TITLE:

HOW THE IMPACT OF COVID-19 HOME STAY ORDERS IS AFFECTING THE PHYSICAL, MENTAL AND FINANCIAL HEALTH AMONG OBESE PATIENTS?

RUNNING HEADS:

Stay-at-home orders for obese patients

ABSTRACT

BACKGROUND: Stay-at-home orders in response to the Coronavirus 2 (SARSCoV-2) have forced abrupt changes to daily routines.

The aim of our study is to evaluate the impact of the Stay-at-home orders on the waiting list for bariatric surgery in our Department of Medical and Surgical during covid-19 pandemic.

MATERIALS AND METHODS: In this observational retrospective study, from the 9th of March to 18th May 2020, the patients of our Department were invited to answer to a 14-questions multiple-choice questionnaire relative to weight changes, working activity, daily exercise, dietary behaviors, and conditions potentially impacting the nutritional choices

RESULTS: In total, 52 patients completed the questionnaire (86,7%). 58% of patients stated that the pandemic negatively affected their mood, 60% of patients confirmed that they changed their dietary behaviors during the stay-at-home period, as they consumed more junk food or spent longer time to cook.

71% of patients stated that the closure of the gyms influenced the worsening of their obesity condition and their mental well-being with an increase of a state of anxiety, so telematic support from the psychologist and nutritionist would have been helpful.

CONCLUSIONS: Results showed that the COVID-19 pandemic have had a significant impact on health behaviors, including quality of life, mental health physical activity, weight maintenance, and consumption of sweets in obese patients.

Key words: SARSCoV-2, obesity, sleeve gastrectomy, lock-down, bariatric surgery, pandemic.

INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) causes the coronavirus disease-19 (COVID-19) [1-4]. According to the WHO, this virus has been declared pandemic, and to date (7th August 2021), a total of 18,902,735 diagnosed cases and 709,511 deaths have been confirmed [5,6].

However, what is not known is how the COVID-19 social orders such as self-quarantine,lockdown and/or mandatory stay-at-home orders are impacting of the are impacting mental andfinancial health, in addition to physical health, in vulnerable populations, such as those withobesity. The stay-at-home orders forced the cancellation of elective surgeries, includingmetabolic and bariatric surgery (MBS), and nothing is known about how this has impacted.

Stay-at-home orders have curbed the spread of the virus, [7,8] yet the results of these unprecedentedgovernment mandates on other indices of health cannot be overlooked. Temporary closure to places of employment, restaurants, fitness facilities, and other public places forces abrupt changes to habitual dietary and physical activity patterns. Furthermore, social isolation has deleterious impacts on mental wellness [9]. Stress is associated with sleep disruption, consumption of highly palatable foods, and increased snacking, often resulting in weight gain [10]. Non-scientific reports have begun to illustrate the impacts of weight gain throughout the pandemic[11-13]. The COVID-19 pandemic therefore has the potential to also threaten non-communicable diseases such as obesity.

The aim of our study is to evaluate the impact of the Lockdown period on the mental and physical health of obese patients on the waiting list for bariatric surgeryin our Department of Medical and Surgical Sciences during covid-19 pandemic.

MATERIALS AND METHODS

An online survey format was administered to all obese patients on the waiting list for bariatric surgery in our Department of Medical and Surgical Sciences to obtain information about the COVID- 19 pandemic's impact on patients with obesity starting March 09, 2020 until May 18, 2020. Our Health System Institutional Review Board approved the study. Patients were asked to respond to 14questions about their experiences during lock-down period during the COVID-19 pandemic as it pertains to their health and lifestyle behaviors. Those that agreed to participate signed an online consent and authorized researchers to contact them for follow up information.

RESULTS

52 patients on the waiting list for bariatric surgery in our Department of Medical and Surgical Sciences completed the questionnaire (86,7%).

33% of patients are aged between 31 and 40 years, 25% between 21-30 and 41-50 years, 17% between 51-60 years.

58% of patients stated that the pandemic negatively affected their mood, 60% of patients confirmed that they changed their dietary behaviors during the stay-at-home period, as they consumed more junk food or spent longer time to cook. Half of the patients said they spent more time in the kitchen at the stove (Figure 1, 2, 3).

