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## The Role of Sugar in COVID-19 Pandemic

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### INTRODUCTION

By the middle of August 2020, COVID-19 had infected over 20 million people worldwide and caused more than 700,000 deaths. The elderly and patients with comorbidities are the most affected group since they have a higher fatality rate because of COVID-19. For patients younger than fifty, the risk of death is just under one percent, but in the elderly, especially those over 65, the risk of death jumps 2 to 8 times<sup>1,2</sup>.

The presence of comorbidities also significantly increases the risk of COVID-19 death. People with diabetes and obesity can increase their risk of death by 1.5 times, while hypertension and heart disease raise the mortality up to 1.6 to 3 higher<sup>3,4,5</sup>. This situation should make us aware; we are not only facing the COVID-19 pandemic but also a pandemic of non-communicable diseases (NCDs).

There are so many people who are now suffering from obesity, diabetes, hypertension, and heart disease, they are the leading causes of worldwide deaths. Four main NCDs, i.e. cardiovascular diseases, cancer, diabetes, and chronic pulmonary diseases are responsible for 82% of mortality<sup>6</sup>. One of the reasons that causes those diseases to have rapid growth, is because obesity, as the primary basis of almost all NCDs, is socially contagious<sup>7</sup>. Christakis explained that people who have closeness with obese people, over time, will also be obese. Vice versa, obese people can cause people in their social circles to be obese for a certain period<sup>8</sup>.

### DISCUSSION

Obesity is a complex condition. The single most important cause of obesity is excessive carbohydrates (or sugar) intake. In his book, *The Real Meal Revolution*, Noakes mentioned that among the three macronutrients commonly consumed, carbohydrates are the only nutrients that we do not need that much<sup>9</sup>. The Institute of Medicine also states that in individuals who consume adequate amounts of protein and

fat, the need for carbohydrate consumption is zero<sup>10</sup>. This is because our body can produce blood sugar (glucose) itself by the liver and can make energy from protein and fat. High carbohydrate consumption has a terrible impact because it triggers the production of insulin, which will be converted into body fat. Excessive production of insulin will lead to insulin resistance, which is the basis of most chronic diseases<sup>9</sup>.

So, why are we consuming such large amounts of carbohydrates? Noakes said that two significant events contribute to this trend. The first is the agricultural revolution, which changed the pattern of human life from hunting to farming over 10,000 years ago. And the second was the existence of dietary guidelines issued by the United States Department of Agriculture (USDA) in 1977 as a standard American diet known as a balanced nutrition pyramid. In those standards, they advised us to make carbohydrates as a staple food, with the recommended portion reaching 50-60% of our food. This standard was then widely followed throughout the world. Since then, the impacts have been the prevalence of obesity and its associated diseases continue to dramatically increase out of control. If traced historically, the USDA made these guidelines when the wheat and sugar farming industry in America were developing<sup>9,11</sup>.

Carbohydrates and sugar intake, especially in high amounts, will raise blood sugar. This high sugar level plays a role in the susceptibility to COVID-19 infection, and also the course of the disease becomes more severe and even fatal. The COVID-19 virus needs glucose to multiply so that hyperglycemia will help the process. High glucose also eases the formation of hyaline membranes in lung tissue and causes respiratory failure, which is a notable cause of death in COVID-19 patients. Eventually, the body will create deposits of the excess sugar in the form of body fat, which will weaken the immune system. This will increase the susceptibility to COVID-19 infection<sup>12</sup>.

We must adopt two essential pillars to avoid infection and fatal conditions due to COVID-19. Besides continuing to implement standard precautionary protocols such as social distancing, using masks, and frequent hand-washing, we all need to take care of our metabolic health. We must transform our diet and activity patterns. The major goal is to eat as low as possible carbohydrates and sugar. In the Ministry of Health Campaign, “*Isi Piringku*”, carbohydrate should only constitute the maximum level of 33% in our meals. This is the key to increasing immunity and avoiding in the long run the ravages of obesity and its accompanying diseases. Without these comorbidities, we will have a better prognosis from COVID-19.

The second pillar is physical activity. Besides the aerobic exercise that is very popular, weight training is also very necessary to avoid obesity. Weight training is crucial because it helps us build muscle mass. With greater muscle mass, we will have a higher rate of metabolism. This is very beneficial because the body will be more efficient and no longer accumulate food as fat storage.

The COVID-19 pandemic should make us aware that we are also currently facing a pandemic of NCDs. There should be increased efforts to control these non-infectious diseases, which mainly focus on prevention efforts. We have to be more concerned about the extensive sugar intake because blood sugar influences the pathophysiology of COVID-19. We can use the momentum to overcome the COVID-19 outbreaks at the same time to educate people to shift lifestyles, especially our eating patterns.

Reducing carbohydrate and sugar consumption is certainly not easy to do, mainly because of social and cultural factors. We are used to consuming rice as a staple food and other carbohydrates such as bread, noodles, potatoes, or cassava. Accordingly, all parties must work hard to create an environment that supports this new lifestyle. The government must strive for various policies that impact reducing the consumption of sugar and carbohydrates. We have to consider some strategies such as sugar restrictions on bottled drinks, extensive education in various mass media, and encouraging programs to shift the agricultural industry from rice production to vegetables or even livestock. Therefore, as researchers and primary physicians, we must also struggle to explore an effective approach to transform people’s behavior to be healthier. Hopefully, we can all be free from sugar addiction and successfully overcome the COVID-19 pandemic and obesity.

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