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## Impact of COVID-19 pandemic on health and lifestyle factors among local residents of Odisha

**BR Abha Ayushree, Dr. Mukul Sinha and Aparna Sahu**

### Abstract

**Objective:** Nations continue to face substantial issues as a result of the COVID-19 epidemic. The Odisha government attempted to reduce the spread of COVID-19 through stay-at-home methods and social distance, which are anticipated to result in significant changes in residents' lifestyle, health, and quality of life. The purpose of this study was to look at the influence of the COVID-19 pandemic on these parameters among the local residents of Odisha.

**Methods:** We conducted a survey on social media platforms which was shared on Whatsapp, Facebook, and Instagram platform to collect self-reported data on health and lifestyle changes during first, second and third waves of Covid-19 Pandemic. The questionnaire was built by using Google Form. The data was analysed using statistical analysis.

**Results:** Physical and other meaningful activities, such as everyday living tasks, leisure, social activity, and education, have declined significantly. Except for carbohydrate and mineral consumption, there were no notable changes in nutrition. Following the epidemic, participants reported a decline in their quality of life and health.

**Conclusions:** We gathered new information on the changes in lifestyle, health, and quality of life of Odisha people during the epidemic. The findings of our study might help health policymakers and practitioners design health education or suitable treatments to deal with the pandemic scenario and future emergencies.

**Keywords:** COVID-19 pandemic, health, lifestyle factors, local residents

### Introduction

The new coronavirus strain SARS-CoV-2 that causes COVID-19 originated in Wuhan, China. COVID-19 was labelled a pandemic on March 11, 2020, owing to its unchecked expansion globally. Since the onset of the pandemic, approximately 79.2 million COVID-19 cases and over 1.7 million fatalities have been documented globally as of December 29, 2020 [1]. In May 2020 during second wave, India had the greatest weekly average of 1.7 million confirmed new cases than at any other period in history. Despite the development of over a hundred vaccinations, this terrible ailment has not yet improved due to a lack of adequate therapy and drugs [2]. Most nations instituted a lockdown to prevent the virus from spreading, which eventually harmed people's socioeconomic situations and mental health regardless of age, gender, occupation, or other factors. COVID-19 is mostly transferred by infected persons' inhaling droplets or through contact with infected individuals [3]. People's lifestyles, psychological health, and relationship status were all affected by their dread of coronavirus infection. During the COVID-19 epidemic, about 52.1 percent of individuals in India were concerned, and 57.8–77.9 percent needed mental support from family and friends [4].

Nutrition, physical activity, and restful sleep are considered important parts of human health and the three traditional pillars of living [5]. At the moment, lifestyle is viewed as a multifaceted concept that encompasses a broader variety of behaviours such as smoking, alcohol/substance abuse, stress management, social support, and screen time and digital technology usage [6]. It has been repeatedly established that healthy lifestyles (HLs) play a critical impact in reducing all-cause mortality and maintaining persons' health and well-being [7]. HLs are associated with a variety of non-communicable diseases (NCDs), including cardiovascular disease, type 2 diabetes, metabolic syndrome, and depression [8]. Recent research suggests that a lower level of adherence to numerous HLs is related with worse results in a variety of mental diseases other than depression [9]. Lifestyle is now viewed as a multifaceted concept that includes a variety of personal behaviours such as diet/nutrition, drug use, physical activity/exercise, stress management, restorative sleep, social support, and

environmental exposures such as screen time and outdoor exposure <sup>[10]</sup>. Healthy living practises have been demonstrated over and over again to have an impact on people's physical health, mental health, and overall well-being.

Multiple studies have been conducted during the first, second & third waves of Covid-19 pandemic particularly during population lockdowns, revealed the significant influence of the COVID-19 pandemic on most people's lifestyle patterns. As a result, considerable rates of sleep disruptions <sup>[11]</sup>, as well as decreased physical activity levels and increased sedentary behaviours <sup>[12]</sup>, have been found. During confinement, nutritional and food quality deteriorated, although there was a stronger adherence to the Mediterranean diet <sup>[13]</sup>. Changes in drug usage, such as increased alcohol use, have also been seen. Increased use of digital devices and screen time has also been seen, particularly among young adults with mental illness and low levels of physical activity <sup>[14]</sup>. Furthermore, during the pandemic, substantial rates of depression, anxiety, and psychological stress were reported among the youngsters. Surprisingly, in this demographic, decreased mental health has been linked to lifestyle modifications <sup>[15]</sup>.

