

The Intersection Between Coronavirus Disease of 2019 (COVID-19) and Obesity

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As we all know, everyone around the world is impacted by the novel and unprecedented Coronavirus Disease of 2019 (COVID-19) which originated in Wuhan (China) in December 2019. The overview of COVID-19 provided by the World Health Organization (WHO) is “an infectious disease caused by a newly discovered coronavirus; most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment; older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness”. (53) Dr. Qanta Ahmed, Associate Professor of Medicine at State University of New York (SUNY), writes “the 1957 Asian flu pandemic and the 1968 Hong Kong flu pandemic showed that obese people were more often infected and more likely to succumb to the viral infection; more recently, obesity was linked to hospitalization and death rates in the 2009 swine flu pandemic; Americans have long struggled with weight as a national and individual issue; but in a time of pandemic, America’s weight issue has devastating implications”. (1) There are similarities between

COVID-19 and obesity which I will discuss in this article and I will also include direct quotes from well-known experts, leaders, and researchers.

The Centers for Disease Control and Prevention (CDC) identifies people living with obesity as a high risk group. (8) According to the CDC, “people of any age with severe obesity — a body mass index of 40 or more — are considered to be at high risk of serious illness from COVID-19”. (50) Dr. Jennifer Lighter, an Infectious Disease specialist and a Hospital epidemiologist explains “I suspect this is America’s COVID Achilles heel and may cause higher morbidity and mortality rates than other regions; in individuals less than 60 years old, they were two to three times more likely to be admitted to the hospital or ICU, and for the morbidly obese, fatality is three times the rate than for non-obese COVID-infected individuals; people with obesity have less pulmonary reserve – higher rates of obstructive sleep apnea, asthma, restrictive lung disease – which makes them at risk of severe pulmonary manifestations with a respiratory virus; they are on the spectrum of progressing to cardiovascular disease, diabetes, and hyperlipidemia; and there are ACE2 receptors on adipose cells, so they have higher viral replication causing more inflammation”. (32) Dr. David Samadi, director of Urologic Oncology at St. Francis Hospital in NY, adds “in addition to obesity, if you’re a diabetic, that makes the situation even much worse because the belly fat becomes a reservoir for these viruses; that’s one of the reasons why these patients are really having a lot of volume of these viruses”. (43) Dr. David Kass, professor of Cardiology at the Johns Hopkins University School of Medicine explains

“I think one of the things we found and this wasn't being highlighted as a risk factor prior to the arrival of COVID to the United States were people who were morbidly obese; internationally if you look at the levels of obesity and we define this by a body mass index of 30 or more, the U.S. is averaging around 40%, China is about 6%, many of the countries in Europe are somewhere in the 20% range; the whole planet is becoming increasingly obese but the United States is definitely one of the heavier countries; and so it is then not so surprising that when the virus landed on our shores, populations with this as a significant co-factor started appearing more in our intensive care units and hospitals” (52) The World Obesity Federation states “given the extremely high rates of obesity around the globe we expect that a high percentage of the population who will contract coronavirus will also have a BMI over 25”. (54) Dr. Suneel Dhand, an Internal Medicine physician and assistant professor of Clinical Medicine at Tufts University, adds “it’s no secret why we have soaring rates of being overweight or obese; it’s not because over the last fifty years our internal metabolism or internal biology is just suddenly changed; it’s because we as a society eat way too much junk food and we’re sedentary”. (12)

As we know, obesity rates continue to be on the rise and affect people of all ages worldwide causing its current crisis and pandemic as well as Dr. Travis Stork’s notion of “the weight gain emergency”. (48) Similarly, the outbreak of COVID-19 has led to its current pandemic and public health emergency. The novel COVID-19 is very infectious and many researchers are studying its method of transmission; how

