Research Article

Association between diabetes and daily intake of white rice consumption among diabetes mellitus patients

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ABSTRACT

Introduction: Whole grains are cultivated over 10,000 years ago and became part of the human diet for the past 300–400 years. During the 20th century, rice became staple food for Indian population. White rice consumption is the primary source of developing risk of type 2 diabetes. Substituting whole grains for white rice is the best solution to minimize the risk of diabetes mellitus. This study is to evaluate the association between the diabetes and white rice consumption among middle-aged diabetes mellitus patients. **Materials and Methods:** A total of 100 elderly population will be subjected for list of standard questions on diabetes and its associated effects with lifestyle. The collected data is further analyzed and categorized based on the criteria for stages of diabetic condition. All the data are represented graphically. **Results:** White rice has a higher level of starch and carbohydrate level (glycemic index) which would increase the glucose sugar level in the blood and increases the risk of diabetes. **Conclusion:** It is the fact to conclude that higher white rice intake is associated with a significantly elevated risk of type 2 diabetes, especially among Asian populations.

KEY WORDS: Diabetes mellitus, Glycemic index, Insulin level, Obesity, Staple food, White rice

INTRODUCTION

Whole grains are cultivated over 10,000 years ago and became part of the human diet for the past 300–400 years. During the 20th century, rice became staple food for Indian population.[1] Rice is now cultivated in all the countries such as India, China, and Japan, where the population is high. After cultivation of paddy, number of processes such as hulling and milling are to be taken to convert paddy into white rice, which is consumed as staple food worldwide.[2-4]

White rice consumption is the primary source of developing risk of type 2 diabetes.[4] According to glycemic index (GI), consumption of white rice generates more blood glucose than brown rice.[5] The GI value of white rice is higher than the GI values of whole grains.[5] In ancient period itself, diabetes was recognized as a disease.[6] This disease was considered as diseases for rich people, who consumed more quantity of oil, flour, and sugar.[7] Diabetes mellitus can arise from other diseases, drugs taken during surgery, infections, and during the period of pregnancy.[8-10]

Diabetes mellitus can be controlled by diet and physical exercises. Smoking should be avoided in the case of diabetic patient.[11,12] Individual lifestyle and other environmental factors also take place in the increase in diabetes mellitus.[13] Brown rice consumption also has beneficial effects of type 2 diabetes risk since it is having multiple nutrients such as vitamins, minerals, and fibers.[14] Substituting whole grains for white rice is the best solution to minimize the risk of diabetes mellitus.[15,2] Cereal and fiber intake is also connected with a decreased risk of diabetes.[4]

MATERIALS AND METHODS

A total of 100 elderly populations will be subjected for list of standard questions on diabetes and its associated effects with lifestyle. The collected data is further analyzed and categorized based on the criteria for stages of diabetic condition. All the data are represented graphically. The questionnaire is based on their food habits, type of food consumption, and preference of food types on carbohydrate, fat, protein, etc. Each survey question contains multiple-related answers

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of which the participants are intimated to choose as their individual response. Based on the response of individual question among the total participants, the percentage of answer preference is represented. All the data were collected and analyzed systematically for any association between the parameters applied.

RESULTS

From the survey questionnaire, it is inferred that among the 100 participants, 72% of population said "yes" and 28% said "no" for the question that whether diabetes mellitus is associated with diet [Figure 1]. To evaluate the knowledge on the association between diabetes mellitus and lifestyle of an individual, 59% responded "yes" and 41% said "no" [Figure 2]. Staple foods which are beneficial for diabetic patients when given a choice among wheat, rice, barley, oats, and any type of food, 36% preferred wheat, 11% preferred rice, 25% preferred barley, 18% preferred oats, and 10% preferred any type of foods [Figure 3]. From ancient times, we are consuming rice as our staple food, it is by the advent of modern adulterated various food products, and the disease diabetes is overwhelming: for this question, 39% responded "strongly agree," 38% said "agree," 9% said "strongly disagree," and 14% said "disagree" [Figure 4].

