

Study The Impact Of Covid-19 Pandemic Confinement On Body Weight In Young Adults Of 17-18 Yrs In Jaipur

Dr Manu Saini, MD^{1*}, Dr Sweta Soni, Ph.D.², Dr Niti Yadav, M.Sc.³, Dr Ruchi Agrawal, MD⁴, Dr Shikha Mathur, Ph.D.⁵, Dr Kamal Sachdeva Ph.D.⁶

^{1*, 2,4}Assistant Professor, Department of Physiology, Mahatma Gandhi Medical College & Hospital, Jaipur

³Tutor, Department of Physiology, Mahatma Gandhi Medical College & Hospital, Jaipur

⁵Professor, Department of Physiology, Mahatma Gandhi Medical College & Hospital, Jaipur

⁶ Department of Pharmacy, JJTU University

*Corresponding author: - Dr Manu Saini

*Assistant Professor, Department of Physiology, Mahatma Gandhi Medical College & Hospital, Jaipur

E-mail:-manusainid2004@gmail.com

DOI: 10.47750/pnr.2023.14.502.278

Abstract

Background: The COVID-19 Pandemic hit INDIA in March 2020. This pandemic lead to confinement of students at home for more than a year. This influenced their dietary behaviours and physical activity along with increase in stress levels. The net result of pandemic was alterations in weight, increasing the risk of obesity and diseases associated with obesity especially in affluent class. AIMS and OBJECTIVES: This study aims to evaluate the effect of confinement on body weight in students of 17-18 yrs of Jaipur and to identify the contributory factors.

Material and Methods: A school based, cross-sectional, observational study was carried out from January 2021 to June 2021 involving 300 students in age group of 17-18 years studying in private school belonging to affluent class. Students were made to fill a proforma regarding their daily lifestyle and physical activities. Physical activity was evaluated with the International Physical Activity Questionnaire. Weight before the pandemic confinement was compared to the post confinement weight. Data was analysed using DATAtab Team (2023). DATAtab: Online Statistics Calculator. DATA tab e.U. Graz, Austria. URL <https://datatab.net/>

Results: More than 50% of students gained significant weight during the pandemic. Only one third of participants were moderately physically active. Factors contributing to weight gain included increased consumption of unhealthy food, altered sleep pattern, increased screen time and decreased physical activity.

Conclusion: The study showed that confinement lead to significant weight gain in students of affluent class. The findings showed the short term effects of pandemic confinement. This study during Covid19 confinement will help the health authorities in understanding and implementing newer policies for healthy lifestyle when newer pandemics waves arrive.

Keywords: Weight gain, COVID-19, Confinement, Physical activity

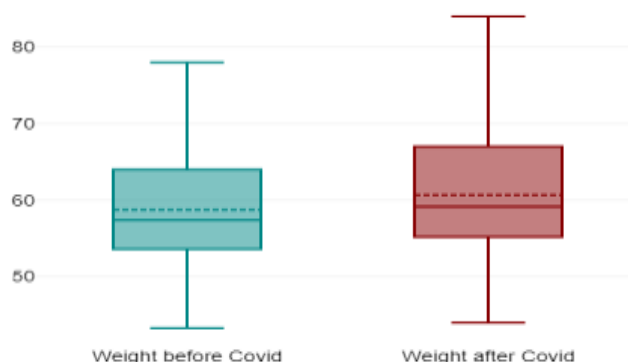
INTRODUCTION:

The COVID19 pandemic started in India in March 2020, country wide lockdown was implemented in mid February. This pandemic has led to increased morbidity and mortality all over the world. Social distancing and quarantine measures have led to various direct and indirect health implications. Physical wellbeing has suffered from increased levels of stress, anxiety and decreased physical activity (1,2,3,6). Students are especially prone to alterations in body weight because of varying levels of physical inactivity, increased screen time and mental health issues. High stress levels during pandemic due to loneliness, loss of friends or family members and fear were seen among many (2,3,4,5). Lockdown conditions may precipitate weight gain in students similar to that seen during holiday season, because of increased inactive time at home and snacking on energy dense foods. Lockdown for affluent class gave more time to cook and consume (7,8) thought it meant food scarcity to financially disadvantaged people(21). Recent researches have observed that obesity can lead to an increased risk of contacting severe infections of COVID 19 (5), thereby increasing the risk of extended hospitalization and increased morbidity. Moreover therapeutic interventions and prophylactic measurements are difficult and less effective in obese people (9,10). As the pandemic unfolds, researchers are trying to understand the factors involved in weight changes and the possible impact of weight changes especially weight gain on health in order to guide future prevention strategies. These efforts have led to the identification of multiple factors including biological, psychological and sociological processes that influence body weight during the pandemic(11,12).

