1% level of significance ($p < 0.001$), **10% level of significance ($p < 0.1$)

Consuming turmeric milk is a common practice in Indian families especially on injury or sickness. Today's generation consume milk in the form of shakes and coffee etc. therefore, it was important to know how many people adapted the guidelines for consuming turmeric milk. The consumption of turmeric milk before the COVID-19 lockdown phase-1 was reported only by 2.2% respondents whereas a significant ($p < 0.001$) increase in percentage (30%) of respondents consuming turmeric milk was observed during the lockdown period. 97.7% respondents were not consuming turmeric milk before the COVID-19, lockdown phase-1 and results showed that 70% respondents did not start consuming turmeric milk during the lockdown.

Balanced diet is the key to health. Nowadays various types of dieting regimes are prevalent to control weight. Younger people, middle aged women, and men prefer to diet than do physical activity. Dieting regimes might not be catering balanced diet to the consumers which may affect their immune system gradually. To see how many of the respondents were on any kind of diet before and during the lockdown, the data was collected. Data showed that 14.4% respondents were using some kind of diet schedule before phase-1 of the lock down however only 6.6% respondents followed the dieting regime during the lockdown phase-1. 85.5% were not on any kind of diet before and 93.3% were not using dieting regimes during the lockdown phase-1.

A total of 4.4% respondents used to consume warm water before the COVID-19 lockdown phase-1 and a significant ($p<0.001$) increase was observed in the percentage (81.1%) of people consuming warm water during the lockdown phase-1. 86% respondents didn't consume warm water daily before the COVID-19 lockdown phase-1 whereas 18.8% respondents did not take warm water during this phase.

Daily gargling appears to prevent upper respiratory tract infections including COVID-19. Before the COVID-19 lockdown phase-1 no respondent used to gargle daily. The covid-19 common symptoms include fever, cough, and shortness of breath. Gargles are believed to sooth throat and help in cold, cough, and sore throat. (WHO, 2020[b]). After the lockdown phase-1 20% respondents starting gargling on daily basis. Whereas 100% respondents were not gargling before, during the lockdown phase-1 77.7% respondents were not gargling daily. A significant ($p<0.1$) increase was observed in the habit of gargling daily. The Ministry of AYUSH emphasized on using preventive measures mentioned in *Ayurveda* during the COVID-19 unprecedented spread. These include common food ingredients readily available in Indian kitchens that are helpful especially for respiratory health and to boost immunity. The commonly available and easy to adapt measures included condiments like turmeric, cumin and coriander, and garlic. Use of turmeric powder in hot milk every day, drinking warm water throughout the day is said to be useful. For physical health, The Ministry of AYUSH emphasized on practicing yogasana, *pranayam*, and meditation for at least half an hour daily (The Tribune, April, 2020). In a study by Ang, L. 2020, seven data sources for eligible traditional medicine guidelines were searched and he found a total of 28 traditional medicine guidelines (26 government-issued Chinese and two Korean guidelines) providing treatment measures for COVID-19. He suggested that there is no direct evidence on the efficacy of traditional formulae in the treatment of COVID-19; all of them require clinical verification.

The positive outcome in dietary choices may be attributed to GOI advisories on websites, radio, television, ring tones etc. and social media awareness sites and television programs. At this time maximum people would have used social media and different apps more frequently and for longer durations as compared to routine days before lock down. The fear factor, spread due to the deadly virus affecting health and life of individuals at mass level, might have motivated individuals to be empowered and preach health information. Appropriate health information from reliable sources, provided intermittently in simple words in international, national, and regional languages, initiated people to read about health foods and advisories resulting in positive outcomes, as neither a vaccine nor any treatment for COVID-19 infection has been advised worldwide.

Figure 2 depicts meal intake pattern of the respondents before and during COVID-19 lockdown phase-1.