### Materials and Methods

We conducted a survey on social media platforms which was shared on Whatsapp, Facebook, and Instagram platform to collect self-reported data on health and lifestyle changes during first, second and third waves of Covid-19 Pandemic. The survey was addressed to the Covid-19 patients only.

Participants completed an anonymous online questionnaire on their own, freely choosing to take part in the study.

### Questionnaire

The questionnaire was built by using Google Form, a free tool that allows collecting information through a survey or a personalized quiz. The information was automatically linked to an Excel spreadsheet that at the end contained the independently compiled answers that users have given. The questionnaire included 31 questions (multiple choice, single choice, numeric, short & long type questions) on baseline data (age, gender, address, education, occupation, conditions, number of family members, type of the house, presence of past chronic diseases) and changes during covid-19 (lifestyle changes, food consumption pattern and nutrient intake during Covid-19).

### Statistical Analysis

Continuous variables are shown as mean and Standard Deviation (SD). Categorical data are reported as frequencies and percentages. The determinants of changes for the three main lifestyle components (i.e., diet/eating habits, physical activity, and sleep) were established considering the outcome "change" at 3 levels: improve/increase, worsening/decrease, and no change of the variable. All analyses were performed using the MS-Excel.

### Results and Discussion

**Table 1:** General & Socio-economic Information

	Frequency	Percentage (%)
<b>Age</b>		
Above 50 Years	3	5.76
49-30 Years	17	32.69
29-10 Years	27	51.9
<b>Gender</b>		
Male	19	36.5
Female	33	63.5
<b>Type of Residence</b>		
Type of Residence	Frequency	Percentage
Urban	37	71.2
Semi Urban	9	17.3
Rural	6	11.5
<b>Educational Status</b>		
Educational Status	Frequency	Percentage
Post Graduate	19	36.5
Graduate	25	48.1
Intermediate Or Diploma	5	9.6
High School	3	5.8
<b>Marital Status</b>		
Marital Status	Frequency	Percentage
Married	22	57.7
Unmarried/Single	30	42.3
Divorced	0	Nil
<b>Family Status</b>		
Family Status	Frequency	Percentage
Nuclear	40	76.9
Extended	4	7.7
Joint	8	15.4
<b>Family Size</b>		
Family Size	Frequency	Percentage
1-4 Members	42	80.8
5-7 Members	8	15.4
> 7 Members	2	3.8
<b>Annual Family Income</b>		
Annual Family Income	Number	Percentage

Above 5 Lakh	28	53.8
4-5 Lakh	11	21.2
3-4 Lakh	4	7.7
2-3 Lakh	2	3.8
Below 2 Lakh	7	13.5
<b>Socio-Economic Status</b>		
Socio-Economic Status	Number	Percentage
Upper Class	3	5.8
Upper Middle Class	30	57.7
Lower Middle Class	16	30.8
Upper Lower Class	3	5.8

Out of the 52 respondents, the age group of 10-29 years formed the majority i.e. 51.90 per cent followed by 30 -49 and more than 50 years age group. Female respondents were more in number compared to male which is 63.50 & 36.5 per cent respectively. Majority of participants were residing in urban area, followed by semi-urban and rural areas. Most of the participants are graduated forming the larger part followed by post graduate, intermediate or diploma level and high school degree holders. Around 57.70 per cent respondents were married while the rest are single or unmarried. Nuclear family type was observed in most of the households forming 76.90 per cent followed by joint and extended family type with 15.40 & 7.70 per cent respectively which is proved by the observation of family size of 1 -4 members forming the greater part compared to 5-7 and more than 7 family members. As far as the annual income of the families are concerned, it was observed that majority of the participants (53.80 per cent) were having family income of more than 5 lakhs per annum followed by 4-5 lakhs per annum nearly 21.20 per cent respondents. At the same time the third position of this annual income was found to be below 2 lakhs by 13.5 per cent participants. It was also seen that nearly

57.70 per cent respondents belonged to upper middle class, followed by lower middle class by 30.80 per cent and upper class along with upper lower class with equal share of 5.80 per cent.

**Table 2:** Any past History of Illness/ Risk Factors

Risk Factors	Frequency	Percentage
CVD	6	15.8
Liver Disease	2	5.3
Dm	5	13.2
Obesity	5	13.2
Cancer		
Renal Disease	1	2.6
Any Other	6	15.8

From the perusal of above table, it was observed that nearly 15.80 per cent of respondents were having past history of cardiovascular disease followed by diabetes mellitus and obesity with 13.20 per cent each. Around 5.30 per cent of participants had a past history of liver disease which adversely affects their health during Covid-19.

