Research Article

Changes in Lifestyle, Food Choices, Sleeping Habits, and Physical Activities during the COVID-19 Pandemic: Analysis of Data after the First Lockdown Period from Three States of India

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A B S T R A C T

Background: The COVID-19 pandemic led to a substantial influence on the lifestyle of individuals. This article focuses to investigate the changes in lifestyle behaviour, food choice, sleeping habit, and physical activities that occurred during the COVID-19 pandemic.

Method: A cross-sectional study was conducted and data were captured through a web-based application questionnaire using a convenience sample method among individuals visiting health camps under the mobile healthcare programme conducted by three peripheral institutes of Central Council for Research of Unani Medicine in identified pockets of three different states in India to assess the impact of the COVID-19 induced lockdown on changes in their lifestyle, food preferences, physical activity, and social life among the population.

Results: The data were obtained from 1007 cases in total between the age group of 15 and 90 years. The lockdown resulted in an alteration in the lifestyle as manifested by a change in food choices (65.4%), a change in sleeping routine (65.1%), a reduction in physical activity (63.7%), and a change in social life (68.9%) of the participants. A notably increased use of traditional medicine and herbal preparations has been reported by the study participants during the lockdown.

Conclusions: Isolation, fear, distress, and social stigma caused various lifestyle changes and psychological problems among people during the first lockdown.

Keywords: Lockdown, COVID-19, Lifestyle Changes, Sleeping Routine, Social Life, Physical Activity, Food Choices, Unani

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Introduction

On 24th March 2020, a nationwide lockdown was imposed by the Government of India for 21 days. Towards the end of the first lockdown period, it was recommended by the state government and other advisory committees that the lockdown should be extended. Thereafter, the government enforced a four-phased lockdown of 68 days from 24th March to 31st May to keep control over the fast spread of COVID-19 infection.[1]

Meanwhile, on 1st May 2020, the Government categorised the districts into three zones (red, orange, and green) on the basis of the extent of the virus spread. Lockdown restrictions were limited to containment zones only.

People were compelled to stay in their homes during the lockdown. Beyond the transportation of essential commodities, emergency services, police, and fire, all the other transportation services were suspended.[2] Petrol pumps, banks, ATMs, food shops, other essentials, as well as their manufacturing were the only exempted services.

The lockdown restrictions were lifted from 30th May onwards, except in containment zones, where they extended till 30th June. The resumption of services was also done in a phased manner and was termed 'Unlock 1'. This began on 8th June. The current study was conducted after Unlock 3 was announced in August 2020.

Prolonged lockdown, social isolation, quarantine, curfew, and enforcement of extensive preventive measures to contain the disease spread have led to a drastic impact on lifestyle amongst almost all people worldwide; not only due to millions of deaths but also due to fear of getting COVID-19 infection, social stigma, loneliness, distress, economic, mental and social disruptions. This study was conducted to investigate the impact of the lockdown on lifestyle behaviour, food choice, sleeping habit, and physical activities that occurred during the COVID-19 pandemic in India.

Method

Study Design and Participants

To assess the effect of the coronavirus pandemic and subsequent lockdown, a population-based (cross-sectional) study was conducted between August 14, 2020 and January 10, 2021, in the identified pockets of three different states; New Delhi, Uttar Pradesh, and West Bengal where outreach healthcare programmes were already being conducted through the peripheral institutes of Central Council for Research in Unani Medicine for creating awareness and distributing Unani medicines during COVID-19 lockdown.

A web-based questionnaire link was created and shared with the institute's head of the respective centres which was later given to the duty officers of the outreach programme who administered the survey to the people visiting the health clinics. To be eligible for inclusion in the study, individuals were required to be 15 years or older, able to communicate, and fully willing to participate. The objectives of the study were explained to the participants at the start of the survey. Verbal consent was taken from each participant before administering the questionnaire and they were assured that their answers will be used anonymously for research purposes. Respondents who were less than 15 years of age, or who did not complete the questionnaire appropriately were excluded from the final analysis.

Sample Size

It was calculated using the prevalence of change in habits during the lockdown which was 84% as reported by Mehta V and taking absolute error as 5%.[3] Taking this as prevalence, the sample size was calculated using the formula $(Z\alpha/2)^2 PQ/L^2$ which came out to be 206. Considering a non-response rate of 10%, the total sample size was computed as 220.

