INCOMING MESSAGE: HOW GENES DICTATE NUTRIENT INTAKE AND COMMON RISK FACTORS OF NON-COMMUNICABLE DISEASES IN SELECTED FILIPINO ADULTS

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Background:
In the Philippines, the prevalence of Non-Communicable Diseases (NCDs) has already reached endemic proportions despite on-going efforts to mitigate or eradicate its onset and progression. Nutrition researches are now looking into the possible role of genes into the individuals' susceptibility to the common risk factors of NCDs, including dietary intake. The human body is made up of trillions of cells that contain sets of chromosomes passed through generations. Enclosed in these chromosomes are building blocks of life-abbreviated into A, C, T, and G, known as DNA, which are further organized into units called genes. The way genes are "spelled" make up the so-called "instruction manual" of life and dictate the manifestation of a person's trait such as hair color, etc. Any “misspellings” in these genes can affect the state of health or disease. In 2013, a study was conducted to gain insights into the genetic control of macronutrient intake and found out that the variations in the FGF21 gene is potentially related to genetic control of caloric intake, which could be related to the rise of NCDs.

Objectives:
This study aimed to determine the SNP genotypes of FGF21 rs838133 among selected Filipino adults, and to determine variations in nutrient intake and common risk factors of NCDs based on identified alleles.

Materials and Methods:
This study used a cross-sectional design and was approved by the DOST-FNRI Institutional Ethics Review Committee. A total of 1,439 genomic DNA samples from selected Filipino adults ages 20 years and over, residing in the National Capital Region, and who were part of the 8th National Nutrition Survey (8th NNS) were included in the study. Genotyping of FGF21 rs838133 was carried out in the NuGen™ Laboratory of DOST-FNRI. Chi-square proportions found significant differences in population diversity and in the prevalence of high diastolic blood pressure, one of the risk factors for NCDs. Data were expressed as mean ± SD and differences were considered significant when P values were < 0.05.

Results and Findings:
This study showed that 99% of the selected Filipino adults are carriers of the FGF21 genetic variant. This frequency is expected to remain constant over time, ensuring the presence of this variant from generation to generation. Further, those with the “T” allele have lower protein and fat intakes but higher prevalence of high cholesterol, triglyceride, and blood pressure levels as compared to those with the “C” allele. Significantly, the prevalence of high diastolic blood pressure among adults with the genetic variant (C allele) is 61.6% lower as compared to those with the ancestral/risk allele (T allele) (p=0.0089).

Conclusion and Recommendation:
This study suggests that Filipinos carry the “C” allele, which seems to be protective in expressing common risk factors of NCDs. Findings underscore the important role of considering genetic variation in the development of dietary recommendation and its implications in providing genomic-based nutrition counselling in the future.