long it lasts on surfaces (35); as well as the effectiveness of physical distance, face masks, and eye protection in preventing its spread. (9) Unfortunately, the coronavirus is spreading quickly worldwide and this rate of spread, in addition to the type of inflammation, may be of the few differences between obesity and the novel coronavirus. When asked whether obesity is infectious, Dr. Michael Greger, founder and Chief Scientific Officer at NutritionFacts.org, explains “given the role our gut bacteria can play in affecting our weight, having family and friends who are obese may not just be socially contagious, but actually contagious, rather truly infectious, like a cold”. (21) Dr. Matthew Hutter, president of the American Society for Metabolic and Bariatric Surgery (ASMBS) and director of the Weight Center at Massachusetts General Hospital, emphasizes “we in the U.S. have not always identified obesity as a disease, and some people think it’s a lifestyle choice; but it’s not; it makes people sick, and we’re realizing that now”. (40) Jane Brody, the Personal Health columnist for The New York Times, writes “while most people focus, as they should, on social distancing, face coverings, hand washing and even self-isolation to protect against the deadly coronavirus now ravaging the country, too few are paying serious attention to two other factors critically important to the risk of developing a Covid-19 infection and its potential severity; those factors are immunity, which should be boosted, and inflammation, which should be suppressed”. (4) According to researchers, obesity is a big risk factor in COVID-19 hospitalizations because people with obesity who get infected are in need of critical

care. Dr. Dhand emphasizes “this is being observed across frontlines in many different countries”. (12) “In a study of over 4,000 patients in New York City, scientists found that after age, obesity was one of the most significant factors associated with poorer health outcomes of coronavirus”. (36) A cohort study done by Lille CHRU teams in France showed that 47% of patients infected with the coronavirus and admitted to intensive care have obesity. The researchers also noted that regardless of the patients’ age or having a diagnosis of hypertension or diabetes, a BMI of greater than 35 significantly increases their risk of requiring invasive mechanical ventilation. They concluded “obesity is a risk factor for SARS-CoV-2 severity requiring increased attention to preventive measures in susceptible individuals”. (46) For this reason, the Ministry of Solidarity and Health in France through their health care system is offering teleconsultations and remote monitoring for people living with obesity. They also created a resource, entitled the “Management sheet for people experiencing obesity during the Covid-19 epidemic”. (33) Data from the Intensive Care National Audit and Research Centre (ICNARC) suggests that being overweight is a big risk factor that affects one’s ability to fight the coronavirus. “The audit suggested that men are at much higher risk from the virus – seven in ten of all ICU patients were male, while 30% of men in critical care were under 60, compared to just 15% of women; excess weight also appears to be a significant risk factor; over 70% of patients were overweight, obese or clinically obese on the body mass index scale”. (6) Dr. Jaime Ponce, past-president of the

American Society for Metabolic and Bariatric Surgery (ASMBS), explains “providers and governments are seeing similarities between COVID-19 and previous influenza outbreaks; the UK government has asked people with a body mass index (BMI) greater than 40 to practice more stringent forms of social distancing to prevent exposure after a report emerged that 63% of COVID-19 patients in the UK requiring ICU-level care are overweight; in Italy, GIVITI—a group of leading intensive care physicians—convened recently to discuss their experiences treating COVID-19 patients; they identified obesity as the most prevalent pre-existing condition for patients with COVID-19 who require ICU-level care”. (38)

The highest risk for COVID-19 are people with chronic conditions caused by obesity. (37) A population-characteristic based metric report summarizing data from 14 states (California, Colorado, Connecticut, Georgia, Iowa, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, Utah) during March 2020 released from the CDC stated that “the hospitalization rate among patients identified through COVID-NET during this 4-week period was 4.6 per 100,000 population; rates were highest (13.8) among adults aged ≥ 65 years; among 178 (12%) adult patients with data on underlying conditions as of March 30, 2020, 89.3% had one or more underlying conditions; the most common were hypertension (49.7%), obesity (48.3%), chronic lung disease (34.6%), diabetes mellitus (28.3%), and cardiovascular disease (27.8%); among patients aged 18–49 years, obesity was the most prevalent underlying condition, followed by chronic lung disease (primarily