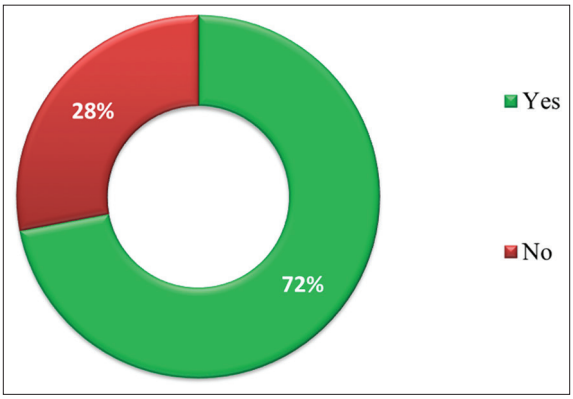

Figure 1: Do you think is there any association between diabetes and diet

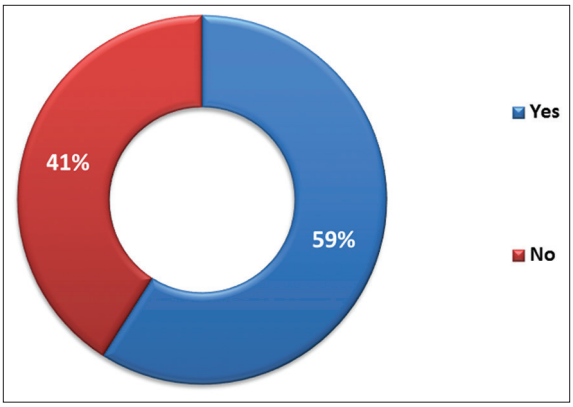

Figure 2: Is diabetes mellitus concerned with lifestyle of an individual

DISCUSSION

On survey, it is found that diabetes mellitus is connected with factors such as hereditary, food, and lifestyle. There is a close relation with the diabetes and diet. Food plays a vital role in the control of diabetes. Vegetables, whole grains, and red rice are the food recommended for diabetic patients. Wheat is the stable food suggested and more beneficial in the place of rice. White rice in a moderate quantity is advisable, and daily intake of white rice may lead to critical situation for diabetic patients.

Physical activities may also decrease the risk of diabetes and improve the health condition of the patients. Diabetes affects the regular activities of the individuals. Although medicines suggested in controlling disease, it has more side effects according to survey.

Several studies have clarified that there is a positive connection between diabetes and white rice consumption.[16,17] It is observed that doubling of diabetes 2 risk is associated with daily intake of 250 g of white rice.[18] The difference in the effect of white rice among various populations may be due to different types of food we intake.[19] In milling process, the outer layer of grains has been removed which

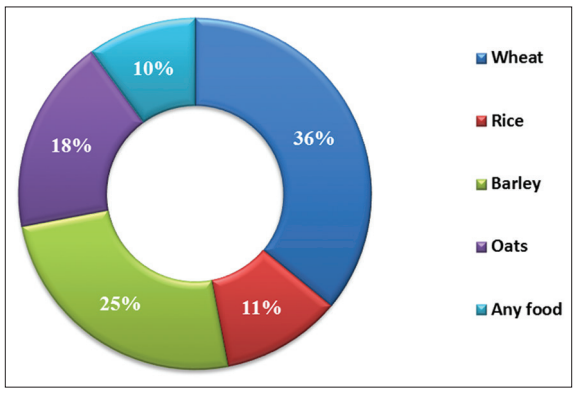

Figure 3: According to you which staple food is beneficial for diabetic patients

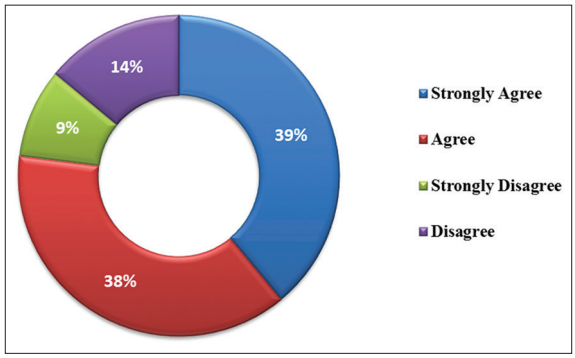

Figure 4: From ancient times, we are consuming rice as our staple food. It is by the advent of modern adulterated various food products, and the disease diabetes is overwhelming

contains important nutrient and decreases the risk of diabetes.[20,18] Due to this negligence, the valuable much-consumed staple food rice is now regarded as a threat to several diseases and postulated to be a risk factor for diabetes.

CONCLUSION

In summary, this meta-analysis suggests that higher white rice intake is associated with a significantly elevated risk of type 2 diabetes, especially among Asian populations. Although rice has been a staple food in Asian populations for thousands of years, this transition may render Asian populations more susceptible to the adverse effects of high intakes of white rice, as well as other sources of refined carbohydrates such as pastries, white bread, and sugar-sweetened beverage.

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