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Coronavirus disease (COVID-19) pandemic: Lockdown related morbidity among young adults in Chennai, India

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Abstract

Background: The COVID-19 pandemic triggered widespread lockdown measures, profoundly altering the daily routines and lifestyles of individuals worldwide. This study aims to investigate the repercussions of these lockdowns on the morbidity patterns among young adults in Chennai.

Methods: A web-based questionnaire survey was conducted among 1110 young adults aged 18 to 29 years in Chennai, India. The study analyzed various aspects of health, encompassing physical, mental, and social well-being, during the lockdown period using a prevalidated questionnaire. Frequency distribution of variables and chi-square tests for categorical variables were employed.

Result: The study revealed significant impacts on physical, mental, and social well-being during the lockdown period. Physical health was affected, with weight gain (56.83%) being the most common morbid condition due to physical inactivity and frequent eating. Headaches (33.24%) were prevalent, attributed to prolonged digital screen exposure and irregular sleep patterns. Psychological impacts included stress rates of 43.42% among young adults.

Conclusion: This research highlights the intricate relationship between COVID-19 lockdown measures and morbidity among young adults. The findings provide valuable insights into the potential long-term implications of the pandemic on the health of this demographic group, emphasizing the importance of targeted interventions and support systems.

Keywords: COVID 19; Mental health; Psychological; Neurological; Systemic health

1. Introduction

Coronavirus Disease 2019 (COVID-19), caused by the severe acute respiratory syndrome (SARS) Influenza virus, a member of the Coronavirus family, has become a notable global health concern. The initial case was reported in Wuhan, China, in December 2018[1]. Subsequently, the Government of India implemented a nationwide lockdown as a preventive measure [2]. This study focuses on the profound impact of the pandemic, particularly during the lockdown, on both the psychological and systemic health of the population.

The government's strategies, including social distancing, implemented to curb the virus spread, inadvertently contributed to heightened feelings of social isolation and loneliness. Closure of workplaces, educational institutions, fitness facilities, and public spaces led to abrupt lifestyle changes affecting the entire population [3].

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The unprecedented global pandemic induced physical and psychological burdens, significantly diminishing the quality of life [3]. Psychological distress manifested as sleep disruption, altered dietary habits, including increased consumption of highly palatable food and frequent snacking [4]. Notably, students, already prone to conditions like anxiety [5], depression [6], and disordered eating [7,8], emerged as a particularly susceptible group.

This study aims to explore the enduring effects of COVID-19 on both psychological well-being and systemic health, with a focus on the consequences experienced during the lockdown period.

2. Materials and method

2.1. Study design

A cross-sectional online questionnaire survey adhering to the STROBE guidelines [9] was conducted among the 18 to 29-year-old young adult population in Chennai.

2.2. Participants and setting

This study targeted healthy individuals aged 18-29 years in Chennai who rendered voluntary consent. Exclusion criteria comprised individuals with a history of COVID-19, any systemic illness, or those under medication. Ethical clearance was obtained from The Institutional Ethical Committee of the Sathyabama Institute of Science and Technology (Ref: 274/IRB- IBSEC/SIST). The study was conducted between May 2023 and June 2023.

2.3. Validation of the questionnaire

To evaluate the long-term effects of COVID-19, a closed-ended questionnaire containing 24 questions across three domains was prepared. Sociodemographic details, impact on systemic health and impact on psychological health were covered under these domains. The questionnaire underwent content validity by an expert panel, including a general pathologist, a general physician, a public health professional, and a psychologist. The questionnaire was also subjected to face validity by twenty undergraduate students. Specific changes were made based on their suggestions. The modified questionnaire was again checked for content validity.

2.4. Sample size estimation

The sample size was estimated using the formula: $n = Z^2pq/d^2$, where Z (Confidence limit 99%), p (prevalence of morbidity), q (1-p), and d (allowable error). With Z = 2, p = 38.2% (from a previous study [10]), q = 61.8, and d = 3, the estimated sample size was 1110, rounded to the nearest integer.

2.5. Sampling methodology

Cluster random sampling was employed to select the study sample. The expanded Chennai Corporation was divided into three regions: North, South, and Central by the Tamil Nadu Government. Seventy-four participants were selected from designated areas in each zone: North (Tiruvottiyur, Manali, Madhavaram, Tondiarpet, Royapuram), Central (Thiru Vi Ka Nagar, Ambattur, Anna Nagar, Teynampet, Kodambakkam), and South (Valasaravakkam, Alandur, Adyar, Perungudi, Sholinganallur).