asthma) and diabetes mellitus; among patients aged 50–64 years, obesity was most prevalent, followed by hypertension and diabetes mellitus; and among those aged ≥ 65 years, hypertension was most prevalent, followed by cardiovascular disease and diabetes mellitus; these findings suggest that older adults have elevated rates of COVID-19–associated hospitalization and the majority of persons hospitalized with COVID-19 have underlying medical conditions”. (17, 18) Also, in a study published in the Journal of the American Medical Association (JAMA) on April 22nd, researchers studied data from electronic health records of 5,700 people with COVID-19 admitted to 12 hospitals between March 1st and April 4th 2020 within the Northwell Health system in the New York City area, which is the epicenter of the outbreak in the US. The researchers noted that the patients had at least one other disease in addition to COVID-19. The most common were hypertension (affecting 56.6% of all COVID-19 patients), obesity (affecting 41.7% of patients with BMI data), and diabetes (affecting 33.8% of all patients). (51) In addition to the COVID-19 hospitalization, treatment for those with obesity can be challenging. Dr. John Morton, vice-chair for Quality and Division Chief for Bariatric and Minimally Invasive Surgery at the Yale School of Medicine, explains “the ability to place a breathing tube can be a challenge; and we always advocate the most experienced person place that breathing tube”. (31) Dr. Ania Jastreboff, the vice chair of The Obesity Society Clinical Committee and an assistant professor at Yale University School of Medicine, adds “they may need different hospital beds; they need different settings on ventilators; people with

obesity may be more hesitant to come into the hospital because they have faced the lifelong stigma of having obesity; these things all affect care; the measures we take helping people so they don't require mechanical ventilation, like turning them prone, may not work as well in individuals with obesity both because of mechanics and difference in lung function at baseline". (45) Dr. Rekha Kumar, an endocrinologist and metabolism specialist at Weill Cornell Medical College in NY warns that if patients with obesity present with COVID-19 symptoms at the hospital, then they may need to be given oxygen early on or they may need to have a long hospitalization. (15)

COVID-19 and obesity involve inflammation and both affect breathing. Ted Kyle, obesity expert and founder of ConscienHealth, writes "when these two diseases come together, understanding the role of inflammation might turn out to be life-saving". (26) The inflammation seen in COVID-19 is acute; however, in obesity the inflammation is chronic. Acute respiratory distress syndrome is seen in severe cases of coronavirus whereas people living with morbid obesity experience hypoventilation syndrome and sleep apnea. Dr. Morton explains, "the virus itself apparently uses a door to get inside of our lungs; and that door is called the ACE-2 receptor; and believe it or not, that is made in fat cells, adipocytes". (31) In addition, Dr. Samadi describes "we're finding out that when the virus gets into the system, it has to lock in; it's almost like a key and a hole; has to hook to the cells in order to enter; the spike on the virus has to connect to a receptor and lot of obese patients

have too many of these receptors called ACE-2 receptors and that's one of the major risk factors; one of the other things I also found out is these kind of fat cells produce something that can cause scarring of the lungs - myofibroblasts - and you get pulmonary fibrosis; when your lungs are scarred and they cannot expand, there's no oxygen; and, that's why they end up on ventilators; so obesity seems to be one of the active players". (43) Dr. Sue Pedersen, a specialist in Endocrinology and Metabolism, further explains "severe COVID-19 infection is characterized by pneumonia, which can lead to trouble breathing, and in the most severe cases, can lead to acute respiratory distress syndrome (ARDS), where a powerful inflammatory response in the lungs makes the lungs less able to bring oxygen into our bloodstream; the inflammatory response to COVID-19 can also result in the compromise of other organ systems, including the heart, kidneys, and other vital organs; COVID-19 pneumonia can also lead to coinfection with secondary bacterial pneumonia; we also know that there is a state of chronic low grade inflammation in obesity, and it has been hypothesized that this inflammatory state may increase the risk of a more severe inflammatory reaction in the lungs when infection hits". (37) The chronic inflammation seen in obesity "is reflected in increased circulating levels of pro-inflammatory proteins, and it occurs not only in adults but also in adolescents and children; the chronic inflammatory response has its origin in the links existing between the adipose tissue and the immune system; there is a positive feedback loop between local inflammation in adipose tissue and altered immune response in

obesity, both contributing to the development of related metabolic complications”.