**Table 3:** Frequency of Food Consumption

Food Groups	Daily (Frequency)	%	Once A Week (Frequency)	%	2-5 Times In A Week (Frequency)	%	Never (Frequency)	%
Cereals								
Rice	39	75	6	11.53846154	7	13.46153846		
Wheat Flour (Bread, Roti)	43	82.69231	2	3.846153846	7	13.46153846		
Puffed Rice	8	15.38462	27	51.92307692	10	19.23076923	7	13.46153846
Rice Flakes	2	3.846154	32	61.53846154	6	11.53846154	12	23.07692308
Oats	8	15.38462	27	51.92307692	9	17.30769231	8	15.38461538
Maize	8	15.38462	24	46.15384615	9	17.30769231	11	21.15384615
Pulses And Legumes								
Dal	41	78.84615	4	7.692307692	6	11.53846154	1	1.923076923
Peas	16	30.76923	22	42.30769231	12	23.07692308	2	3.846153846
Soyabean	9	17.30769	29	55.76923077	14	26.92307692		
Bengal Gram Whole (Chana)	10	19.23077	30	57.69230769	10	19.23076923	2	3.846153846
Milk & Meat Products								
Milk	36	69.23077	8	15.38461538	5	9.615384615	3	5.769230769
Meat (Chicken & Fish)	4	7.692308	28	53.84615385	15	28.84615385	5	9.615384615
Egg	13	25	18	34.61538462	15	28.84615385	6	11.53846154
Fruits	27	51.92308	13	25	11	21.15384615	1	1.923076923
Vegetables	39	75	3	5.769230769	10	19.23076923		
Fats And Sugars								
Cooking Oil	42	80.76923	4	7.692307692	5	9.615384615	1	1.923076923
Butter , Ghee	12	23.07692	27	51.92307692	5	9.615384615	8	15.38461538
Sugar	26	50	10	19.23076923	12	23.07692308	4	7.692307692

From the above table it was observed that cereal and its products like rice and wheat flour is consumed by all the respondents at least two to five times in a week if not daily. Daily consumption of rice and wheat flour among the respondents was found to be 75 and 82.69 per cent respectively. Rice flakes, oats and maize were being consumed at least once in a week by nearly 61.53, 51.92 and 46.13 per cent respectively. Certain percentages of respondents were also found to never consume puffed rice, rice flakes, oats and maize even once in a week.

Among pulses and legumes, dals was consumed daily by larger number of participants constituting about 78.84 per cent which is followed by peas (30.76 per cent), Bengal gram whole (19.23 per cent) and soya bean (17.30 per cent). Even though daily consumption of soya bean is lower compared to other pulses and legumes, it was observed that it is consumed by all the participants ranging from daily to two to five times per week to at least once in a week.

Amid milk and meat products, it was noted that maximum number of participants i.e 36 out of 52 were consuming milk daily, followed by egg (25 per cent) and then meat like fish and chicken (7.69 Per cent). Certain participants also found to never consume those milk and meat products, who formed the vegan category.

Nearly 51.92 per cent respondents reported to consumes fruits on daily basis, followed by 25, 21.15 & 1.92 per cent subjects conveyed to consume fruits once in a week, two to five times week and not at all respectively.

But the good thing that was found from this survey was that

not a single participant reported about skipping vegetable intake in their diet. About 75 per cent participants reported to have vegetables in their daily diet.