2.6. Data source

The questionnaire was distributed via web-based electronic modes, including email, SMS, and WhatsApp, to known contacts in each zone. The data were collected using google forms and stored in the spreadsheet.

2.7. Statistical analysis

Data collected through Google Forms were transferred to an Excel sheet and entered into IBM SPSS version 20.0 software. Descriptive statistics, including frequency distributions, were recorded. Categorical variables were subjected to the Chi-square test with a significance level set at 0.01 and a 99% confidence interval.

3. Result

A total of 1128 individuals were approached for participation in the survey, resulting in a response rate of 98.40%. Among the respondents, 1110 individuals (98.40%) expressed their willingness to participate in the online survey, while the remaining 18 individuals (1.59%) showed a lack of interest.

3.1. Demographic details

Females constituted 62.5% (694 individuals), while males comprised 37.5% (416 individuals). Among the participants, 83.0% (921 individuals) were unmarried, and 17.0% (189 individuals) were married. Educational distribution revealed that 74.5% (827 participants) were undergraduates, and 25.5% (283 participants) were postgraduates.

Table 1 Distribution of study participants based on physical and psychological health

	Yes, I feel stressed N (%)	No, I do not feel stressed N (%)	TOTAL N (%)	P VALUE
How was your physical activity during COVID lockdown?				
Dancing/Zumba Class	27(5.60%)	18(2.86%)	45(4.05%)	0.001
Normal lifestyle	292(60.58%)	439(69.90%)	731(65.85%)	
Walking/cycling	84(17.42%)	90(14.33%)	174(15.67%)	
Workout	88(18.25%)	81(12.89%)	169(15.22%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Did you experience weight loss during lockdown, if so, how much was your weight loss?				
5-10kgs	69(14.31%)	57(9.07%)	126(11.35%)	0.001
Less than 5kgs	104(21.57%)	136(21.65%)	240(21.62%)	
More than 10kgs	38(7.88%)	20(4.14%)	58(5.22%)	
No weight loss	271(56.22%)	415(66.08%)	686(61.80%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Did you experience weight gain during lockdown, if so, how much was your weight gain?				
5-10kgs	75(15.56%)	103(16.40%)	178(16.03%)	0.001
Less than 5kgs	127(26.34%)	201(32.0%)	328(29.54%)	
More than 10kgs	74(15.35%)	51(8.12%)	125(11.26%)	
No weight gain	216(44.81%)	273(43.47%)	489(44.05%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
What can be your reason for weight gain during COVID lockdown?				
Eating junk foods	79(16.39%)	58(9.23%)	137(12.34%)	0.001
Frequent eating	110(22.82%)	207(32.96%)	317(28.55%)	
Less than 5kgs	0(0%)	1(0.15%)	1(0.09%)	
No weight gain	58(12.03%)	258(41.08%)	316(28.46%)	
Physical inactivity	61(12.65%)	73(11.62%)	134(12.07%)	
Stress	173(35.89%)	31(4.93%)	204(18.37%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
During lockdown, how was your sleep pattern at night?				
6-8hours	149(30.91%)	173(27.54%)	322(29.0%)	0.001
Irregular sleep Pattern	147(30.49%)	180(28.66%)	327(29.45%)	

Less than 5 hours	69(14.31%)	42(6.68%)	111(10%)	
More than 8 Hours	117(24.27%)	233(37.10%)	350(31.53%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
How long was your duration of screen exposure (using digital devices) during lockdown?				
4-8hours	183(37.96%)	269(42.83%)	452(40.72%)	0.001
Less than 2 hours	1(0.20%)	0(0%)	1(0.09%)	
Less than 4 hours	80(16.59%)	106(16.87%)	186(16.75%)	
More than 8 hours	219(45.43%)	252(40.12%)	471(42.43%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	

** p value <0.005 is statistically significant

3.2. Stress during lockdown

628 (56.57%) of 1110 respondents, reported no stress whereas 482 (43.42%) reported stress during COVID lockdown.

3.3. Physical activity vs Stress

Out of 1110 individuals, 731 (65.85%) students led a routine life without engaging them in any additional physical activity of which 292 (60.58%) had expressed stress.

3.4. Weight loss vs Stress

During the COVID lockdown, the majority of the individuals- 686 (61.80%) had not lost any weight, 217 (56.22%) participants were anxious.