Study Tool

The survey questionnaire was a web-based application especially designed, structured, and pretested on a sample; its participants were subsequently removed from the final analysis. The questionnaire was bilingual, initially developed in English and then translated to Hindi and contained 43 closed-ended questions, divided into six sections. The first section had questions to gather data about sociodemographic characteristics. Likewise, the respondents were asked about pre-existing disease conditions in the second section. The third section related to personal habits consisted of five questions and investigated dietary patterns, and addictions such as smoking, tobacco use, and alcohol intake. The fourth section was based on symptoms related to COVID-19 within the past week of participation. The fifth section asked about the use of prophylactic modalities (conventional medicines, AYUSH medicines, or home remedies) during the lockdown. The final part of the questionnaire asked about the impact on lifestyle during the lockdown and consisted of 4 questions aimed at eating habits, sleeping habits, physical activity, and social life.

Statistical Analysis

Statistical analyses were done using IBM SPSS (Statistical Package for the Social Sciences) Statistics Software (version 23; IBM, New York, USA). The measurement data were tested for normality and homogeneity of variance. Data cleaning was done. A quality check was performed for data entry and coding. Descriptive statistics were used for presenting data as frequencies and percentages in the case of qualitative variables, and as range, mean, and SD in the case of quantitative variables. The comparison of qualitative variables was done using the chi-square test or

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Fisher exact test, as per the suitability. P-value less than 0.05 was considered statistically significant.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of the research institution. The privacy and confidentiality of study participants were assured. Participants' consent was taken before administering the questionnaire.

Results

Out of 1007 cases in total from three states in India, 383 were from New Delhi, 304 from Uttar Pradesh, and 320 from West Bengal. The study participants were between the ages of 15 and 90 years, the mean age being 44.01 ± 14.5 years with male preponderance (52.7%), and mostly married (80.8%) participants. Of the total participants in the study, about 290 (28.8%) were having no formal education, however, 23.2% were graduate or higher degree holders. Details of participants have been described in Table 1.

Pre-existing Disease Screening

The most frequent pre-existing diseases reported by study participants were hypertension (259, 25.7%), diabetes (143, 14.2%), respiratory diseases (42, 4.2%), cardiac ailments (20, 1.9%), immunocompromised state (13, 1.3%), chronic liver disease (11, 1.1%) and chronic renal disorder (9, 0.9%) Table 2.

Table 1.Demographic Details of Study Participants

Characteristics	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Age (in years)				
≤ 45	241 (43.5)	164 (29.6)	149 (26.9)	554 (55.0)
> 45	142 (31.3)	140 (30.9)	171 (37.7)	453 (45.0)
Gender				
Female	159 (33.4)	109 (22.9)	208 (43.7)	476 (47.3)
Male	224 (42.20)	195 (36.70)	112 (21.1)	531 (52.7)
Marital status				
Married	285 (35)	258 (31.7)	271 (33.3)	814 (80.8)
Separated or widowed	15 (46.9)	4 (12.5)	13 (40.6)	32 (3.2)
Single	83 (51.60)	42 (26.1)	36 (22.4)	161 (15.9)
Education status				
No formal education	121 (41.7)	71 (24.5)	98 (33.8)	290 (28.8)
Elementary education	49 (26.8)	34 (18.60)	100 (54.6)	183 (18.2)
Secondary school	87 (47.3)	30 (16.3)	67 (36.4)	184 (18.3)
Senior secondary school	59 (50.9)	27 (23.3)	30 (25.9)	116 (11.5)
Graduate & higher	67 (28.6)	142 (60.7)	25 (10.7)	234 (23.2)

Table 2.Pre-existing Ailments Screening of Study Participants in Selected Spots of Three States

Diseases	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Hypertension	74 (19.3)	131 (43.1)	54 (16.9)	259 (25.7)
Diabetes mellitus	16 (4.2)	93 (30.6)	34 (10.6)	143 (14.2)
Respiratory diseases	19 (4.9)	19 (6.3)	4 (1.3)	42 (4.2)
Cardiac disease	2 (0.5)	12 (3.9)	6 (1.9)	20 (1.9)
Chronic liver disease	3 (0.8)	1 (0.3)	7 (2.2)	11 (1.1)

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Chronic renal disease	4 (4.2)	5 (1.6)	0 (0)	9 (0.9)
Immunocompromised state	3 (0.8)	2 (0.6)	1 (0.3)	13 (1.3)
No pre-existing ailments	277 (72.3)	130 (42.8)	234 (73.1)	641 (63.7)

The most common signs and symptoms experienced by the study participants in the past one week before data collection were body pain in 364 (36.1%), fatigue in 328 (32.6%), and headache in 228 (22.6%) participants. A few other symptoms were fever in 66 (6.6 %), dry cough in 85 (8.4%), productive cough in 27 (2.7%), and breathing difficulty, sore throat, and rhinorrhoea Table 3.

