

Glycemic Indices of Foods in Association with Diabetes Among Rural Women of Kenya- Case of Amagoro in Busia County

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Abstract

Diabetes mellitus is a chronic medical condition in which a person's sugar level rises above the normal. This disease has become quite prevalent worldwide. In the year 2018, more than 500 million people were suffering from diabetes mellitus type-2 (DM2) worldwide. In 2010, an estimated seven million cases of diabetes were found in Africa. This figure was predicted to rise to over 18 million by the year 2030. In Kenya, an estimated 1.2 million Kenyans suffer from the disease. This has been projected to rise to 1.5 million by the year 2025. Although DM2 is determined primarily by genes and lifestyle, it has been strongly linked to dietary patterns. However data linking DM2 and Glycemic index (GI) in Kenya remain scarce. Generally, foods with high GI are more likely to lead to a high prevalence of DM2 than foods with low GI. Some studies done in Kenya have indicated relationship between local diets and diabetes. However these studies were hospital-based and not community-based and they did not identify the GI of locally consumed foods and link with DM2. The objective of this study was therefore to assess the glycemic indices of the staple foods consumed by women in a rural population and establish the association of the glycemic load (GL) of foods with DM2. The study was cross sectional in design with analytical components that generated both qualitative and quantitative data. The survey involved 260 women participants aged 15-90 years, GI, focus group discussions (FGDs) and key informant interviews (KIIs) involved a total of 12, 45 and 15 participants respectively. Initially, FGDs and KIIs were conducted to establish community's knowledge and selfperceptions to foods associated with diabetes and to generate a food list that was used in designing a structured food frequency questionnaire (FFQ). The survey was conducted using a pre-tested questionnaire; FGD and KII guide were used to guide the FGDs and KIIs while the GI and proximate composition of foods were determined using standard procedures. The xii analytical components included proximate analyses of the foods and determination of glycemic indices (GIs). The GI of various foods was used to calculate the glycemic load (GL). Data were analysed using Microsoft Excel and Statistical Package for Social Sciences. Descriptive statistics were used to analyze and characterize the sample. The data was presented by absolute frequencies and percentages. A chi-square analysis was used to compare the categories of DM2 with other variables. Multivariate logistic regression was used to identify the magnitude of independent variable. Linear regression with mixed-effects was used to establish the differences between GIs of different foods. Results showed that the prevalence of DM2 was 16.9%. The GI of the foods followed the order: Cassava and sorghum Ugali with silver fish > rice plain > cassava > whole maize ugali with beef > whole maize ugali with silver fish = cassava-sorghum ugali and cowpea leaves = rice with beef > sweet potato > whole maize ugali = rice and beans > whole maize ugali with cowpea leaves > beans plain. The glycemic indices of various ugali meals were significantly different ($p < 0.05$). Women consuming a GL of >840 were 1.36 times more likely to suffer from DM2 as opposed to those who consumed a moderate load although this association was not significant ($p > 0.05$). The study

concluded that there was no significant association between glycemic index and diabetes among rural women of Amagoro. Cowpea leaves and beans have the potential of lowering the GI of staple foods consumed alongside. Alcohol consumption and physical activity were the strongest independent risk factors for DM2 in this study population. This calls for need to create awareness and sensitize the population on these predisposing factors.

Key words.

Glycemic Indices of Foods, Diabetes, Rural Women