3.5. Weight gain vs stress

Out of the 489 (44.05%) people who experienced no weight gain, 216 (44.81%) were under stress, while among the 328 (29.54%) people with a weight gain of less than 5kgs, 127 (26.34%) reported being under stress. With a population of 317 (28.55%) who had reported frequent eating, 110 (22.82%) participants were under stress had a notable association with consumption of junk foods in contributing to weight gain.

3.6. Sleep pattern and screen exposure vs stress:

Out of the total population, 350 (31.53%) individuals slept for over 8 hours, with 117 (24.27%) participants experiencing stress. Additionally, among 327 (29.45%) participants who had irregular sleep patterns, 147(30.49%) reported feeling stressed. Almost half of the population [471 (42.43%)] spent more than 8 hours daily on screens, including 219 (45.43%) people were anxious.

Table 2 Distribution of study population based on systemic health

Did you notice any eye changes during COVID lockdown?				
Combined problems	18(3.73%)	19(3.02%)	37(3.33%)	0.001
Eye styes	57(11.82%)	27(4.29%)	84(7.56%)	
Headache	180(37.34%)	189(30.09%)	369(33.24%)	
Increase in power	65(13.48%)	94(14.96%)	159(14.32%)	
No changes	94(19.50%)	259(41.24%)	353(31.80%)	
Redness of eye	68(14.10%)	40(6.36%)	108(9.72%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Did you notice any of these neurological problems during COVID lockdown?				

Abnormal movements	27(5.60%)	13(2.07%)	40(3.60%)	0.001
Combination of problems	37(7.67%)	30(4.77%)	67(6.03%)	
Lack of concentration	183(37.96%)	195(31.05%)	378(34.05%)	
Lack of concentration, loss of taste and smell	8(1.65%)	9(1.43%)	17(1.53%)	
Loss of taste and smell	56(11.61%)	35(5.57%)	91(8.19%)	
Memory loss	45(9.33%)	12(1.91%)	57(5.13%)	
Memory loss, none of these	2(0.41%)	27(4.29%)	29(2.61%)	
None of these	124(25.72%)	306(48.72%)	430(38.73%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced any skin/hair changes during COVID lockdown?				
Acne	106(21.99%)	115(18.31%)	221(19.90%)	0.001
Combination of Problems	26(5.39%)	10(1.59%)	36(3.24%)	
Hair fall	159(32.98%)	198(31.52%)	357(32.16%)	
No changes	130(26.97%)	277(44.10%)	407(36.66%)	
Skin rashes	61(12.65%)	28(4.45%)	89(8.01%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced any orthopedic pain during COVID lockdown?				
Back pain	93(19.29%)	97(15.44%)	190(17.11%)	0.001
Combination of Problems	44(9.12%)	43(6.84%)	87(7.83%)	
Foot/ankle pain	40(8.29%)	18(2.86%)	58(5.22%)	
Knee pain	35(7.26%)	32(5.09%)	67(6.03%)	
Neck pain	114(23.65%)	131(20.85%)	245(22.07%)	
None of these	156(32.36%)	307(48.88%)	463(41.71%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Did you have any respiratory problems during COVID lockdown?				
Breathing difficulty	43(8.92%)	36(5.73%)	79(7.11%)	0.001
Combination of Problems	11(2.28%)	10(1.59%)	21(1.89%)	
COPD (Asthma/bronchitis)	27(5.60%)	16(2.54%)	43(3.87%)	
Cough/sore throat	83(17.21%)	100(9.0%)	183(16.48%)	
None of these	282(58.50%)	438(69.74%)	720(64.86%)	
Sleep apnea/snoring	36(7.46%)	28(4.45%)	64(5.76%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Did you have any cardiac problems during COVID lockdown?				
Chest pain	29(6.01%)	18(2.86%)	47(4.23%)	
Combination of problems	11(2.28%)	5(0.79%)	16(1.44%)	
Heart attack	29(6.01%)	7(1.11%)	36(3.24%)	
Hypertension	43(8.92%)	57(9.07%)	100(9.0%)	