Remarkable differences were detected among the three states in the food preferences that give insights into the different food habits of the study participants from each state. It was found that more than half (53.5%) of the study participants from Delhi reported increased use of vegetarian food during the lockdown. However, there was no change observed in the food preference of respondents from West Bengal with the majority of people (94.7%) consuming non-vegetarian food during the lockdown period Table 4.

It was noted that during the lockdown among the three states, around 89% were non-smokers. The smoking habit in the study population was very less; it was observed from the data that only 6.9% of people smoked every day, and 4% of people smoked less often. Similarly, amongst the smokeless product (khaini and gutka) users, only 4.9% of participants consumed it daily and only 1.7% consumed it less than daily during the lockdown.

A larger proportion of participants (93.3%) reported that they did not consume alcohol, very few participants (1.7%) notified their alcohol intake to be on daily basis, and 4.9% of study participants consumed alcohol less than daily during the pandemic Table 4.

Table 3.Symptoms Experienced by Study Participants during the Lockdown in India in the Selected Spots of Three States

Symptoms	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Low-grade fever	11 (2.9)	24 (7.9)	22 (6.9)	57 (5.7)
High-grade fever	1 (0.3)	5 (1.6)	3 (0.9)	9 (0.9)
Dry cough	47 (12.3)	14 (4.6)	24 (7.5)	85 (8.4)
Productive cough	16 (4.2)	5 (1.6)	6 (1.9)	27 (2.7)
Muscular pain	218 (56.9)	74 (24.3)	72 (22.5)	364 (36.1)
Fatigue	153 (39.9)	157 (51.6)	18 (5.6)	328 (32.6)
Sore throat	20 (5.2)	21 (6.9)	3 (0.9)	44 (4.4)
Difficulty in breathing	10 (2.6)	19 (6.3)	22 (6.9)	51 (5.1)
Runny nose	9 (2.3)	6 (1.9)	3 (0.9)	18 (1.8)
Headache	98 (25.6)	33 (10.9)	97 (30.3)	228 (22.6)
Diarrhoea	5 (1.3)	1 (0.3)	0 (0.0)	6 (0.6)
Nausea	11 (2.9)	3 (0.9)	0 (0.0)	14 (1.4)
Discolouration in fingers or toes	11 (2.9)	2 (0.7)	23 (7.2)	36 (3.6)
Conjunctivitis	2 (0.5)	0 (0.0)	0 (0.0)	2 (0.2)
Loss of smell	2 (0.5)	0 (0.0)	1 (0.3)	3 (0.3)
Loss of taste	2 (0.5)	2 (0.7)	0 (0.0)	4 (0.4)
Skin rash	11 (2.9)	3 (0.9)	23 (7.2)	37 (3.7)
Abdominal pain	24 (6.3)	26 (8.6)	7 (2.2)	57 (5.6)
Irritability	1 (0.3)	2 (0.7)	1 (0.3)	4 (0.4)

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Table 4.Lifestyle Changes Acquired by Study Participants in their Diet, Smoking Habit, and Alcohol Consumption during the COVID-19 Pandemic

Variables	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Dietary choice				
Vegetarians	205 (53.5)	120 (39.5)	16 (5.0)	341 (33.9)
Non-vegetarians	172 (44.9)	175 (57.6)	303 (94.7)	650 (64.5)
Eggetarians	6 (1.6)	9 (2.9)	1 (0.3)	16 (1.6)
Smokers				
Daily	35 (9.1)	17 (5.6)	18 (5.6)	70 (6.9)
Less than daily	19 (4.9)	16 (5.2)	5 (1.6)	40 (4.0)
Not at all	329 (85.9)	271 (89.1)	297 (92.8)	897 (89.1)
Smokeless products*				
Daily	15 (3.9)	11 (3.6)	24 (7.5)	50 (4.9)
Less than daily	7 (1.2)	7 (2.3)	3 (0.9)	17 (1.7)
Not at all	361 (94.3)	286 (94.1)	293 (96.6)	940 (93.3)
Alcohol				
Daily	13 (3.4)	1 (0.3)	3 (0.9)	17 (1.7)
Less than daily	30 (7.8)	12 (3.9)	8 (2.5)	50 (4.9)
Not at all	340 (88.8)	291 (95.7)	309 (96.6)	940 (93.3)

*gutka or khaini

Participants were further asked whether they had experienced certain lifestyle modifications due to COVID-19, including changes in their food habits, physical activity, sleeping routine, and social life.