MATERIAL AND METHOD:-

A school based, cross-sectional, observational study was carried out from January 2021 to June 2021 involving 300 students in age group of 17-18 years studying in private schools belonging to affluent class. Students were asked to fill a online Performa regarding their age, weight, screen time, dietary habits and physical activity and sleep .Physical activity was evaluated with the “International Physical Activity Questionare” (13). Weight was taken by digital weighing machine. The participants were informed of the purpose and procedure of the study and contest was taken. Ethical clearance was obtained from Mahatma Gandhi medical university of health sciences. Data was analysed using DATAtab Team (2023). DATAtab: Online Statistics Calculator. DATAtab e.U. Graz, Austria. URL <https://datatab.net/>. Weight before the confinement period was compared to the present weight at the end of the confinement period. In the present study 17-18 years of age healthy young volunteers were included. Young volunteers with any acute and chronic illness like diabetes, tuberculosis, any neuromuscular disorders, taking any drugs which affect weight (steroids), sleep disorders, excessive fatigue/fasting, smoking/alcohol and pre existing mental disorders were excluded.

RESULT:-

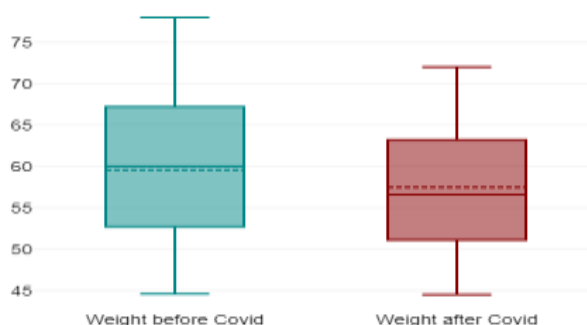


Graph 1 Weight gain after COVID

Table: 1 Weight gain after COVID

	Mean	SD	p-value	Pearson correlation
Weight before COVID	58.75	8.21	<.001	0.99
Weight after COVID	60.7	8.48		

In the present study we observed significant association between weight before and after COVID through Pearson correlation, $r(148) = 0.99, p = <.001$. We found a very high, positive correlation between the variables weight before and after COVID with $r = 0.99$ (Table-1).

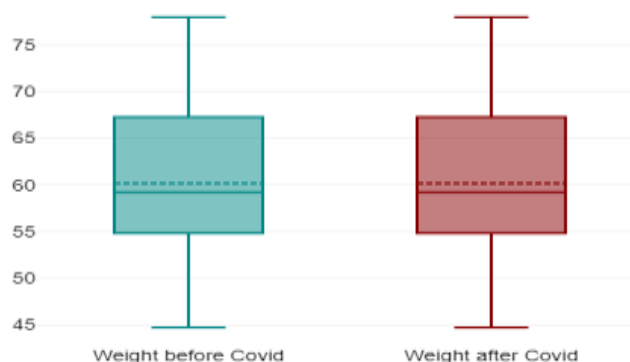


Graph:2 Weight loss after COVID

Table:2 Weight loss after COVID

	Mean	SD	p-value	Pearson correlation
Weight before COVID	59.55	7.99	<.001	0.97
Weight after COVID	57.47	7.21		

In the present study we observed significant association between weight before and after COVID through Pearson correlation, $r(88) = 0.97, p = <.001$. We found a very high, positive correlation between the variables weight before and after COVID with $r = 0.97$ (Table-2).



Graph:3 No change in weight after COVID

Table:3 No change in Weight after COVID

	Mean	SD	p-value	Pearson correlation
Weight before COVID	60.17	8.58	<.001	1
Weight after COVID	60.17	8.58		

In the present study we observed significant association between weight before and after COVID through Pearson correlation, $r(58) = 1, p = <.001$. We found a very high, positive correlation between the variables weight before and after COVID with $r = 1$ (Table-3).

