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Association between Index of Nutritional Quality (INQ) and Severity of Coronary Artery Disease: A Cross-Sectional Study of Patients Undergoing Coronary Angiography

AmirHossein Najafi; MSc[1-3], Bahareh Sasanfar; PhD[4], Fatemeh Toorang; PhD[5], Marzieh Taftian; MSc[1,2], Azam Ahmadi Vasmehjani; PhD[1,2], Maryam Motallaei; MSc[1,2] & Amin Salehi-Abargouei; PhD[6-7*]

[1] Department of Nutrition, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran; [2] Research Center for Food Hygiene and Safety, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran; [3] Student Research Committee, Shahid Sadoughi University of Medical Sciences, Yazd, Iran; [4] Minimally Invasive Surgery Research, Center, Iran University of Medical Sciences, Tehran, Iran; [5] Departments of Medical and Surgical Sciences, University of Bologna, Bologna, Italy; [6] Nutrition Research Center, Shiraz University of Medical Sciences, Shiraz, Iran; [7] School of Nutrition and Food Sciences ،Shiraz University of Medical Sciences, Shiraz, Iran.

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****Corresponding author:***
Amin Salehi-Abargouei, Ph.D. in Nutrition, School of Nutrition and Food Sciences, Shiraz University of Medical Sciences, Razi Blvd. Shiraz, Iran, PO Code 7153675541,
Tel: +98-71-317267056,
Fax: +98-71-37257288,
Email: abargouei@sums.ac.ir,
Alternate email: abargouei@gmail.com

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ABSTRACT

Background: Coronary artery disease (CAD) is the predominant form of cardiovascular disease (CVD) and a major cause of mortality globally. This study aimed to investigate the association between the Index of Nutritional Quality (INQ) for specific nutrients and coronary artery stenosis severity, lipid profiles, and body composition in patients undergoing coronary angiography. **Methods:** In this cross-sectional study of 612 adults (35-75 years) undergoing coronary angiography, dietary intake was assessed using a validated 178-item food frequency questionnaire (FFQ). The INQ was calculated for various nutrients. Coronary artery stenosis was quantified using Gensini (GS) and SYNTAX (SS) scores. **Results:** A higher INQ for linolenic acid was significantly associated with lower odds of vascular occlusion based on SS after full adjustment (OR=0.5; 95% CI: 0.28-0.88). A higher INQ for fiber was associated with lower total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C), while a higher INQ for protein was associated with elevated high-density lipoprotein cholesterol (HDL-C). Conversely, a higher INQ for riboflavin and vitamin D was correlated with increased TC. A higher INQ for vitamin B6 was linked to increased TC, triglycerides (TG), and visceral fat, but a lower body mass index (BMI). **Conclusion:** These findings suggest that the quality of nutrient intake, particularly higher linolenic acid and fiber, is associated with a better cardiometabolic profile and reduced coronary stenosis, highlighting the potential importance of nutrient quality assessment in the dietary management of CAD. Prospective studies are needed to confirm these findings.

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Introduction

Coronary artery disease (CAD) is a heart condition that results from the narrowing or blockage of the coronary arteries by atherosclerotic plaques. This reduces the blood and oxygen supply to the heart muscle, causing ischemia and hypoxia. CAD is the most common type of cardiovascular disease (CVD) and a leading cause of death in both developed and developing countries (Aboyans and Causes of Death Collaborators, 2015, Dalen *et al.*, 2014, Yang *et al.*, 2016). CAD risk factors are generally divided into two categories: non-modifiable risk factors, including age, gender, race, and family history (Hajar, 2017, Pencina *et al.*, 2019), and modifiable risk factors, including obesity, smoking, sedentary lifestyle, and poor diet (Ades and Savage, 2017, Alexander, 1995, Anand *et al.*, 2015, Arnett *et al.*, 2019, Bechthold *et al.*, 2019, DiNicolantonio and OKeefe, 2017, Malakar *et al.*, 2019, Mons *et al.*, 2015, Mozaffarian *et al.*, 2015, Mozaffarian *et al.*, 2006, Narain *et al.*, 2016, Yusuf *et al.*, 2004). A healthy diet has been mentioned as the main cornerstone of CVD prevention (Perk *et al.*, 2012).

The association between diet quality and macro-micro nutrients and chronic diseases, such as CVD, has been extensively investigated (Coulston, 2001). The observational studies have led to conflicting results regarding the relationship between dietary nutrients and CVD risk factors (Daneshzad *et al.*, 2019, Mohamadi *et al.*, 2023, Sepandi *et al.*, 2022). Previous meta-analyses found inconsistent results regarding the association between CVD risk and dietary carbohydrates (Jo and Park, 2023, Mohammadifard *et al.*, 2022) or protein intake (Naghshi *et al.*, 2020, Qi and Shen, 2020). Furthermore, some meta-analyses have shown that higher dietary intake of folate, vitamin B6, and fiber are associated with a lower risk of CHD (Jayedi and Zargar, 2019, Threapleton *et al.*, 2013, Wu *et al.*, 2015). Although previous investigations have looked into the connection between numerous nutrients and the risk of cardiovascular diseases, there is a lack of studies that evaluate nutrient consumption with regard to recommended dietary allowance (RDA), like the index of nutritional quality (INQ), and their association with a range of health outcomes (Jayedi and Zargar, 2019, Qi and Shen, 2020, Wen *et al.*, 2023, Wu *et al.*, 2015, Zhou *et al.*, 2023). This index is a method that can analyze single foods, meals, and diets quantitatively and qualitatively. The INQ for each nutrient is determined from the ratio of food intake to the RDAs of the same food (Sorenson *et al.*, 1976).