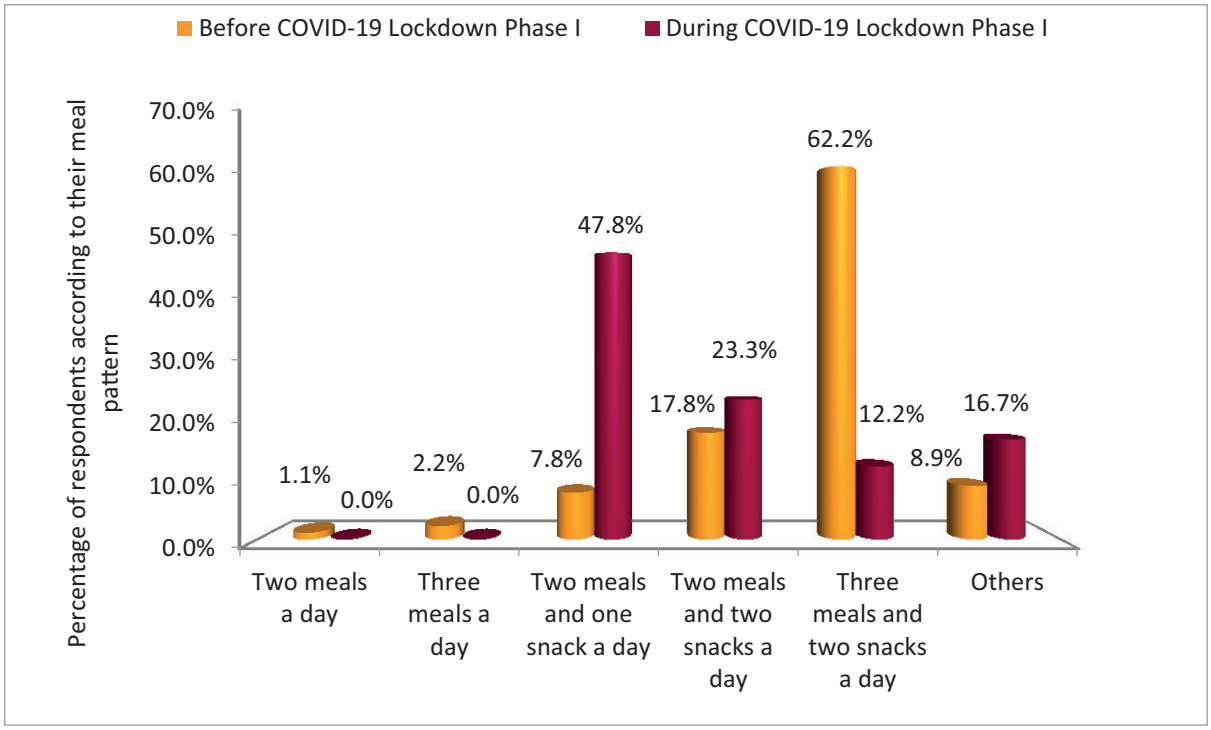

Figure 2: Meal intake pattern of the respondents before and during COVID-19, lockdown phase-1

Maximum respondents, i. e., 62.2%, used to consume three meals and two snacks a day. The percentage of respondents consuming three meals and two snacks a day decreased to 12.2% during the lockdown. While only 7.8% respondents used to consume two meals and one snack a day, during COVID-19 lockdown phase-1, 47.8% respondents started consuming two meals and one snack a day. 17.8% respondents used to consume two meals and two snacks a day before the lockdown, whereas 23.3% respondents started consuming two meals and two snacks a day during the COVID-19 lockdown phase-1. 8.9% respondents reported that they used to follow other meal patterns before the COVID-19, lockdown phase-1 and the percentage increased to 16.7% during lockdown. This increase may be attributed to weight watchers. They might have gone for various dieting experimentations during this time. The data showed that 2.2% and 1.1% respondents were consuming three meals and two meals respectively, before the COVID-19 lockdown. Under both the categories, no respondents followed these meal patterns. Change in meal patterns may be due to various reasons including initial confusion in the minds of common people regarding how the administration is going to execute this lockdown. From where would the essentials be organized? During that time, people might have decided their meal patterns, predicted lesser activity and to do things that further supported their thoughts regarding food. Further, more leisure time with families, relaxation from daily hustle- bustle and tight schedules, unavailability of domestic helps, distribution of available food wisely, not overeating etc. may be the factors effecting meal pattern during the COVID-19 lockdown phase-1. Gandhi ji promoted fasting. According to him fasting helps the body to detox, cleanse the stomach, use up body fat. This also helps in coping with any infection, if present (Mathur, 2019).

According to World Bank (2009) report, malnutrition affects the socio-economic growth of a Nation. Therefore, balanced diet, at appropriate times, and portion size is an important and easy key to remain healthy. Gandhi ji, in his book 'The Story of my Experiments with Truth (1929)', suggested that "Today I know that physical training should have as much place in the curriculum as mental training" (Mathur, 2019).

Figure 3 shows the percent distribution of respondents according to frequency of physical activity before and during the COVID-19, lockdown phase-1. Before the COVID-19 lockdown situation, only 27.7% respondents used to do physical activity daily while after the announcement of COVID-19 lockdown phase-1, 53.3% respondents started doing physical activity on daily basis. Physical inactivity is globally a public health issue. Physical inactivity is the root cause of lifestyle diseases thereby affecting the immunity of a person. 25.5% respondents were working out minimum four times a week and the number reduced to 24.4%. This fall in percentage may be due to their decision to do physical activity daily. A total of 14% respondents worked out three-times a week before the lockdown and this number also reduced to 10%; 7% respondents used to do physical activity on weekends in normal days before the lockdown was announced. 20% respondents reported that they used to do some kind of physical activity sometimes and the percentage of respondents doing physical activity sometimes decreased to 11.1%.