DISCUSSION:-

It was observed that confinement led to changes in weight of majority of the students. A weight gain of upto 5 kgs average was observed in 50% students whereas 20% showed no change in weight. Only 30% students showed weight loss. This extra weight gain increased the prevalence of young individuals considered overweight or obese (2, 28). Findings of the study showed that for young people, COVID 19 came with major changes in routines that affected their health status (9,10,15). Physical activity decreased significantly during 2020 among young individuals (17), most likely due to virtual school, increased screen time, less time spent outdoors, limited to no access to sports and physical activity (26,29). Online classes contributed to increased sitting hours without break and increased screen time. Eating habits also contributed to weight gain along with the change in sleeping patterns(21). Snacking and trying new recipes which were mostly high calorie, through you tube was commonly seen among students. 2020 was also a particularly stressful year and this stress too played a significant role in weight changes(23). Fear of getting re infection (30), loss of family members or friends due to COVID infection or worsening of pre-existing medical conditions(27,28) all contributed to increased levels of stress and anxiety. Changes in sleep pattern were observed among young adults, night time gaming and more day time sleeping led to abnormal eating patterns. No access to community parks and nearby markets further contributed to decreased walking among students and more lethargic lifestyle. Going to school leads to a set pattern in a students life, getting up early, bathing at proper time and proper meals. All these were disturbed during the lockdown period.

CONCLUSION:-

This study has concluded that COVID -19 pandemic has played a significant role on weight gain and obesity among the young adults. The condition may not be permanent but re-establishing healthy life-style habits and resetting weight can be difficult for them. As pandemic continues, families need to prepare their children for in person activities. Simple steps like adopting healthy food habits, keeping junk food out of house and increasing physical activities in small increments throughout the day could develop long term healthy habits. Maintaining consistent sleep patterns and stress management strategies are also particularly important.

Paper cited.

Changes in body mass index among children and adolescents during COVID 19 pandemic. JAMA. DOI: 10. 1001/ JAMA.2021.15036

REFERENCES:-

1. Khubchandani J., Sharma S., Webb F.J., Wiblehauser M.J., Bowman S.L. Post-lockdown depression and anxiety in the USA during the COVID-19 pandemic. J Publ Health. 2021;43(2):246–253. doi: 10.1093/pubmed/fdaa250. - DOI-PMC - PubMed