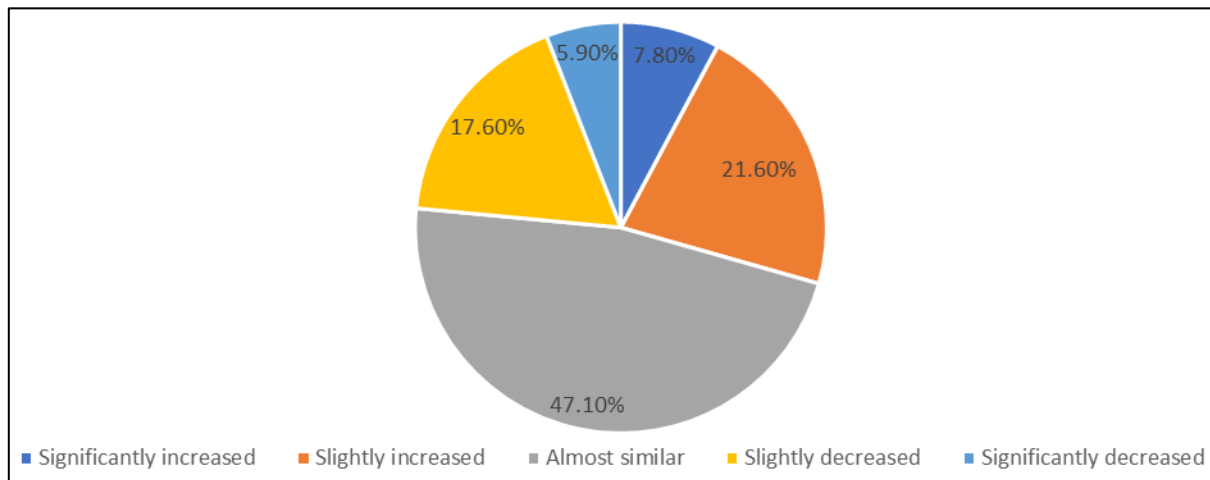
Around 80.76, 23.07 & 50 per cent participants confirmed their daily consumption of cooking oil, butter/ghee and sugar respectively, while 1.92, 15.38 and 7.69 per cent participants conveyed the absence of the same in their diet.

**Table 3:** Daily Nutrient Intake during Covid

Nutrient	Mean ±SD
Energy (kcal)	1843.94±96.41
Protein (g)	53.54±3.5
Total fat (g)	32.39±1.23
Carbohydrates (g)	400.81±57.66
β-carotene (µg)	1859.8±127.85
Vitamin C (mg)	33.12±1.91

From the above table, the average nutrient intakes of respondents were calculated. it was found that average calorie intake of participants is found to be 1843.94±96.41 Kcal which is contributed by the average consumption of carbohydrates, fats and proteins i.e. 400.81±57.66, 32.39±1.23 and 53.54±3.5 gram respectively. Besides, the beta carotene and vitamin C intake are found to be 1859.8±127.85 micro gram and 33.12±1.91 milligram respectively.

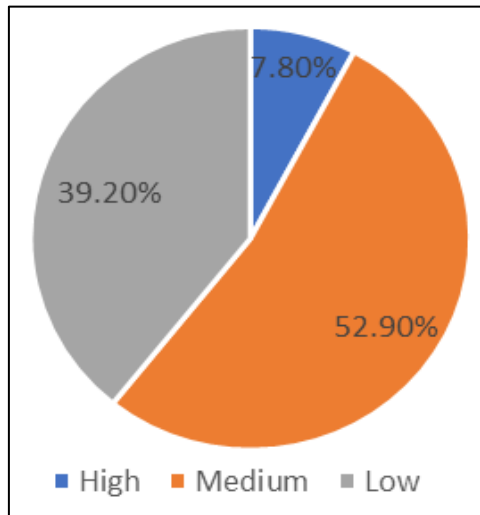
**Changes on Lifestyle Behaviours during the COVID-19 Pandemic**



During covid pandemic probability of skipping one meals (breakfast/lunch/dinner)

From the survey, the data collected and represented in the above diagram. It was found that about 5.90 per cent of participants skipped their one of the major meals like breakfast, lunch or dinner significantly while 17.60 per cent respondents reported slight decrease in the probability of skipping any of the major meals. But the interesting thing that

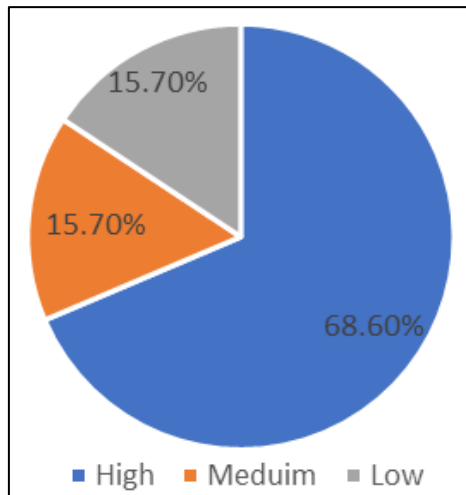
was reported that about 47.10 per cent that is the larger part of the respondent’s meal consumption pattern remains the same. On the other hand, the probability of skipping meals is increased slightly by 21.60 per cent participants. Thus, the probability of skipping of meals was almost similar during Covid-19.