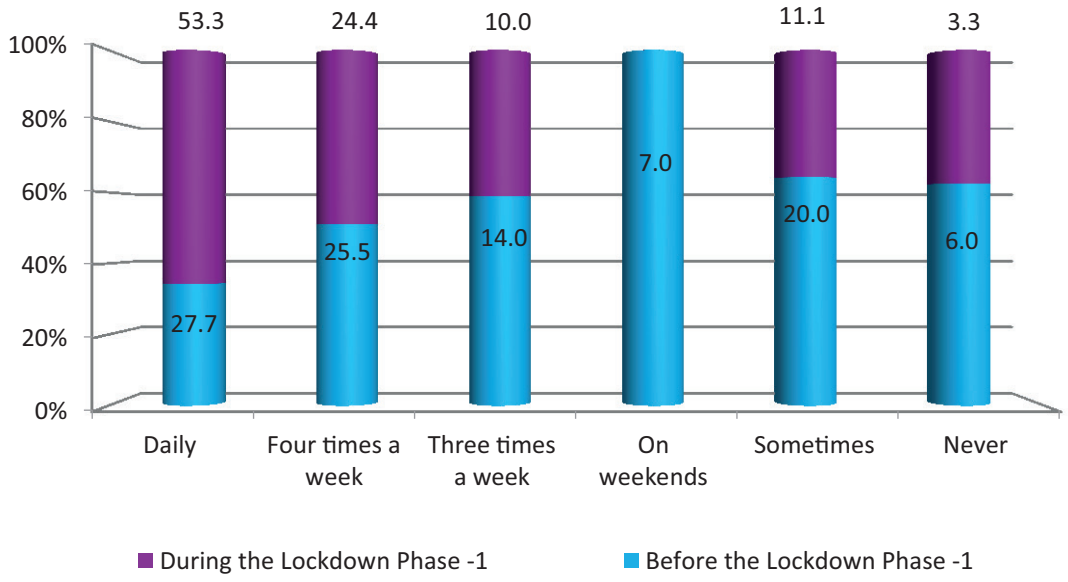

Figure 3: Percent distribution of respondents according to frequency of physical activity before and during the lockdown phase-1

Six percent respondents never did formal physical activity and the percentage of respondents under this category reduced to 3.3% during the lockdown. Fast-paced societal transition, industrialization, globalization have catered for reduced physical activity. Most of the people fall in the category of sedentary lifestyle. Mathur (2019) reported that 54.4% adult population of India is inactive. The 65.5% inactive population is from urban areas. Women are more inactive then men. WHO (2003) report shows that In India among the population aged 20+, 52.6% females and 10.2% males are inactive. Physical inactivity increases the risk of lifestyle diseases, stress, anxiety, depression etc. Therefore, it is important to be active during the COVID-19 lockdown phase-1 and maintain health (physical, mental, emotional, and social health).

Figure 4 shows the changes in the food preference of family members. 41% of the respondents reported that family members preferred simple and light food. 26% stated that family members became conscious and wiser to not waste food. 17% respondents reported demand for more variety in daily meals by the family members. 13% respondents reported that food preference and pattern remained same before and during the COVID-19, lockdown phase-1. Only 3% respondents reported any other changes in the food preference. The fear of food scarcity in coming times, closure of shops, uncertainty prevailing in the environment for the solution and duration of lockdown etc. might have motivated people to use food wisely, not waste it, and prefer simple and light food.

Whereas lesser active day schedules would have initiated creative minds to experiment and make variety in kitchens. Variety in food preferences may also be due to the together time by families in today's life. The plethora of recipes, cooking shows, advertisements and sufficient time to see those pop ups might have helped in preferring variety and experimenting with available food ingredients.

