Review Article

The role of diet in bacterial/viral infections: Vegan diet, red meat, and the Coronavirus

Elham Alshammari[1*]

[1]Department of Pharmacy Practice, College of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia.

Correspondence: Elham Alshammari, Department of Pharmacy Practice, College of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia. ejalshammari@pnu.edu.sa

ABSTRACT

Since being declared a pandemic, the coronavirus has affected several people. Over the recent months, increased efforts have been directed towards finding a medication or a vaccine that can stop the prevalence of the infections. A simple review of the COVID-19 worldwide statistics revealed the least affected cases in countries known to be on a vegan diet. Vegetarians have low rates of viral illnesses. To find a lasting solution, researchers are now in the process of investigating the potential role of dietary eating patterns in the control of the prevalence of the coronavirus. Only a few studies have been published concerning this matter. The limited data evaluated in this study revealed that red meat varieties can have some quantities of fats and decreasing their use could help mitigate associated viral or bacterial infections. Some of the reviewed studies confirmed the relationship between consumption of a vegan regimen and low occurrence of viral or bacterial diseases. Though COVID-19 is a vital disease, such a benefit can only be inferred to now since there are still no adequate studies pointing to the advantages of a plant-based diet on the transmission or recovery from the coronavirus disease. It seems reasonable from this review that human dietary habits concerning vegan and red meat consumption should be modified substantially as the world struggles with the effects of the coronavirus pandemic. While investigators are still in the evaluation process, there is a high chance that future emphasis could be on dietary eating habits.

Keywords: Coronavirus, COVID-19, Red meat, Vegan diet

Introduction

On 30 January 2020, the outbreak of coronavirus was declared an emergency for public health at the international level [1-3]. From January 3rd until January 7th, 2021, Saudi Arabia has reported a total of 363,377 confirmed cases of coronavirus, with 6,272 deaths [4]. Researchers are now in the process of investigating potential solutions to this pandemic, and perhaps the emphasis is increasingly drawing towards the actual COVID-19 patients and their eating manners.

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Literature review

A recent study investigated the effect of following a vegetarian diet on viral diseases. There is research evidence to suggest that vegetarians have reduced rates of contracting viral diseases due to low LDL cholesterol, lower levels of hypertension and diabetes mellitus, and lower incidence of obesity [5]. Vegetarians also report lower cancer rates and greater life expectancy. The risk of succumbing to colorectal cancer has also been found to be much lower among vegetarians. These benefits cut across different groups of vegetarians, existent today (pure vegetarians, strict vegans, Lacto-vegetarians, lacto-ovo-vegetarians, ovo-vegetarians, pescatarian diet persons, semi-vegetarians, and partial vegetarians). Pure vegetarians eat a pure vegetarian diet, in which strict vegans eat plant and plant products except for all items originating from animals. Lacto-vegetarians consume milk and milk products together with vegetables, fruits, and grains. Lacto-ovo-vegetarians consume milk and milk products, together with eggs, honey, vegetables, fruits, and grains. Ovo-vegetarians consume eggs and honey

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without milk and milk products. A pescatarian diet mostly includes products of fish as a replacement for a vegetarian diet. Semi-vegetarians rely on plant products, chicken, eggs, fish, dairy products, and honey but do not consume red meat. The last category, partial vegetarians, eat cake which has been prepared using egg but does not eat an omelet. An analysis of states with the highest number of vegetarians and meat-eaters in India revealed interesting findings. Generally, evidence pointed to the fact that vegetarians had low rates of viral diseases and had fewer cases of Human Papilloma Virus (HPV) [6].