(11) Also, in obesity, the extra weight against the chest makes it harder for deep breathing. (3) Dr. Morton describes “there’s something called hypoventilation syndrome and that is when you have extra tissue around your chest; it’s harder to take deep breaths”. (31) Dr. Jastreboff adds “if an individual is not ventilating their body adequately at baseline, and you add on top of this COVID-19 infection with acute respiratory distress syndrome, individuals with obesity are already at a physiologic disadvantage in terms of their respiratory status as they work to fight the virus off”. (45) Dr. Steven Heymsfield, professor at Pennington Biomedical Research Center, warns “people with obesity may not be symptomatic from their lung disease compared with someone who is not obese; a person could have blood oxygen levels drop to an almost fatal level and not be aware of it until they drop dead; there have been cases where this has happened, and people do not seem to recognize that”. (45)

The new coronavirus and obesity lead to complications and sequelae as they both damage other organs. They also affect children, as young as infants, as well as seniors. Some recover on their own when they are in quarantine at home while others need to be hospitalized for closer monitoring and observation. Dr. Heymsfield states “people with obesity have a chronic inflammatory state; that sets the stage for this likely susceptibility to COVID-19 complications”. (45) Dr. Brunilda Nazario, associate medical director at WebMD adds “obesity causes inflammation in the body; having an already stressed or taxed immune system, because of the obese

state, can reduce your survival if you develop an infection and attempt to mount an immune response”. (32) Unfortunately some of those confirmed COVID-19 cases in children and adults do not recover and die. We hear of this in the news and the daily statistics provided on trusted websites. Joshua Bell, an epidemiologist from the University of Bristol in the UK, explains “given the 'growing' obesity epidemic in the US, this is definitely an association worth highlighting as obesity may increase both the severity of COVID-19 and potentially mortality”. (36) Dr. Samadi says “there has been a lot of discussion about whether cardiac conditions, high blood pressure, age, and race have been a factor; but, now we are finding out from a lot of studies that actually obesity is one of the top reasons why patients with COVID-19 are dying”.

(43) Obesity affects people of all ages and leads to many other chronic health conditions that come with serious complications, all of which could be both preventable and reversible. It is a “dangerous ripple effect”. (32) In his new book entitled “*How Not to Diet*”, Dr. Greger writes “researchers found ‘convincing’ or ‘probable’ evidence linking obesity to twenty different disorders ---- a veritable alphabet soup of potential health concerns; A is for Arthritis; B is for Back Pain and Blood Pressure; C is for Cancer; D is for Diabetes; E is for Encephalopathy; F is for Fertility; G is for Gallstones and GERD; H is for Heart Disease; I is for Immunity; J is for Jaundice; K is for Kidneys;...and L, M, N, O, P through Z; L could be for diminished lung function; M is for Metabolic Syndrome; and there’s even X for Xiphodynia”. (20) Dr. Dhand emphasizes, “being overweight or obese places

tremendous stress on certain organs”; this is seen by looking at CT scans (abdominal or pelvic) of a person living with obesity where there is an increased amount of fatty tissue that accumulates around internal organs. (12) In addition, Dr. Shebani Dalai, founder and medical director of Silicon Valley Metabolic Psychiatry, explains “while metabolic disease certainly affects immunity and organ systems such as the heart, liver, kidneys, and the pancreas, it also negatively affects an overlooked organ: the brain; mental illnesses such as depression, bipolar illness, and psychosis are strongly associated with increased inflammation, and individuals with these conditions suffer from even higher rates of metabolic disease than the general population”. (10)

Obesity is a risk factor for more severe cases of the coronavirus and it, too, if not treated, can shorten one’s lifespan and lead to premature death. “Researchers suspect that inflammation throughout the body linked to obesity could be a powerful factor in the severity of COVID-19”. (41) Dr. Mark Hyman, head of strategy and innovation at the Cleveland Clinic Center for Functional Medicine, and Dr. Dariush Mozaffarian, a cardiologist and dean of the Friedman School of Nutrition Science & Policy at Tufts University, write “doctors and scientists are discovering two common characteristics among many of those who are losing their battle with COVID-19 — they are overweight or obese and suffer from a chronic disease; ninety four percent of deaths from COVID-19 are in those with an underlying age-related chronic disease, mostly caused by excess body fat”. (22) Michael Osterholm, an expert in infectious disease, emphasizes “one of the risk factors for acute respiratory distress