During Covid Pandemic the habit of snacking between meals

From perusal of above graphical representation, it was confirmed that nearly 52.90 per cent of respondents had the habit of snacking between the meals at moderate level,

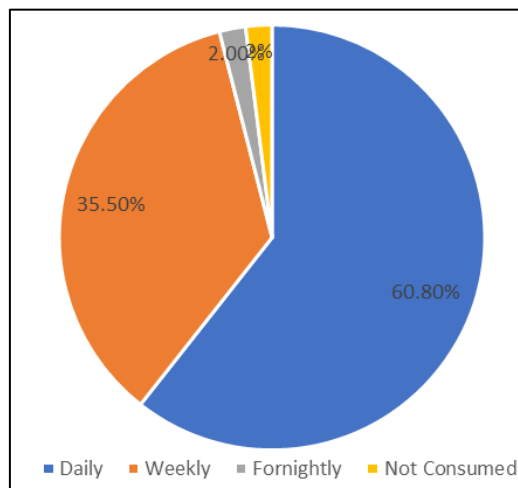
followed by 39.20 per cent of respondents with lower snacking habits while 7.80 per cent of participants showed higher level of snacking in between meals.



During covid pandemic daily intake of fruits and vegetables

During Covid pandemic, it was observed that the majority of participants i.e. 68.60 per cent consumed fruits and vegetables in moderate level, while both the higher or lower level of

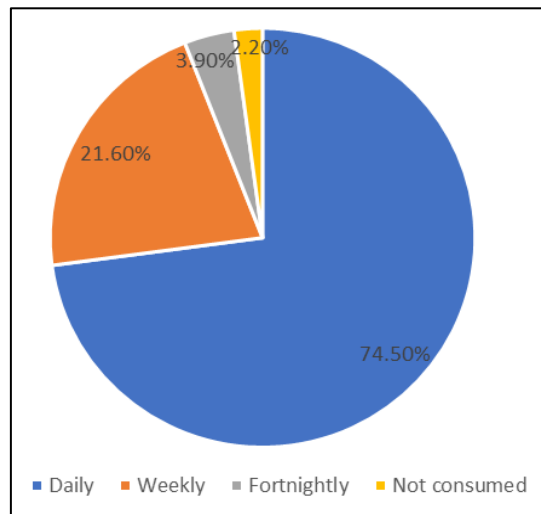
consumption was found among 15.70 per cent equally. And this data was represented graphically in the above diagram.



During covid pandemic intake of a balanced diet (including healthy ingredients such as whole wheat, pulses, legumes, eggs, nuts, fruits and vegetables)

As far as the intake of balanced diet including whole wheat, pulses, legumes, eggs, nuts, fruits & vegetables was concerned, it was found that about 60.80 per cent participants

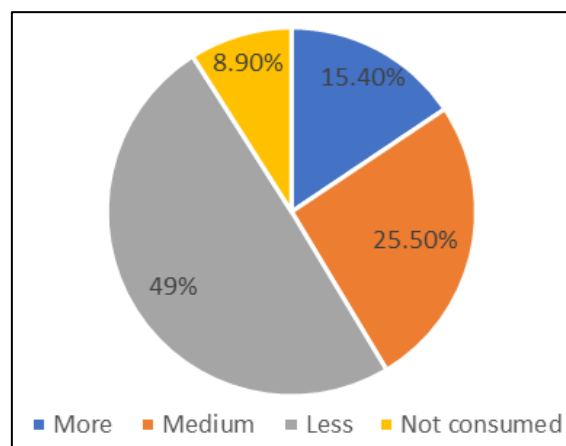
were consuming balanced diet on daily basis, while 35.30 per cent respondents reported the intake of balanced diet pattern on weekly basis.



During covid pandemic intake of immune boosting foods (lemon, turmeric, garlic, citrus fruits and green leafy vegetables) in the diet

In the survey, the best part noticed was the consumption of immune boosting foods on daily basis by 74.50 per cent in

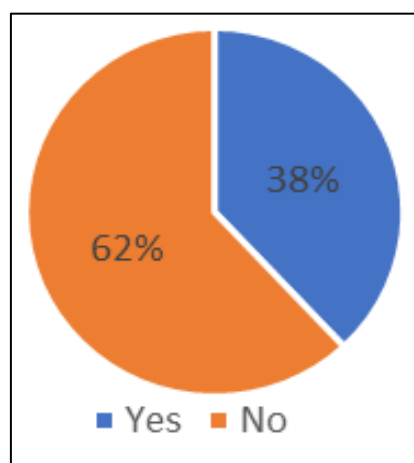
their diet, followed by 21.60 per cent participants with these immune boosting foods intake on weekly basis.