Figure 1

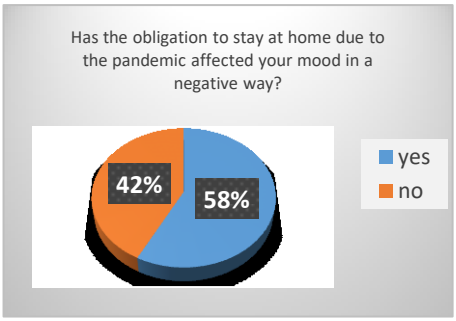


Figure 2

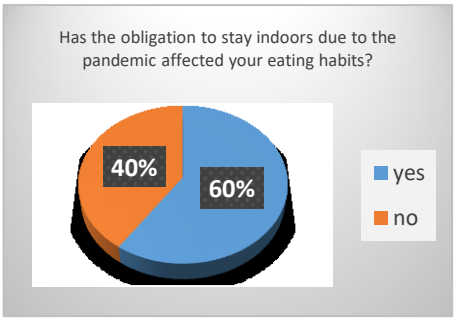
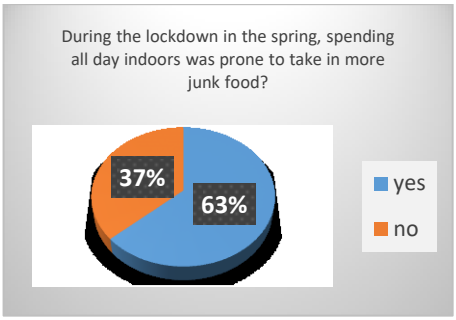


Figure 3



71% of patients stated that the closure of the gyms influenced the worsening of their obesity condition and their mental well-being with an increase of a state of anxiety, so telematic support from the psychologist and nutritionist would have been helpful (Figure 4, 5).

Figure 4

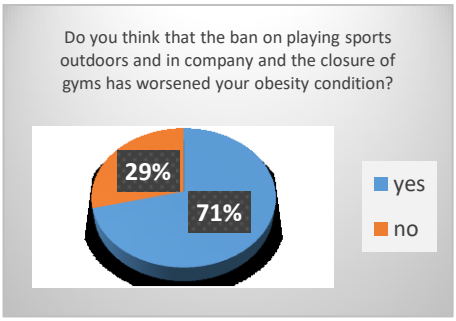


Figure 5

Only 6% of patients on the waiting list contracted the Sars-CoV 2 virus and none of those required hospitalization.

During the lock-down period, 100% of patients were still convinced that they wanted to undergo bariatric surgery.

DISCUSSION

Sars-CoV2 infection had a major impact on obese patients, as the requirement to stay home during the lockdown period had severe effects on health behaviors and well-being for our sample of patients with obesity[14-17]. The results here showed that COVID-19 is having a substantial impact on the health of patients with obesity regardless of infection status.

Most of the obese patients on the waiting list have experienced weight gain, due to a worsening of mood, change in eating habits with an increased intake of junk food.

Telemedicine has been demonstrated, according to two comprehensive review, to be non-inferior to in-person treatment programs, as measured by weight loss, with high rates of patients satisfaction [18-20]. While less has been published about the use of telemedicine to treat obesity in adults, it has been suggested as a novel and powerful way to deliver comprehensive patient centered care, and as a tool to increase access to bariatric surgery, where less than 1% of eligible patients undergo this procedure, and half of those who initiate a treatment program drop out.

These observations point to the critical need for implementation of preventive measure during periods of lockdown, particularly when their duration is uncertain[21-23]. Such measures might include implementation of telemedicine lifestyle programs, practitioners of medicine can offer supplemental guidance encouraging families to maintain healthy lifestyle choices, and facilities can be designed for implementing exercise programs that minimize viral transmission[24-26].

While our report sheds light on how pandemic-related restrictions affect health habits and weight, and what can be done about it, there are limitations that need to be considered. Our cross-sectional study is based on the survey results and, therefore, provided that the data are not

verifiable and should be treated as estimates. Self-reported responses can be influenced by various biases.

Taken together, these limitations suggest the need for further study, which is feasible, given that at the time of writing, the restrictions remain in place in many countries around the world.

CONCLUSIONS

Results showed that the COVID-19 pandemic have had a significant impact on health behaviors, including quality of life, mental health physical activity, weight maintenance, and consumption of sweets in obese patients. This highlights how the pandemic has changed health habits, and in particular, the disproportionate levels of anxiety and weight gain in those who are already obese. Authorities should consider that blocking bariatric surgery may have been negatively affected psycho-physical well-being of obese patients. Further larger studies of this topic are needed to confirm these preliminary results obtained in a limited number of patients.

