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## Investigating Carbohydrate to Protein Ratio as a Dietary Risk Factor for Neuromyelitis Optica Spectrum Disorder

N. Rezaeimanesh<sup>1</sup>, S. R. Jahromi<sup>1</sup>, Z. Ghorbani<sup>3</sup>, N. B. Moghadam<sup>4</sup>, A. Hekmatdoost<sup>2</sup>, A. N. Moghadasi<sup>1</sup>, A. R. Azimi<sup>1</sup>, M. A. Sahraian<sup>1</sup>

<sup>1</sup>MS Research Center, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

<sup>2</sup>Department of Clinical Nutrition and Dietetics, Faculty of Nutrition and Food Technology, National Nutrition and Food Technology Research Institute, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>3</sup>School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences (tuMS), Tehran, Iran

<sup>4</sup>Department of Neurology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

**Background:** NMOSD is an autoimmune demyelinating disease. The pathogenesis of NMOSD is characterized by neuroinflammation of the CNS. Several studies have shown the relation between high dietary carbohydrate intake and inflammatory status. Given that, we aimed to investigate the role of carbohydrate to protein ratio (CHO:PRO ratio) in NMOSD incidence.

**Methods:** This case-control study included 70 NMOSD patients diagnosed by international 2016 consensus criteria with disease duration < 3-years who didn't change their diet after NMOSD diagnosis and 164 healthy controls. Demographic and anthropometric data were collected. Also, dietary intakes of subjects during the year prior to study in control group and the year before NMOSD diagnosis in the case group were assessed using a validated 168-item food frequency questionnaire. Nutritionist-4 software was used to calculate CHO:PRO ratio.

**Results:** Eighty-five percent of patients in case group and 62% of controls consisted of females. The mean age of participants was 35.34 and 93.42 years in case and control groups, respectively. The mean carbohydrate intake increased from 268.93 to 317.69 g/day across cho:pro quartiles. Inversely, the mean protein intake decreased from 102.09 to 73.17 g/day across CHO:PRO quartiles. Participants with higher CHO:PRO ratio met increasing risk of NMOSD. After adjustment for age and gender the or of suffering from NMOSD was 3.66 (95% CI: 1.52-8.78) for the fourth quartile of CHO:PRO ratio compared to the first quartile (p-trend=0.01). The other model which additionally adjusted for BMI, energy intake, smoking and alcohol consumption showed or=4.00(95% CI: 1.61-9.92) in the fourth quartile compared to the first quartile of CHO:PRO (p-trend= 0.00).

**Conclusions:** The results imply high dietary CHO:PRO ratio as a NMOSD risk factor. Given that this study is the first investigation in this field, further studies are required to approve our results.