During covid pandemic consumption of junk food/fast food and fried food

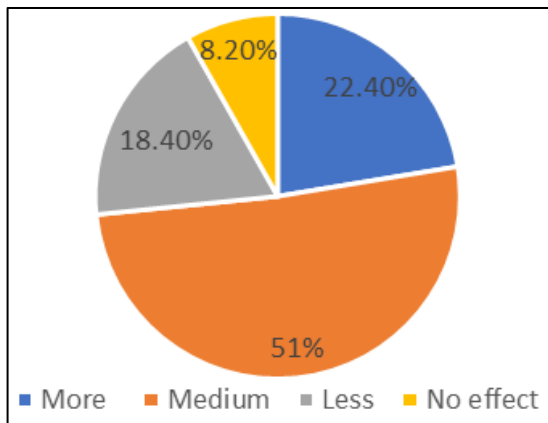
During Covid pandemic, it was found that nearly 49 per cent respondents consumed fast food or junk food including fried foods in lesser amount while 25.50 per cent of participants did

not consumed fast food at all and 11.80 per cent neither consumed fast food or junk food nor fried foods.



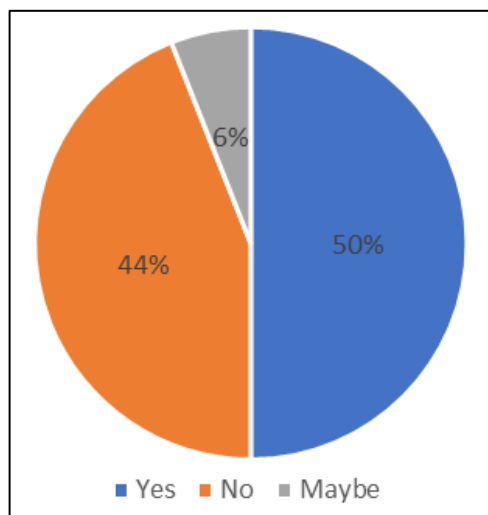
Physical activity during covid pandemic

From the above graphical representation it was observed that 38 per cent of respondents were exercising regularly in contrast to 62 per cent respondents who were not practising exercise on regular basis.



Effect of covid on stress and anxiety

The impact of Covid on stress and anxiety was studied and reported that majority of participants i.e. 51 per cent were facing the stress and anxiety issues at moderate level, while 22.40 per cent respondents were more stressed and anxiotic while 8.20 per cent were totally unaffected.



During covid pandemic if the quality of sleep changed

The quality of sleep during Covid was also studied and found that 50 per cent respondents reported change in sleep, while 44 per cent participants did not notice any changes in sleeping pattern.

Our findings should be interpreted in light of their strengths and limitations. One of the study's strengths is its uniqueness; to the best of the researchers' knowledge, this is the first study on the multiple lifestyle changes that happened in Odisha during the epidemic. We used an online survey, which was a great study instrument since it allowed us to collect samples from all around Odisha without raising the danger of coronavirus transmission. This study, however, had numerous shortcomings. First, our findings cannot be generalised to the full Odisha population due to the limited sample size. Furthermore, individuals in our sample were mostly young adults, healthier, and had a better level of education than the overall population. This is due in part to the fact that our sample was confined to individuals having Covid during the

study period. Because of the study technique, only persons with Internet access were able to participate in this study; however, participation was not limited for people who did not have Internet access. As a result, the demographics of our sample may not fully represent the Odisha general population. As a result, our findings should be taken with caution, and their generalizability to a larger population may be restricted. Second, subjective measurements were employed to evaluate lifestyle. Despite the fact that all of the questionnaires used in this study had previously been validated, extra objective measures should be used in future research to correctly characterise lifestyle patterns. Finally, the scope of this study was confined to assessing participants' perceptions of COVID-19. As a result, in future investigations, people's perceptions of COVID-19 should be taken into account by performing relevant evaluations with instruments like the Fear of the COVID-19 Scale (FCoV-19S).

### Conclusion

The present study showed that participants had remarkable changes in lifestyle and health factors during the onset of the COVID-19 pandemic in Odisha. A series of demographic and clinical variables were found to be independently associated with lifestyle during the study period. Consequently, more attention should be paid to changes in lifestyle behaviors of the especially young adult population during health crises, such as the current pandemic, in search of protective factors and markers of resilience. The results of this and future studies can be used to refine the public health recommendations issued to maintain or adopt healthier lifestyles.

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