Background: Both the amount and quality of dietary fat may modify glucose tolerance and insulin sensitivity. A high fat content in the diet may result in deterioration of glucose tolerance by mechanisms like decreased binding of insulin to its receptors and consequently impaired glucose transport. Our bodies need fat. However, it must be the right kind. Omega-3 fatty acids (EPA C20,5 and DHA C22,6) both found primarily in fish, they are increasingly recognized as important to human health but it is not yet clear how beneficial they can be in averting the risk of T2DM.

Objective: to compare the risk of T2DM, in relation to 03FA (DHA & EPA) intake among a rural population whose traditional diet comprised of fish rich in Omega 3 Fatty Acids and an urban population whose diet evolved from a traditional one and can now be termed as “modern”.

Methods: A descriptive, cross-sectional comparative survey. The risk of T2DM was determined in a rural and an urban community in Kenya, by measuring factors such as Impaired Glucose Tolerance (IGT), Impaired Fasting Glucose (IFG) according to WHO diagnostic criteria. Obesity was also measured via Body Mass Index. The intake of 03FA (EPA & DHA) was determined using a 24 Hr, dietary recall that recorded the type and quantity of fish ingested. A total of 623 subjects, 405 rural (185 men, 220 women) and 218 urban (125 men and 93 women) aged 20-60 were included in the study. The rural population was drawn from Nyang'oma division of Bondo district and the urban population was drawn from Nairobi. Data was analysed using SPSS and Nutri-Survey Program. Pearson Correlation Coefficient was used to test correlation between 03FA consumption and factors associated with the risk of T2DM. The inter-group comparisons were performed by using an independent-sample t test and a one-way analysis of variance followed by Duncan's Multiple Range Test.

Results: The prevalence of IGT, IFG & BMI was found to be higher among the urban population, as well as among the females for both rural and urban populations. There was also a significant positive correlation between age and prevalence of IGT (r= 0.204, p<0.05) & BMI (r= 0.174, p<0.05). The difference between BMI levels among males and females was also very significant p=0.003, with a majority of the females presenting very high levels. EPA & DHA were found to be consumed in the rural areas at a mean of 0.5964 and 0.0163 per day respectively and a mean of 0.1156 and 0.0137 respectively in the urban area. There was a highly significant negative correlation between EPA & DHA consumption and factors related to the risk of T2DM like IGT, IFG and BMI.

The level of significance was considered at P<0.05.

Conclusion: There is evidence of a high inverse correlation between the factors associated with the risk of T2DM and consumption of 03FA. The rural population who consumed a lot of 03FA, recorded lower levels of the risk factors, than the urbanites who had much lower consumption.

Recommendation: Effective screening methods should be used at the existing health units to determine IGT and IFG patients and advise them accordingly on lifestyle changes.

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