syndrome, or ARDS -- the most severe of the outcomes of COVID-19 infection -- is obesity; in parts of the world, including the US, where obesity is an epidemic problem, it's likely we may see a different case fatality rate than we're seeing in China; that is, US fatalities may be less gender-specific and the rate of fatalities could be even higher than it is in China due to higher obesity rates among people 45 years or older". (2) Furthermore, "some 97% of those killed by COVID-19 in Louisiana had a pre-existing condition, according to the state health department; diabetes was seen in 40% of the deaths, obesity in 25%, chronic kidney disease in 23%, and cardiac problems in 21%; it is clear that obesity-related conditions are playing a role in the deaths; that could be a warning sign for the United States at large, where chronic obesity is more common than in other developed countries". (5)

The COVID-19 period may force people to make unhealthy food choices which contributes to the current obesity pandemic. In preparation for the coronavirus pandemic, there was a period of "panic buying" as many people were worried that items would run out from grocery stores. For this reason, fresh produce and a variety of food items were limited for many people. As a result, people had to buy shelf stable food like pasta and rice as well as food with preservatives to keep it fresher for longer periods of time. This can contribute to unhealthy food choices and not managing obesity during the coronavirus crisis. In his blog article, Dr. Hyman describes ways to support one's immune system during this COVID-19 period and reminds people about the philosophy of Hippocrates, namely "Let food be your

medicine”. The ideas that Dr. Hyman mentions coincide with those for weight management and thus can help control the current obesity pandemic. He writes “eat a whole foods, nutrient-dense diet; cut out sugar and refined starches; ensure adequate protein intake; add garlic, onions, ginger, and lots of spices (oregano, turmeric, rosemary) to your meals; eat multiple servings of colorful fruits and vegetables; eat fermented foods to support your microbiome and immunity; alkalize your body; drink plenty of fluids, especially warmer fluids; get sufficient sleep; get regular exercise; practice meditation and yoga; and start a garden”. (14) In addition, Hank Cardello, director of Obesity Solutions Initiative and contributor on Food Policy at Forbes, writes “food makers, food retailers and restaurant chains need to step up quickly, and in three ways, namely own the health of your consumers and customers, stop treating healthier products like second-class citizens, and change your mindset from operational to long term; it’s time for the industry to finally step up and own its customers’ health problems: poor diets that have led to greater obesity, illness and death; their future (and yours) will depend on it, long after the coronavirus crisis is over”. (7)

The rapid and precipitous rise in the spread of the coronavirus making it a “state of emergency” led to the most effective measure of “social distancing” and later to “stay at home orders” in March 2020. Sean Mulroney, founder of The Obesity Revolution, points out another similarity between the coronavirus and obesity, namely social-distancing and “the hope”. In reference to living with obesity,

he explains “we are isolated and are constantly in a social-distancing mindset because not many people want to get close to us; the coronavirus has an anticipated conclusion; and, we don’t know exactly when it’s going to be; but we know it won’t last forever and that gives everyone hope that they will be able to be free again one day very soon; but obesity doesn’t offer that kind of hope unless you do something about your obesity or try to lose the weight or do something and put a healthy lifestyle in action”. (34) During COVID-19 pandemic, there was a push for work from home as well as distance learning for students, which led to more hours of sitting. This can lead to an increase in obesity rates in adults as well as children because they may engage in less physical activity than usual. Dr. Wesley Smith, chief of Science and Innovation at HealthSnap reminds people about the benefits of exercise as a means to protection against COVID-19. He explains “the ability to increase biological defenses against free radicals (antioxidants) would seem to confer significant protection against COVID-19 mortality; exercise produces an enzyme that can defend the lungs from inflammation-induced oxidative stress, which may be the major cause of COVID-19 mortality”. (47) Dr. Ahmed emphasizes “as sedentary activity impairs immunity, during this pandemic and far beyond, health programs to help Americans get on the move can not only improve an individual’s health, but protect against successive waves of coronavirus infection; now more than ever, getting into shape has become a matter of urgent national public health security”. (1) Dr. Vincent Nelson, VP of medical affairs at Blue Cross Blue Shield Association