A quick scan of the COVID-19 worldwide statistic showed the least infected cases in countries considered to be on a vegan diet for religious or animal rights activists' purposes [2]. As such, the dietary habits of those who are infected with the virus need to be examined and documented. A lot of research has been documented covering the nutritional sufficiency of vegetarian regimens, but less information is still known regarding the long-term health status of vegetarians and vegans. A recent study summarized the findings from many cross-sectional and prospective cohort studies carried out in western countries. Most of the participants in these studies were vegetarian. The findings showed that vegetarians had a lower prevalence rate of obesity and a reduced chance of contracting Ischemic Heart Disease (IHD) equated to vegetarians from the same background. However, similar data on stroke patients was quite confusing. Cancer rates were also tested and evidence was presented indicating a reduced risk of the disease in all sites among vegetarians compared to non-vegetarians. Still, evidence drawn from individual cancer sites was unfounded. Another line of evidence from the study also showed that vegetarians had a lower risk of diabetes, eye cataract, as well as diverticular disease. Generally, mortality was found to be comparable for vegetarians and similar non-vegetarians. The vegan regimen includes many risks, but the long-term health of vegetarians was found to be commonly good and somewhat greater than that of equivalent omnivores for some diseases and medical conditions. Even with these findings, there is still a need for additional findings to ascertain the long-term health of vegans [7].

Lately, a group of researchers gauged the probability of the coronavirus crisis repeating in the future. Among their foremost proposals for preventing a recurrence entailed modifying and correcting the culture of food consumption across the world. According to the research, it is important for international communities, more so those engaged in global health, to plan and execute policies, rules, and guidelines concerning food habits and food consumption. This would help prevent the repetition of viral diseases, such as COVID-19. Nations and institutions that have effective food consumption experiences can take part in such strategies. One of the proposed rules would be to prohibit certain foods or particular practices associated with food preparation, storage, and cooking. Policies associated with the use of new and safe technologies, such as probiotics and probiotic foods have been suggested as potential action measures. Alongside them, researchers have also recommended the consumption of verbal foods (vegan food) as part of the efforts to ensure viral infections do not recur [8].

Consumption of animal products by humans has largely intensified the danger of choosing viral mutations and genetic recombination in the viral genome. This has provided room for adaptation to humans. Some studies have proposed banning the shambling of wild animals and intaking of endangered ones. Recent research holds that the illegal sale of exotic wild animals together with their meat could be a major source of future pandemics. Humans must learn to curb their craving for exotic meat and discover the plentiful nutrients in different seeds, leaves, vegetables, and fruits. As it stands, no known epidemic has begun because of plant viruses being transmitted to animals. While not everyone can transit to become vegan, most people can easily become primarily vegetarians. This is a characteristic that was most common among our ancestors who lived healthier and longer lives of a higher quality [9].

Another line of recent research has questioned whether plant-based hospital meals should be made mandatory. Such studies are mostly informed by the outstanding interlink between poor dietary choices and the different types of chronic diseases. Late analysis of hospitals in the United States revealed that the most common food varieties in nearby cafeterias and restaurants include meat-based entrees, candy, and sugar-sweetened beverages. Therefore, it is at times difficult to find healthy menus at hospitals, which are a significant section of the healing process. This is of particular importance in the current times since data shows that COVID-19 mortality is mostly linked with uncontrolled type-2-diabetes. This illness is very responsive to a plant-based diet. For individuals who are ready to take up nutrition as part of their healing process, necessary framework conditions should be put in place to facilitate such a transition to a vegan diet. A suitable framework must include guaranteed availability of healthy plant-based meals during the time of hospitalization [10]. Even so, reservations still exist since some patients may still not be willing to change their dietary habits [11].

Even with all the supposed health advantages of a vegan regimen, red meat nonetheless supplies a plentiful source of protein and necessary nutrients of high biological value, some of which are more bioavailable than in alternative food varieties. The term "red meat" is commonly considered to contain beef, lamb, pork, and game. This diet has been a major section of the human diet for many years. Upon inclusion as part of a healthy diet, red meat supplies a rich source of high biological value protein as well as essential nutrients. Most of these nutrients are more bioavailable rather than in alternative sources of food. Some specific nutrients are in less supply in the diets of some groups of individuals. A recent study discussed the effect of red meat and its key nutrients on young infants, women of childbearing age, adolescents, as well as older adults. The study revealed that red meat can supply key micronutrients to young infants, more so at the time of weaning. The vitamin D and iron in red meat are also regarded as significant for women of childbearing age, especially around the time of pregnancy. The study also presented clear evidence from many studies supporting the fact that high-protein regimens enhance fullness as well as weight loss in comparison with diets high in

carbohydrates. Additionally, the author draws advice from various studies concerning the quantity of red meat that one should consume. Based on the findings, the recommended daily intake of red meat should be around 70 g/d (cooked weight). Otherwise, any quantity above this increases an individual's risk of colorectal cancer [12].