A total of 67.3% of study participants reported that during lockdown they didn't engage in any physical activity. Lockdown significantly impacted the physical activity of 98.9% of people from Delhi and 90.8% of people from Uttar Pradesh in contrast to only 7.2% of people from West Bengal.

Sleep disturbances and changes in the sleeping pattern were prevalent among 65.1%, however, 34.9% of respondents had no change in their sleep routine. Furthermore, the dietary habits of the participants were distanced from the healthy diet; 65.4% of study participants reported changes in their dietary patterns and food choices. A total of 68.9% of respondents had impaired social life, and 98.9% of people from Delhi and 93.4% from Uttar Pradesh had experienced disturbed social life due to the lockdown Table 5.

A noteworthy increase was observed in the consumption of homemade herbal beverages like hot water, ginger tea, and golden milk, as reported by the study participants during the lockdown Table 6.

Table 5.Changes Acquired by Study Participants in Physical Activity, Sleeping Routine, Food Preferences, and Social Life during the Lockdown

Questions Related to Changes	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Did the lockdown affect your physical activity?				
Yes	379 (98.9)	276 (90.8)	23 (7.2)	678 (67.3)
No	4 (1.0)	28 (9.2)	297 (92.8)	329 (32.7)
Did your sleep routine change?				
Yes	378 (98.7)	261 (85.9)	17 (5.3)	656 (65.1)
No	5 (1.3)	43 (14.1)	303 (94.7)	351 (34.9)
Did the lockdown affect your food preferences?				
Yes	377 (98.4)	263 (86.5)	19 (5.9)	659 (65.4)

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No	6 (1.6)	41 (13.5)	301 (94.1)	348 (34.6)
Did the lockdown affect your social life?				
Yes	379 (98.9)	284 (93.4)	31 (9.7)	694 (68.9)
No	4 (1.0)	20 (6.6)	289 (90.3)	313 (31.1)

Table 6.Prophylactic Medicines and Homemade Beverages Reportedly Consumed by Study Participants during the Lockdown

Prophylactic Medicines	Delhi n = 383 (%)	Uttar Pradesh n = 304 (%)	West Bengal n = 320 (%)	Total N = 1007 (%)
Allopathy[a]	73 (19.1)	138 (45.4)	21 (6.6)	232 (23.0)
Ayurveda[b]	197 (51.4)	174 (57.2)	46 (14.4)	417 (44.4)
Unani[c]	314 (81.9)	189 (62.2)	7 (2.2)	510 (50.6)
Homemade beverages				
Hot water	186 (48.6)	185 (60.9)	244 (76.3)	615 (61.1)
Golden milk (turmeric milk)	141 (36.8)	100 (32.9)	30 (9.4)	271 (26.9)
Ginger tea	170 (44.4)	156 (51.3)	230 (71.9)	556 (55.2)
Spice tea	27 (7.1)	23 (7.6)	146 (45.6)	196 (19.5)

[a]Allopathic medicines comprised tablets of vitamin C, tablets of zinc, capsules of B complex, and tablets of HCQ

[b]Ayurvedic medicines comprised ayush kwath, chyawanprash, ashwagandha

[c]Unani medicines comprised joshanda, khamira marwareed, tiryaq arba, and arq-e ajeeb

Discussion

In the present study, 1035 responses obtained via an especially designed Google Form were shared with the respective institute to capture the data of individuals. A total of 1007 valid responses were obtained from the individuals visiting the health clinics of Delhi, Uttar Pradesh, and West Bengal who completed the survey questionnaire and shared their experience regarding health, sleep, food choices, physical activity, social life, and other lifestyle changes during the lockdown. The highest numbers (38%) of participants were from Delhi, followed by 32% from West Bengal, and then 30% from Uttar Pradesh. As per the demographic details, most of the people participating in the study were between the ages of 15 and 90 years with the average age being 45 years. The proportions of males and females were almost equal with a slight male preponderance of 52.7%. Most were married (81%) with an education level of either illiterate/ elementary educated or graduate or above.

The prevalence of hypertension and diabetes in the study was somewhat high in individuals visiting the mobile health clinics after the lockdown in comparison to other pre-existing diseases. Hypertension was reported by 25.7% and diabetes was reported by 14.2% of participants. Patients with comorbidities and immunocompromised states were extremely affected during the pandemic due to weak immune systems and poor outcomes associated with comorbidities.[4,7] COVID-19 pandemic and country-wide sudden lockdown are likely to increase the new onset of anxiety disorder. A study in India by Kishore et al. revealed the presence of depressive symptoms across more than half of the respondents (51.7%).[8,9]