None of these	337(69.91%)	523(83.28%)	860(77.47%)	0.001
Palpitation	33(6.84%)	18(2.86%)	51(4.59%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced any digestive problems during COVID lockdown?				
Abdominal bloating	46(9.54%)	24(3.82%)	70(6.30%)	0.001
Combination of problems	23(4.77%)	27(4.29%)	50(4.50%)	
Diarrhea	52(10.78%)	37(5.89%)	89(8.01%)	
Heart burn	26(5.39%)	40(6.36%)	66(5.94%)	
None of these	252(52.28%)	432(68.78%)	685(61.71%)	
Regurgitation	18(3.73%)	17(0.18%)	35(3.15%)	
Stomach pain	65(13.48%)	51(8.12%)	116(10.45%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced any of these symptoms during COVID lockdown?				
Combination of problems	11(2.28%)	16(2.54%)	27(2.43%)	0.001
Excessive thirst	51(10.58%)	34(5.41%)	85(7.65%)	
Frequent eating	82(17.01%)	99(15.76%)	181(16.30%)	
Frequent urination	28(5.80%)	32(5.09%)	60(5.40%)	
None of the above	310(64.31%)	447(71.17%)	757(68.19%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced thyroid malfunctions during COVID lockdown?				
Thyroid(Normal)	119(24.68%)	97(15.44%)	216(19.45%)	0.001
Hyperthyroid	38(7.88%)	20(3.18%)	58(5.22%)	
Hypothyroid	26(5.39%)	28(4.45%)	54(4.86%)	
Not aware	299(62.03%)	483(76.91%)	782(70.45%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you experienced any of these symptoms during COVID lockdown?				
Blood in urine	34(7.05%)	15(2.38%)	47(4.23%)	0.001
Burning /Painful Urination	33(6.84%)	26(4.14%)	59(5.31%)	
Combination of Problems	7(1.45%)	2(0.31%)	9(0.81%)	
Kidney stone	42(8.71%)	19(3.02%)	61(5.49%)	
None of these	365(75.72%)	566(90.12%)	931(83.87%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	
If female, is there any changes in your menstrual cycle during COVID lockdown?				
Not applicable	153(31.87%)	207(32.96%)	360(32.43%)	
Absent periods	33(6.84%)	20(3.18%)	53(4.77%)	
Combination of Problems	22(4.56%)	32(5.09%)	54(4.86%)	
Irregular periods	97(20.12%)	99(15.76%)	196(17.65%)	

Regular periods	177(36.72%)	262(41.71%)	439(39.54%)	0.001
Total	482(43.42%)	628(56.57%)	1110(100%)	
Have you done any laboratory test during COVID lockdown?				
Blood glucose level	40(8.29%)	16(2.54%)	56(5.04%)	0.001
Blood lipid levels	22(4.56%)	22(3.50%)	44(3.96%)	
Hemoglobin test	43(8.92%)	58(9.23%)	101(9.09%)	
Multiple problems	27(5.60%)	27(4.29%)	54(4.86%)	
None of the above	285(59.12%)	458(72.92%)	743(66.93%)	
Thyroid function test	35(7.26%)	24(3.82%)	59(5.31%)	
Vitamin D level	35(7.26%)	23(3.66%)	58(5.31%)	
Total	482(43.42%)	628(56.57%)	1110(100%)	

** p value <0.005 is statistically significant

3.7. Neurological health vs stress

Out of the whole population, 369 (33.24%) individuals reported headache as a frequent symptom during COVID shutdown, maybe as a result of prolonged exposure to a digital screen. 180 (37.34%) said they felt stressed. During the lockdown, there were 378 (34.05%) people with attention problems, of which 183 (37.96%) people reported stress, and 430 (38.73%) people who were neurologically not affected, 124 (25.72%) people were stressed.

3.8. Other systemic health vs stress

COVID lockdown has little impact on overall health as the majority did not experience any alteration in their skin, respiratory, cardiac, digestive, bone and endocrine system. In the entire population, less than 370 people had expressed stress in every system even though their impact on systemic health is less.

3.9. Menstrual cycle vs stress

Throughout the COVID breakdown, the menstrual cycle of 439 (39.54%) female participants remained unchanged, of which 177 (36.72%) were stressed and 196 (17.65%) had irregular periods with 97 (20.12%) had experienced stress. Most of the participants 743 (66.93%) had not undergone any laboratory test during the lockdown period.