(BCBSA) reassures the public, “with the current stay-at-home orders, Blue Cross and Blue Shield companies are working within their local communities to find new and creative ways to encourage at-home regular exercise activities needed to maintain and improve the mental and physical health of their members – and of all Americans”. (25)

The coronavirus era is a time of uncertainty and it makes people worried, anxious, depressed, stressed, and even lose hours of sleep. Cardello writes “the coronavirus outbreak is likely to boost unhealthy eating habits in the near term; even typically healthy consumers have been stress-eating the wrong things; nobody is hoarding broccoli right now; the pandemic has taught us that much needs to be done to make healthy foods more flavorful and convenient, especially as consumers are clamoring for these items”. (7) Simply watching the news and hearing the updates of COVID-19 continues to affect one’s emotional and mental state. All of this leads to the release of the stress hormone, cortisol, which raises one’s blood sugar and blood pressure. In addition, it increases the risk of obesity because of emotional eating and overeating. Also, less hours of sleep affect the release of ghrelin (the hunger hormone) and leptin (the satiety hormone), both of which are involved in weight maintenance. Because the production of leptin occurs at night, people who experience “short sleep”, that is less than seven hours every night, have large appetites and are at risk for overeating. (49) The level of ghrelin increases before meals and decreases after meals; and, it is one of the reasons for snacking and

overeating. In addition, ghrelin is released in times of stress, which explains the cause of emotional eating and potential weight gain. Furthermore, leptin resistance and increased ghrelin lead to obesity. (19) In other words, the tsunami of coronavirus cases can lead to more weight gain and worsening of obesity for many people due to the anxiety, stress, and losing hours of sleep. This gives rise to the notion of “Quarantine 15”, that is “what you eat during self-quarantine and sheltering in place during the COVID-19 pandemic can help you cope better or make your stress worse; some are calling the 15-pound weight gain during self-isolation ‘quarantine 15’ ”. (42) Nine ways to prevent “Quarantine 15” include: (1) create an eating pattern where you have a meal or snack about every three hours; this can help prevent mindless snacking, (2) keep a food journal – tracking the time of day, the food and the amount – to hold yourself accountable, (3) limit snacking of highly processed foods such as chips and cookies; if you don’t buy it, you can’t eat it, (4) portion out your snacks; place cheese and crackers, for example, in individual bags to prevent overeating, (5) drink at least 64 ounces of water each day to stay hydrated and keep your body’s systems functioning normally; consider adding things like mint, cucumber or ginger; avoid sugary beverages, (6) practice mindful eating; ask yourself, ‘Why am I reaching for this?’ or ‘Has it been three hours since my last meal or snack?’, (7) stay active; lay out a yoga mat; walk up and down the stairs; stream a workout online or dust off your old workout tapes, (8) call or FaceTime a friend or family member to talk about your emotions; getting your feelings out can help curb

emotional eating, and (9) buy food that comes from the earth – fresh fruit, vegetables, nuts, seeds, whole grains and lean protein”. (13) Dr. David Katz, founder of True Health Initiative and CEO of Diet ID, emphasizes, “the acute threat of coronavirus highlights some chronic threats to our health that may suddenly matter more, along with an urgent timeline; we can't change our chronological age, but even short-term efforts to improve health and weight while sheltering in place may enhance our ability to get through this safely”. (41)

Thus, obesity is linked to a heightened risk for COVID-19 disease severity and this continues to be a rising concern. From all the studies mentioned, we can see that the coronavirus is disproportionately affecting those living with obesity. Dr. David Nazarian, medical director at My Concierge MD, states “so, in a nutshell, a person who is obese can check off five of the risk factors that the CDC has placed as risks for more severe COVID-19 infections”. (32) Researchers from Johns Hopkins (School of Medicine and Bloomberg School of Public Health) write “we conclude that in populations with a high prevalence of obesity, COVID-19 will affect younger populations more than previously reported; public messaging to younger adults, reducing the threshold for virus testing in obese individuals, and maintaining greater vigilance for this at-risk population should reduce the prevalence of severe COVID-19 disease”. (23) COVID-19 and obesity are both serious diseases that have caused pandemics. For this reason, they both need to be addressed in a similar manner and promptly. Nicholas Feenie, digital marketing executive for The College