REFERENCES

1. Nitulescu GM, Paunescu H, Moschos SA, et al. Comprehensive analysis of drugs to treat SARS-CoV-2 infection: mechanistic insights into current COVID-19 therapies. Int J Mol Med. 46(2): 467–488. 2020.
2. Sanders JM, Monogue ML, Jodlowski TZ, et al. Pharmacologic treatments for coronavirus disease 2019 (COVID-19): a review. JAMA. 2020;323(18):1824-1836
3. World Health Organization (WHO) Situation Report [Internet]. 2020 [cited 2020 Aug 08]. Available from: https://www.who.int/docs/ default-source/coronaviruse/situation-reports/20200807-covid-19- sitrep-200.pdf?sfvrsn=2799bc0f_2
4. Tartaglia N., Pavone G., Petruzzelli F., Di Lascia A., Vovola F., Maddalena F., Cianci P., Fersini A., Pacilli M., Ambrosi A. Robotic sleeve gastrectomy vs laparoscopic sleeve gastrectomy: our preliminary experience and a literature review. Clinical and Experimental Surgery. Petrovsky Journal. 2020; 8 (4): 7–15. DOI: https://doi.org/10.33029/2308- 1198-2020-8-4-7-15
5. Ramai D, Bhandari P, Facciorusso A, Barakat M, Pasisnichenko Y, Saghir S, Ambrosi A, Tartaglia N, Chandan S, Dhindsa B, Dhaliwal A, McDonough S, Adler DG. Real-World Experience of Intragastric Balloons for Obesity: Insights from the FDA Manufacturer and User Facility Device Experience (MAUDE) Database. ObesSurg. 2021 Jul;31(7):3360-3364. doi: 10.1007/s11695-021-05324-x. Epub 2021 Mar 9. PMID: 33687626.

6. Singhal R, Ludwig C, Rudge G, Gkoutos GV, Tahrani A, Mahawar K; GENEVA Collaborators, et al. 30-Day Morbidity and Mortality of Bariatric Surgery During the COVID-19 Pandemic: a Multinational Cohort Study of 7704 Patients from 42 Countries. Obes Surg. 2021 Oct;31(10):4272-4288. doi: 10.1007/s11695-021-05493-9. Epub 2021 Jul 30. PMID: 34328624; PMCID: PMC8323543.
7. Lyu, W. and G.L. Wehby, Comparison of Estimated Rates of Coronavirus Disease 2019 (COVID-19) in Border Counties in Iowa Without a Stay-at-Home Order and Border Counties in Illinois With a Stay-at-Home Order. JAMA Netw Open, 2020. 3(5): p. e2011102.
8. Hawkley, L.C. and J.P. Capitanio, Perceived social isolation, evolutionary fitness and health outcomes: a lifespan approach. Philos Trans R Soc Lond B Biol Sci, 2015. 370(1669).
9. Epel, E., et al., Stress may add bite to appetite in women: a laboratory study of stress-induced cortisol and eating behavior. Psychoneuroendocrinology, 2001. 26(1): p. 37-49.
10. Cohen, G.M.; Irby, M.B.; Boles, K.; Jordan, C.; Skelton, J.A. Telemedicine and Pediatric Obesity Treatment: Review of the literature and lessons learned. *Clin. Obes.* **2012**, *2*, 103–111. [CrossRef] [PubMed]
11. DeSilva, S.; Vaidya, S.S. The Application of Telemedicine to Pediatric Obesity: Lessons from the Past Decade. *Telemed. E Health***2021**, *27*, 159–166. [CrossRef]
12. Almandoz JP, Xie L, Schellinger JN, Mathew MS, Gazda C, Ofori A, Kukreja S, Messiah SE. Impact of COVID-19 stay-at-home orders on weight-related behaviours among patients with obesity. Clin Obes. 2020 Oct;10(5):e12386. doi: 10.1111/cob.12386. Epub 2020 Jul 12. PMID: 32515555; PMCID: PMC7300461.
13. Tartaglia N, Pavone G, Lizzi V, Vovola F, Tricarico F, Pacilli M, Ambrosi A. How emergency surgery has changed during the COVID-19 pandemic: A cohort study. Ann Med Surg (Lond).