4. Discussion

The COVID-19 pandemic, which swept across the globe in 2018, prompted governments worldwide to implement unprecedented measures to restrain the spread of the disease. One of the most widely employed strategies was lockdown, effectively confining people to their homes and limiting social interactions. While these measures were crucial in controlling the pandemic's spread, they inadvertently gave rise to a new concern - the impact of lockdown-related morbidity in young adults. Young adults, aged between 18 and 29 years, constitute a critical and vibrant segment of society. The lockdown imposed during the pandemic disrupted their lives in multifaceted ways, transcending the immediate threat of the virus itself. This necessary disruption led to various physical, mental, and social consequences that warrant careful examination. This study delves into the myriad challenges faced by young adults during the COVID-19 lockdowns, shedding light on how these challenges affected their well-being. From the abrupt transition to remote work and education to the heightened risk of mental health issues due to social isolation, this research aims to provide a comprehensive understanding of the toll taken on young adults during a time of global crisis. By examining the physical and mental health outcomes, changes in lifestyle, and the economic ramifications of lockdown on this demographic, we can better appreciate the far-reaching consequences of the pandemic beyond the immediate health threat. Understanding these consequences is essential for crafting targeted interventions, policies, and support systems to address the unique needs of young adults in future public health emergencies.

In our investigation, we found that physical inactivity causes stress, consistent with studies conducted by Peterson CB et al (2023) [11] and Melamed OC et al (2022) [12]. Regular exercise can help release endorphins, reduce stress hormones, and promote overall mental well-being. Encouraging young adults to incorporate physical activity into their routines can be beneficial for stress management. According to our study, individuals experienced weight fluctuations

due to stress, as seen in studies by Khubchandani J et al (2022) [13], Pillai K et al (2022) [14], and Daniel MM et al (2022) [15]. Some engaged in stress-induced overeating or lifestyle changes, leading to weight gain. Frequent consumption of junk foods was identified as a factor contributing to weight gain, influenced by coping mechanisms, access to healthy foods, physical activity levels, and mental health support. Research studies conducted by Burnatowska E et al (2022) [16] and Laren AV et al (2023) [17] during the pandemic yielded mixed results, highlighting the complex nature of this issue. Our study also indicated that extended exposure to digital screens, especially during lockdowns, negatively affected sleep health. Higher screen time was associated with reduced physical activity, further interfering with sleep quality. This aligns with studies by Sinha M et al (2020)[18], Gupta R et al (2020)[19], Chen O et al (2022)[20], and Pandya A et al (2021)[21]. It is essential for adults to be mindful of their screen time and establish healthy sleep habits, such as limited screen use and maintaining a consistent sleep schedule, to mitigate these adverse effects on sleep health.

Headaches were the most common symptom reported among young adults in our study, consistent with studies by Carcel HF et al (2021)[22], Martinez AG et al (2021)[23], and Aleyeidi NA et al (2021)[24]. Increased stress and disruption of healthcare access could exacerbate headaches for some individuals. It is crucial to consult with healthcare professionals for personalized guidance on managing headaches during COVID lockdowns. In contrast to past studies such as Ejaz H et al (2020) [25], Malik JA et al (2022)[26], Singh AK et al (2020)[27], and Sanyaolu A et al (2020)[28], young adults in our study were not significantly impacted by systemic health issues. Conditions such as cardiovascular disorders, digestive problems, obesity, chronic lung disease, diabetes, and neurological diseases can weaken the immune system, making individuals more vulnerable to severe illness. This emphasizes the importance of vaccination, preventive measures, and careful management of these conditions to reduce the risk of severe outcomes in these populations. Despite having regular menstrual cycles, half of the female participants in our study experienced stress, consistent with prior studies by Chao M et al (2022)[29], Ozimek N et al (2022)[30], Malik VS et al (2021)[31], and Dutta G et al (2021)[32]. Stress can contribute to menstrual irregularities, creating a feedback loop that can affect the overall well-being of women in this age group.

Participants in the online survey were self-selected, leading to potential selection bias. Those who chose to participate may have different characteristics or opinions than those who declined, affecting the generalizability of the results.

5. Conclusion

In this study, we have attempted to evaluate the lockdown related morbidity among young adults in Chennai. We concluded that due to lockdown, physical and psychological health had significant impact among young adults when compared to the systemic health. As a health professional, we encourage regular physical activity, healthy diet, adequate sleep, stay connected, mindfulness and meditation, limited screen time and access to mental and systemic health services in routine lifestyle. It is essential to adapt these recommendations to individual circumstances and needs

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Ethical clearance was obtained from The Institutional Ethical Committee of the Sathyabama Institute of Science and Technology (Ref: 274/IRB- IBSEC/SIST)

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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