Despite the dangers associated with excessive intake of red meat, some scholars recommend isolating the personal effects of certain foods on health outcomes. Such an approach can help individuals choose the right food and develop healthier dietary patterns. A recent study classified red meat as a primary source of high-quality protein. Such a diet also provides various necessary nutrients that better the general health of an individual. Red meat also provides saturated fatty acids, that according to various observational data can result in heart disease. However, the impact of red meat on the occurrence of heart disease has been challenged by recent statistics. Outcomes from recent research have shown that lean red meat can effectively be designed to be part of recommended heart-healthy dietary patterns without causing any harm to blood lipids. It is also important to note that increased dietary intake of protein has been linked with healthier body weight and composition. These benefits derive from the fact that proteins increase satiety and facilitate better vitality and stamina [13].

The perceived benefits of red meat using come at an expense of increased viral infections. Eating meat, more so wild meats, is considered to be largely associated with virus infections. Past research shows that most of the viruses have been found in wild meat trade markets. For instance, hepatitis E (HEV) counts as one of the most extensive viral illnesses contracted through the consumption of meat. The virus spreads mostly through meats that have not been cooked well, the main culprits being deers, pigs, and wild boars. Luckily, most of the virions associated with this illness can be incapacitated by cooking the meat at temperatures above 60°C. Even though HEV is one of the key zoonotic illnesses worldwide, we cannot overlook the coronavirus – which stands as the biggest concern of the present time. Recent literature traces the outbreak of COVID-19 as follows. The main hypothesis is that this RNA virus could have originated from a seafood market in Wuhan, China. This market sells vertebrates and invertebrates, as well as wild and farmed animals. Besides, researchers believe that an intermediate host was facilitating the transmission of the virus from animals to human beings. Such findings corroborate existing recommendations to significantly reduce the use of red meats and related meat products. An additional implication of these findings is that the consumption of wild meats could mean an enhanced danger of transmission of viruses from animals to humans [14-17].

One of Prophet Muhammad's Islamic laws, peace, and blessings be upon him, he said, "The son of Adam cannot fill a vessel worse than his stomach, as it is enough for him to take a few bites to straighten his back. If he cannot do it, then he may fill it with a third of his food, a third of his drink, and a third of his breath" [18]. Through this saying, the noble Prophet (may Allah's peace and blessings be upon him) tends to provide precautions concerning what man should do to maintain their health. Essentially, the statement implies that an individual should eat only the amount that is enough to keep them alive and provide strength to implement basic activities. Satiation is largely affiliated with unnumerable dangerous sicknesses that appear more quickly or later, whether internally or externally. If one must fill their stomach, they should let their food fill only a third, their drink another third, and the remaining third is taken up by their breath. Does this imply a balanced diet or intermittent fasting? What the saying means is worth additional inquiry.

Conclusion

Since the outbreak of the coronavirus pandemic, research efforts have drawn towards finding potential solutions to mitigate the outbreak of the virus. Analysis of data from past viral infections suggests potential benefits of adjusting eating patterns. Proposals have been drawn to increase the consumption of vegan diets and reduce the utilization of red meat and related products. This study has reviewed several recent studies highlighting key primary issues associated with the human dietary intake of vegan diets and meats. Though beneficial, the review shows that red meat varieties can contain some quantities of fats, and reducing their eating could help mitigate associated viral or bacterial infections. A few of the studies examined in this review provided evidence of the connection between consumption of a vegan diet and low occurrence of viral or bacterial diseases. Such a benefit can only be inferred when considering COVID-19 cases since there are still no adequate studies pointing to the benefit of a plant-based diet on the transmission or recovery from coronavirus disease. With this information in mind, it seems plausible that human dietary habits concerning vegan and red meat consumption should be modified substantially, as much and as soon as possible as society deals with the current coronavirus pandemic.

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