of Contemporary Health, writes “when we add all this evidence up, it is clear that people with obesity are very vulnerable, not only to the current coronavirus, but also to influenza viruses and future viral pandemics; rising global obesity rates could be contributing to the spread of infection and are certainly putting added strain on already-stretched health services, highlighting the urgent need to tackle obesity and reverse this trend – something which governments and health systems around the world have so far failed to do”. (16) Dr. Leora Horwitz, director of the Center for Healthcare Innovation and Delivery Science at NYU Langone Medical Center, states “obesity is more important for hospitalization than whether you have high blood pressure or diabetes, though these often go together, and it’s more important than coronary disease or cancer or kidney disease, or even pulmonary disease; it means that as clinicians, we should be thinking a little more carefully about those patients with obesity when they come in – we should worry about them a little bit more”.

(40) In addition, Kyle writes “if we want to take obesity seriously, we need to look at it like any other health condition; we need to provide care that actually helps with the problem – behavioral therapy, pharmacotherapy, and surgery; COVID-19 does indeed make it clear that untreated obesity is a serious health problem; when we actually start taking it seriously, we will find ways to provide better access to real obesity care”. (28) Dr. Nazario states “the stigma that people with obesity face is unjustified, this is a medical condition and should be viewed and addressed as one, especially within the healthcare system; because the rates of obesity continue to

climb in the U.S., and we don't know when the pandemic will end, we need to address this simultaneously". (32) Dr. Jastreboff emphasizes "obesity should not be dismissed; if we treat obesity in the same way we treat other chronic diseases, we can decrease risk for our patients, whether it is for COVID-19 or any other disease; this crisis brings to the forefront that it is absolutely critical to care for patients with obesity and to treat obesity as a disease in and of itself". (45)

The similarities between COVID-19 and obesity can be a reminder for everyone to adopt a healthy lifestyle to boost the immune system. Dr. Hyman and Dr. Mozaffarian emphasize "when COVID-19 lands in a pre-inflamed person, it is like putting gasoline on a fire; the inflammatory explosion, known as the "cytokine storm" (when the body attacks its own tissues and cells), is a major driver of the need for hospitalization, admission to ICUs, ventilator use, and death; it is not the virus itself that kills us, but the overwhelming inflammation that results from an immune system already on high alert". (22) In other words, it is not about the virus, but rather it is about the host immunity or vulnerability. Given that COVID-19 is linked to a greater risk of life-threatening infection in people with obesity, Dr. Samadi warns "a lot people who are obese, they really need to be careful about going out and watch what they're doing". (43) Amidst the COVID-19 pandemic, it has become obvious that an unhealthy lifestyle and weight are causes for greater risk of a complicated infection. As a health professional who is passionate about creating a healthier society and one who has the best interests of my clients' well-being at

heart, my role is to share the scientific evidence, help them focus on their metabolic health and improve their health habits, as well as enable them to conceptualize “lifestyle change” as the new medicine. Just as it is important to monitor and manage blood pressure, blood sugar, triglycerides, and cholesterol levels, it is also crucial to add body fat mass, lean muscle mass, BMI, and weight to the list. As I’ve seen with clients, by managing weight people can improve blood test results and no longer have “borderline” diagnoses, take less medication or none at all, and can prevent chronic health conditions or elective surgeries in the future. Obesity is not a cosmetic issue but a chronic, multifactorial, and multisystemic disease.

Unfortunately, there are many weight-loss myths that people believe. However, the truth is there is science behind obesity and weight management and it is not about fad diets and “quick-fixes”. For many people, they may need guidance and coaching from experts in the field to manage their metabolic health. Kyle writes “seven years have passed since the AMA resolved that obesity is a complex chronic disease that requires good medical management; slowly in some ways, more quickly in others, we are seeing changes in primary care for obesity; most people with significant obesity who try to lose weight discover that the physiology of obesity is quite powerful; for lasting improvements in obesity, real medical care is necessary; often, bariatric surgery turns out to be the most effective option”. (27, 29) Just as there is a coronavirus road to recovery, for those living with obesity there is a road to healthy living. It doesn’t happen overnight; it’s a continuous and life-long process that