Increase in Traditional Medicine and Other Supplementation

Until now, in spite of numerous efforts, there is no treatment for COVID-19 except symptomatic treatment. The study showed that many of the people surveyed intentionally consumed certain foods, supplements, or traditional medicines as they thought it would help them against COVID-19 by enhancing their immunity. During the lockdown, people mainly consumed homemade remedies, and herbal beverages with perceived beneficial effects such as golden turmeric milk, Unani joshanda, Ayush kwath, hot water, tea infused with ginger and hot spices, etc. to enhance immunity. People also increased the intake of traditional medicines for enhancing immunity such as Unani medicines - Khamira Marwarid, Tiryaq-e-Arba, Unani joshanda; Ayurvedic medicines - Ayush Kwath, Ayush-64; Siddha medicine - Nilavembu kudineer; and Homeopathic medicines. The use of these medicines has beneficial effects in improving the immunity of an individual as well as early recovery of mild to moderate COVID-19 confirmed cases.[10,12]

India is considered to be the third world's worst-affected country in the COVID-19 pandemic. Sudden lockdown isolation, curfew, social distancing, and precautionary measures had strongly impacted people's life by affecting their lifestyle, eating habits, sleep routine, and physical activity.

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Impact on Habits

Changes (increase or decrease) in food habits were reported in 65.4% of the study population, which was a little less as compared to the study by Mehta et al., which concluded that improper dietary habits due to various reasons during the lockdown were reported in 84% of the study participants in Mumbai.[3] Stress and anxiety may have an influence over food habits, mainly including, an increase in snacking on unhealthy comfort foods (oily, sugar-added food), fried food, and sweets food, resulting in associated weight gain during the lockdown. Furthermore, in the low socio-economic study population, the decrease in the availability of food, an increase in food prices, and financial crises led to a change in food habits.

Similar observations were made by Yukti et al. in relation to lockdown and the pattern of tobacco use. The change in tobacco consumption was mainly due to decreased income, increased prices, and decreased availability of tobacco.[13] Due to these reasons, the prevalence of tobacco and alcohol use was very less in the study populations in India.

Impact on Physical Activity

During the lockdown in the three states, it was reported that 98.9% of surveyed participants from Delhi and 90.8% from Uttar Pradesh reduced their physical activity during the lockdown. However, only 7.2% of West Bengal reported a change in physical activity. This may be related to working from home, an increase in screen time and restrictions on sporting activities, along with gym closures during the peak of the pandemic. Similarly, Nair et al. showed that over 58.6% of people did little or no exercise.[14]

Impact on Sleep Patterns

During home confinement in lockdown, the sleep timing of people showed a marked change, as people went late to bed and woke up late with a reduction in night-time sleep and an increase in day-time napping. Due to the lockdown closure of physical workplaces, offices, and education institutes and due to fewer workloads, people got more time to sleep and also reported low quality of sleep. In contrast to this, worrying about COVID-19 and deaths, loss of job, and financial crisis had also negatively impacted sleep, which may severely impact health and mood and behaviour changes like irritability and anger. Our findings showed a significant change in the sleep quality or duration due to the COVID-enforced lockdowns; 98.7% of participants in Delhi and 85.9% in Uttar Pradesh reported a change in their sleeping habits, however, only 5.3% of people reported a change in West Bengal. In a study by Agarwal et al., 56.2% believed that their sleep cycle has changed, and Nair et al. reported 18.2% of people to have dissatisfaction with sleep.[14,15] An online survey by Cellini et al. conducted during the COVID pandemic in Italy on 1310 people showed the association of lower sleep quality with increased usage of digital media at bedtime as well as with a delay in bedtime and wake-up time.[16]

Impact on Social Life

The government imposed measures, such as social distancing and security measures, have affected the relationship among people. Not meeting friends, workplace colleagues, and family members in person negatively impacted people. In our study, 68.9% of the participants surveyed revealed that the lockdown affected their social life. In a study by Chaturvedi et al., 29.7% of respondents were not socially well-connected; even their sleeping habits and daily fitness routines significantly affected their health conditions.[17]

Limitations of the Study

The study sample was limited to three states and may not be representative of all states in the country. Although the study had a large sample size, data collection was done in the areas where Unani prophylactic medicines were already distributed by the Central Council for Research in Unani Medicine. Therefore, the actual consumption of other traditional medicines could not be ascertained from this study.

Conclusion

The results presented here suggest that the lockdown during the first wave of the pandemic in India impacted lifestyle behaviour such as eating and sleeping habits, change in lifestyle, and social life among the people living in Uttar Pradesh and Delhi more than the people living in West Bengal. Traditional medicines along with homemade preparations have been used as a preventive remedy during the COVID-19 pandemic by the study participants.

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