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Effect of dietary calcium, protein and vitamin D on adiposity in patients with type 2 diabetes: A structural equation modeling

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Introduction: Due to relationship between obesity and type 2 diabetes and contradictory effects of dietary calcium, protein and vitamin D on adiposity; this study aimed to utilize Structural Equation Modeling (SEM) techniques to determine the effects of dietary calcium, protein and vitamin D on circulating amounts of PTH and 25(OH)D as well as their direct and/or mediating effects on adiposity in patients with type 2 diabetes in Iranian population.

Methods: In the cross-sectional analysis, a total of 174 diabetic patients (101 females and 73 males) were randomly selected. Height, weight, BMI, hip, waist, waist to hip ratio and fat mass percent was carefully measured. Nutritional data were collected and finally biochemical analysis was carried out for the measurement of PTH, insulin, 25(OH)D, lipids and hemoglobin A1c (HbA1c) concentrations. The statistical analyses were carried out using IBM SPSS AMOS 20.0.

Results: The direct effects of dietary calcium were significantly observed on adiposity ($p=0.03$) but there were no significant effects on PTH ($p=0.115$), 25(OH)D ($p=0.831$). Furthermore, there were no significant effects for dietary protein on PTH ($p=0.137$), 25(OH)D ($p=0.408$), or adiposity ($p=0.954$) as well as for dietary vitamin D on PTH ($p=0.190$), 25(OH)D ($p=0.690$), or adiposity ($p=0.088$). In addition, no significant difference was observed between males and females.

Conclusion: The current research showed that there are direct effects of dietary calcium on adiposity in patients with type 2 diabetes in Iranian population. It suggests that the SEM model can be used in further research as well as in other populations.

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