requires perseverance and patience to help maintain the weight loss. Dr. Dhand states “we should declare keeping our bodies healthy an essential job; what will really help in the coronavirus fight over the long-term is....focus on your health habits.....and yes, get to a healthy weight because over the long-term and this fight is going to last a long long time, addressing the obesity epidemic is probably the single biggest thing we can do that we have control over that will send coronavirus and lots of other illnesses to packing”. (12) Dr. Dalai emphasizes “if we continually strive for a healthier nation with less chronic conditions, we could weather the current pandemic and be better prepared for the next one, physically, metabolically, and mentally”. (10)

The COVID-19 pandemic has definitely shed light on the seriousness of the obesity pandemic and is definitely a wake-up call for many people. Dr. Hyman and Dr. Mozaffarian write “COVID-19 has pulled back the curtain to reveal just how unhealthy we are as a nation; only about 12 percent of Americans are metabolically healthy, without a large waist, high blood pressure, high blood sugar, or high cholesterol; the major driver of poor metabolic health, which increases the risk of hospitalization and death from COVID-19, is the nation’s diet – rich in starch, sugar, and processed foods and low in unprocessed food, vegetables, fruits, whole grains, beans, good fats, seafood, nuts, and seeds”. (22) “With no vaccine and effective therapies for COVID-19, Dr. Morton suggests that now could be a good time for many of us to reflect on lifestyle changes to improve our health and ability to fight off

serious illnesses”. (31) This is especially important because it will take time to find a COVID-19 vaccine that will work. It’s not a matter of waiting for a vaccine but rather living a healthy lifestyle and focusing on improving our metabolic health today for a better tomorrow. Ian Sample writes, “more than 30 years after scientists isolated HIV, the virus that causes Aids, we have no vaccine; the dengue fever virus was identified in 1943, but the first vaccine was approved only last year, and even then amid concerns it made the infection worse in some people; the fastest vaccine ever developed was for mumps; it took four years; a chief concern is that coronaviruses do not tend to trigger long-lasting immunity; about a quarter of common colds are caused by human coronaviruses, but the immune response fades so rapidly that people can become reinfected the next year; another serious concern is ‘antibody-induced enhancement’ where the antibodies produced by a vaccine actually make future infections worse”. (44) Dr. Shiva Ayyadurai, a well-known scientist and biological engineer, explains “with the increase in obesity, that’s probably what we should be calling a state of emergency, but we’re not doing that because more obese people, more people with heart disease, more people with cancer, fuel Big Pharma; and, we don’t see a shutdown on any of that; we don’t see a shutdown on the fact that 1.9 million people get hospitalized every year from prescription drugs”. (24) In addition, Dr. Aseem Malhotra, a well-known Consultant Cardiologist and professor of Evidence-Based Medicine, emphasizes “healthcare systems were already overstretched before COVID-19 because of decades of

maldistribution of resources due to ‘too much medicine’ combined our collective failure to implement policy changes to address the root cause of diet related disease – the unavoidable junk food environment; the government public health message enhanced by the media to stay at home, protect the NHS and save lives has been powerful and effective; given the speed at which health markers for metabolic disease improve from dietary interventions, an equally strong if not more significant population health message should now be to ‘eat real food, protect the NHS and save lives’; such implementation backed by policy changes may not just save hundreds and potentially thousands of lives around the world in the coming months but given the high likelihood of another international viral pandemic in the next decade a healthier population and a subsequently more manageable health service will be much better equipped to handle what would then be a smaller mortality peak on the next occasion; hopefully if and when that occurs a lockdown will not be required”.

(30) Dr. Ponce concludes “as the quarantine is lifted, providers should not only be cognizant of the ‘Quarantine 15’ and the tools they have to help people lose the extra weight but also the total sum of negative impact to the mind and the body; with close to 3 million people around the world dying every year from being overweight or obese, even a modest increase in the global population’s weight could have tragic consequences; swift action is required to reverse the toll this quarantine will take with the goal of rewinding the body’s clock back to the pre-coronavirus days”. (39)

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