2020 Dec 5;60:686-689. doi: 10.1016/j.amsu.2020.12.001. PMID: 33312562; PMCID: PMC7719013.

14. Ramai D, Singh J, Lester J, Khan SR, Chandan S, Tartaglia N, Ambrosi A, Serviddio G, Facciorusso A. Systematic review with meta-analysis: bariatric surgery reduces the incidence of hepatocellular carcinoma. AlimentPharmacolTher. 2021 May;53(9):977-984. doi: 10.1111/apt.16335. Epub 2021 Mar 15. PMID: 33721336
15. Polito, Rita, Scarinci, Alessia, Ambrosi, Antonio, Tartaglia, Nicola, Tafuri, Domenico, Monda, Marcellino, Messina, Antonietta, Cimmino, Fabiano, Catapano, Angela, Sessa, Francesco, Di Maio, Girolamo, Francavilla, Vincenzo Cristian, Messina, Giovanni, Monda, Vincenzo. The beneficial effects of physical activity and weight loss on human colorectal carcinoma cell lines. Journal of Human Sport and Exercise. 2020, 15(Proc2): S252-S260. Doi:10.14198/jhse.2020.15.Proc2.16
16. Flanagan EW, Beyl RA, Fearnbach SN, Altazan AD, Martin CK, Redman LM. The Impact of COVID-19 Stay-At-Home Orders on Health Behaviors in Adults. Obesity (Silver Spring). 2021 Feb;29(2):438-445. doi: 10.1002/oby.23066. Epub 2020 Dec 18. PMID: 33043562; PMCID: PMC7675243.
17. Nakeshbandi M, Maini R, Daniel P, Rosengarten S, Parmar P, Wilson C, Kim JM, Oommen A, Mecklenburg M, Salvani J, Joseph MA, Breitman I. The impact of obesity on COVID-19 complications: a retrospective cohort study. Int J Obes (Lond). 2020 Sep;44(9):1832-1837. doi: 10.1038/s41366-020-0648-x. Epub 2020 Jul 25. PMID: 32712623; PMCID: PMC7382318.

18. Butler MJ, Barrientos RM. The impact of nutrition on COVID-19 susceptibility and long-term consequences. Brain Behav Immun. 2020 Jul;87:53-54. doi: 10.1016/j.bbi.2020.04.040. Epub 2020 Apr 18. PMID: 32311498; PMCID: PMC7165103.
19. Pellegrini M, Ponzo V, Rosato R, Scumaci E, Goitre I, Benso A, Belcastro S, Crespi C, De Michieli F, Ghigo E, Broglio F, Bo S. Changes in Weight and Nutritional Habits in Adults with Obesity during the "Lockdown" Period Caused by the COVID-19 Virus Emergency. Nutrients. 2020 Jul 7;12(7):2016. doi: 10.3390/nu12072016. PMID: 32645970; PMCID: PMC7400808.
20. Pietrobelli A, Pecoraro L, Ferruzzi A, Heo M, Faith M, Zoller T, Antoniazzi F, Piacentini G, Fearnbach SN, Heymsfield SB. Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study. Obesity (Silver Spring). 2020 Aug;28(8):1382-1385. doi: 10.1002/oby.22861. Epub 2020 Jul 10. PMID: 32352652; PMCID: PMC7267384.
21. Sockalingam S, Leung SE, Cassin SE. The Impact of Coronavirus Disease 2019 on Bariatric Surgery: Redefining Psychosocial Care. Obesity (Silver Spring). 2020 Jun;28(6):1010-1012. doi: 10.1002/oby.22836. PMID: 32294297; PMCID: PMC7262315.
22. Zupo R, Castellana F, Sardone R, Sila A, Giagulli VA, Triggiani V, Cincione RI, Giannelli G, De Pergola G. Preliminary Trajectories in Dietary Behaviors during the COVID-19 Pandemic: A Public Health Call to Action to Face Obesity. Int J Environ Res Public Health. 2020 Sep 27;17(19):7073. doi: 10.3390/ijerph17197073. PMID: 32992623; PMCID: PMC7579065.
23. Brown A, Flint SW, Kalea AZ, O'Kane M, Williams S, Batterham RL. Negative impact of the first COVID-19 lockdown upon health-related behaviours and psychological wellbeing in people living with severe and complex obesity in the UK. EClinicalMedicine. 2021

Apr;34:100796. doi: 10.1016/j.eclinm.2021.100796. Epub 2021 Mar 18. PMID: 33754138; PMCID: PMC7970262.

24. Minsky NC, Pachter D, Zacay G, Chishlevitz N, Ben-Hamo M, Weiner D, Segal-Lieberman G. Managing Obesity in Lockdown: Survey of Health Behaviors and Telemedicine. Nutrients. 2021 Apr 19;13(4):1359. doi: 10.3390/nu13041359. PMID: 33921602; PMCID: PMC8073707.
25. G. Di Maio, V. Monda, A. Messina, et al. PHYSICAL ACTIVITY AND MODIFICATION OF LIFESTYLE INDUCE BENEFITS ON THE HEALTH STATUS. Acta Medica Mediterranea, 2020, 36: 1913.
26. Singhal R, Tahrani AA, Ludwig C, Mahawar K; GENEVA collaborators. Global 30-day outcomes after bariatric surgery during the COVID-19 pandemic (GENEVA): an international cohort study. Lancet Diabetes Endocrinol. 2021 Jan;9(1):7-9. doi: 10.1016/S2213-8587(20)30375-2. Epub 2020 Nov 27. PMID: 33253631; PMCID: PMC7832244.