2. American Psychological Association One year later, a new wave of pandemic health concerns. 2021. <https://www.apa.org/news/press/releases/stress/2021/one-year-pandemic-st...>
3. Maarefvand M., Hosseinzadeh S., Farmani O., et al. Coronavirus outbreak and stress in Iranians. *Int J Environ Res Publ Health*. 2020;17 (12):4441. - PMC - PubMed
4. Khubchandani J., Sharma S., Price J.H. COVID-19 pandemic and the burden of internet addiction in the United States. *Psychiatr Int*. 2021; 2(4):402–409.
5. Douglas M., Katikireddi S.V., Taulbut M., McKee M., McCartney G. Mitigating the wider health effects of covid-19 pandemic response. *Br Med J*. 2020;369:1557. - PMC - PubMed
6. Kandiah J., Khubchandani J., Saiki D. COVID-19 and Americans' perceptions of change in diet quality. *J Fam Consum Sci*. 2021;113(1):17–24.
7. Alah M.A., Abdeen S., Kehyayan V., Bougmiza I. Impact of staying at home measures during COVID-19 pandemic on the lifestyle of Qatar's population: perceived changes in diet, physical activity, and body weight. *Prevent Med Rep*. 2021;24:101545. - PMC - PubMed
8. Khubchandani J., Kandiah J., Saiki D. The COVID-19 pandemic, stress, and eating practices in the United States. *Eur J Investig Health Psychol Educ*. 2020;10(4):950–956. doi: 10.3390/ejihpe10040067. - DOI - PMC - PubMed
9. U.S. Government Accountability Office . 2021. Chronic health conditions: federal strategy needed to coordinate diet-related efforts. GAO-21-593. <https://www.gao.gov/assets/720/716546.pdf> Available at:
10. Flanagan E.W., Beyl R.A., Fearnbach S.N., Altazan A.D., Martin C.K., Redman L.M. The impact of COVID-19 stay-at-home orders on health behaviors in adults. *Obesity*. 2021;29(2):438–445. - PMC - PubMed
11. Mulugeta W., Desalegn H., Solomon S. Impact of the COVID-19 pandemic lockdown on weight status and factors associated with weight gain among adults in Massachusetts. *Clin Obes*. 2021 doi: 10.1111/cob.12453. - DOI - PMC - PubMed
12. Zeigler Z. COVID-19 Self-quarantine and weight gain risk factors in adults. *Curr Obes Rep*. 2021;10(3):423–433. -PMC - PubMed
13. https://cdnlinks.lww.com/permalink/jcrp/a/jcrp_2016_04_12_kaminsky_jcrp-d-16-00031r1_sdc1.pdf : international physical activity questionnaire.
14. Meyer J., McDowell C., Lansing J., Brower C., Smith L., et al. Changes in physical activity and sedentary behavior due to the COVID-19 outbreak and associations with mental health in 3,052 US adults. *Int J Environ Res Publ Health*. 2020;17(18):6469. - PMC - PubMed
15. Meyer J., Herring M., McDowell C., Lansing J., Brower C., Schuch F., Boolani A. Joint prevalence of physical activity and sitting time during COVID-19 among US adults in April 2020. *Prevent Med Rep*. 2020;20:101256. - PMC - PubMed
16. Duntton G.F., Wang S.D., Do B., Courtney J. Early effects of the COVID-19 pandemic on physical activity locations and behaviors in adults living in the United States. *Prevent Med Rep*. 2020;20:101241. - PMC - PubMed
17. Mason M.R., Hudgins J.H., Campbell M.S., Biddle M.J., Ickes, et al. Changes in physical activity during the initial stages of the COVID-19 pandemic. *J Sports Sci*. 2021:1–9. - PMC - PubMed
18. Brand R., Timme S., Nosrat S. When pandemic hits: exercise frequency and subjective well-being during COVID-19 pandemic. *Front Psychol*. 2020;11:2391. - PMC - PubMed
19. Price J.H., Dake J., Murnan J., Dimmig J., Akpanudo S. Power analysis in survey research: importance and use for health educators. *Am J Health Educ*. 2005;36(4):202–209.
20. Weissman J., Russell D., Mann J.J. Sociodemographic characteristics, financial worries and serious psychological distress in US adults. *Community Ment Health J*. 2020;56(4):606–613. - PubMed
21. Khubchandani J., Price J.H. Association of job insecurity with health risk factors and poorer health in American workers. *J Community Health*. 2017;42(2):242–251. - PubMed
22. Price J.H., Khubchandani J., Webb F.J. Poverty and health disparities: what can public health professionals do? *Health Promot Pract*. 2018;19(2):170–174. - PubMed
23. Tsuchiya K., Leung C.W., et al. Multiple financial stressors and serious psychological distress among adults in the USA. *Int J Publ Health*. 2020;65(3):335–344. - PMC - PubMed
24. Holingue C., Badillo-Goicoechea E., Riehm K.E., Veldhuis C.B., Thrul J., et al. Mental distress during the COVID-19 pandemic among US adults without a pre-existing mental health condition: findings from American trend panel survey. *Prev Med*. 2020;139:106231. - PMC - PubMed
25. Karmakar M., Lantz P.M., Tipimemi R. Association of social and demographic factors with COVID-19 incidence and death rates in the US. *JAMA Netw Open*. 2021;4(1) e2036462-e2036462. - PMC - PubMed
26. Dasgupta S., Bowen V.B., Leidner A., Fletcher K., Musial T., Rose C., Oster A.M. Association between social vulnerability and a county's risk for becoming a COVID-19 hotspot—United States, June 1–July 25, 2020. *MMWR (Morb Mortal Wkly Rep)* 2020;69(42):1535. - PMC - PubMed
27. Cummings J.R., Ackerman J.M., Wolfson J.A., et al. COVID-19 stress and eating and drinking behaviors in the United States during the early stages of the pandemic. *Appetite*. 2021;162:105163. - PMC - PubMed
28. King D.E., Xiang J., Pilkerton C.S. Multimorbidity trends in United States adults, 1988–2014. *J Am Board Fam Med*. 2018;31(4):503–513. - PMC - PubMed
29. Liu B., Du Y., Wu Y., Snetselaar L.G., Wallace R.B., Bao W. Trends in obesity and adiposity measures by race or ethnicity among adults in the United States 2011–18: population-based study. *Br Med J*. 2021;372 doi: 10.1136/bmj.n365. - DOI - PMC - PubMed
30. Du Y., Liu B., Sun Y., Snetselaar L.G., Wallace R.B., Bao W. Trends in adherence to the physical activity guidelines for Americans for aerobic activity and time spent on sedentary behavior among US adults, 2007 to 2016. *JAMA Netw Open*. 2019;2(7) e197597-e197597. - PMC - PubMed