Table 4 shows the results of test statistics of physical activity before and during COVID-19 lockdown phase-1 indicating that there is a significant difference between the physical activity of respondents before and during phase one of the COVD-19 lockdown. The results are significant at 5% level of significance ($p<0.001$). The test

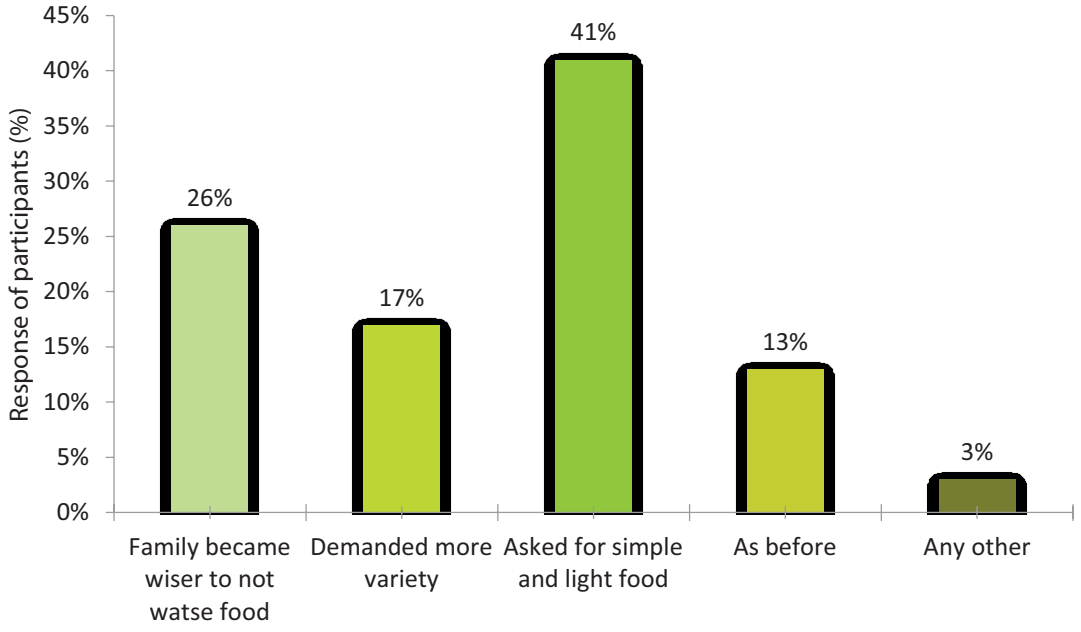

Figure 4: Preference of daily food by family members during COVID-19, lockdown phase-1

Table 4: Test statistics of Physical activity and Meal pattern before and during COVID-19, Lockdown Phase 1

Physical Activity	T-Before		T-During		t-test	p-value
	Mean	Std. Deviation	Mean	Std. Deviation		
	0.71	0.55	1.06	0.70	3.54	0.004
Meal pattern	19.9	10.1	20.0	12.01	0.005	0.997

T-Before: Physical activity and meal pattern before COVID-19, lockdown phase 1
T-During: During COVID-19, lockdown phase-1

statistics of Meal Pattern before and during COVID-19 lockdown phase-1 revealed a non-significant difference in the meal pattern of respondents before and during COVID-19 lockdown phase-1.

Conclusion

COVID-19 is a declared pandemic by World Health Organization (WHO). Till date scientists all over the world are trying whole heartedly to find a definite solution and develop a vaccine. The rapidly increasing corona crisis is a huge challenge for India with the second highest population in the world. To fight the situation, "Prevention is better than cure" is an imperative measure. One of the important appeared measures is social distancing. To save the human race, lockdown measure is announced by most of the countries all over the world bearing enormous economic, other estimated, and non-estimated overall losses. Stay home, stay safe is the only *Mantra* for guarding the human race. Simple changes in our diets and lifestyle may improve our immune system and prevent infections. The present study showed inclusion of physical activity, health foods, immunity boosting foods by the respondents in their daily routines and diets. People realized that a well-balanced diet leads to good health and stronger immune. There were many guidelines for healthy food choices and physical activity but during the COVID-19 lockdown phase-1, it was observed that people followed the guidelines issued by GOI and AYUSH religiously. Majority of respondents started consuming turmeric milk, lemon water, warm water etc. and included physical activity in their routines. A home cooked, balanced and nutritious diet, physical activity and inclusion of basic herbs in daily routines is the best and cheapest strategy for health. The study showed that Government of India's strategy to make people aware, with extensive, need based campaign, advisories, and guidelines, about easily available immunity boosting foods in household kitchens and motivate people to consume healthy diet with some kind of physical activity seem to have a very positive effect on the people of India. People of all age groups are bravely fighting against the deadly virus by staying inside, eating healthier foods, refraining from junk and fast food, adapting immunity boosting foods, trying to balance their daily diets and physical activity. WE can and WE will win.

Suggestions

The next study will be performed with questions pertaining to health index. Presently this survey is already closed. The total respondents enrolled are 90 and pre-testing was performed on 10 respondents i.e.11.11%. Howsoever, it shall be taken care of to pre-test even more number of respondents in the next research being conducted by me.

Competing Interest Statement

The author has declared that no competing interest exists.

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