Two cross-sectional studies on the same population (360 Iranian adult women) showed that increasing the INQ of biotin has an inverse association with high-density lipoprotein cholesterol (HDL-C) levels, while increasing the INQ of vitamin B6 was directly associated with serum triglyceride (TG) levels. The level of fasting blood sugar (FBS) reduces as the INQ of vitamin A, magnesium, phosphorus, zinc, and vitamin K increases (Abbas Torki *et al.*, 2022, Alami *et al.*, 2022). A case-control study on Iranian adolescent boys was conducted with 214 overweight or obese subjects as cases and 321 subjects with normal weight as the control group; it showed that obesity has an inverse relationship with INQ of vitamin C, B6, B5, selenium, and magnesium, and with INQ of zinc; it was directly related (Gholamalizadeh *et al.*, 2021). A cross-sectional study on 6248 overweight or obese Iranian adults showed that INQ of iron, B6, folate, zinc, magnesium, calcium, vitamin C, and E has an inverse relationship with overweight and obesity. Also, an inverse relationship exists between the INQ of B1 and B2 with overweight (Jalali *et al.*, 2022).

To the authors' knowledge, no research has been conducted on the link between the INQ of specific nutrients and the degree of vascular occlusion using the Gensini score (GS) and the Syntax score (SS), lipid profile, FBS, and body composition factors in adults undergoing angiography. Therefore, this study explores the relationship between INQ of carbohydrates, fiber, linoleic acid, linolenic acid, protein, riboflavin, vitamin B6, choline, vitamin D, and zinc with the outcomes above.

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Materials and Methods

Participants

This cross-sectional study was conducted on 720 adults between 35 and 75 who were referred to Afshar Hospital, Yazd, Iran, and were willing to participate in the study. Exclusion criteria included: 1) history of cancer, chronic heart failure, history of myocardial infection (MI), percutaneous coronary intervention (PCI), coronary artery bypass grafting (CABG), chronic kidney disease stage 3 and above, specific liver disease or recipient medicines for those with specific cognitive or psychological disorders, immunodeficiency, AIDS, 2) morbid obesity [body mass index (BMI)> 40 kg/m^2], 3) pregnancy or lactation for women, 4) restriction of food intake by mouth for any reason. Individuals with an average daily energy intake of less than 800 or more than 5500 kcal were excluded from the study (n=67). Finally, 653 subjects remained for the current analysis. The protocol and information of this study, with details of time, method, and sample size, were already published (Motallaei *et al.*, 2023).

Coronary artery stenosis assessment

Two scoring systems, the GS and SS, were used to measure the amount and severity of CAD. These scoring systems measure the number of vessels with blockage, the severity of vessel blockage, and the degree to which blockage affects vascular function (Neeland *et al.*, 2012). A detailed description of the classification method of these scores is provided elsewhere (Arabi *et al.*, 2024).

Assessment of dietary intake and INQ

The researchers collected information about the participants' food intake over the past year (Before coronary angiography) through a validated 178-item semi-quantitative food frequency questionnaire (FFQ) (Zimorovat *et al.*, 2022b). The questionnaire asked about the frequency and amount of consumption of various food items daily, weekly, monthly, and yearly. The daily intake values were then converted into grams based on household measures (Zimorovat *et al.*, 2022a). After that, dietary food intakes were converted to dietary nutrients using the United States Department of Agriculture (USDA) food database (USDA, 2018). For each nutrient, the INQ is obtained from the ratio of the daily intake of that nutrient per 1000 kcal intake to the RDA of the same nutrient per 1000 kcal (Sorenson *et al.*, 1976). Adequate Intake (AI) was used if the RDA was not defined for a nutrient (Abbas Torki *et al.*, 2022).

Anthropometric, body composition, and physical activity measurement

A trained nutritionist used a digital scale with an accuracy of 100 grams (Omron, model: BF51) to measure the body weight of the person wearing minimal clothing without shoes. Height was measured using a tape measure with an accuracy of 0.1 cm while standing next to the wall and without shoes. The shoulders were in a normal position, and the head was placed in the horizontal position. To calculate the BMI, weight in kilograms was divided by the square of the height in meters. Waist circumference was measured using an inflexible tape measure, between the iliac bone and the last rib above the pelvis, while the participant was standing. The measurement was taken just below the last rib, and the tape was tight enough in all the measurements (Wang *et al.*, 2003). Body fat percentage, skeletal muscle percentage, and visceral fat percentage were measured using a digital scale with bioimpedance (Omron, model: BF51). Also, daily physical activity was evaluated using the International Physical Activity Questionnaire (IPAQ). (Pate *et al.*, 1995).

Biochemical parameters

Total cholesterol (TC), TG, low-density lipoprotein cholesterol (LDL-C), HDL-C, and FBS were evaluated using their last blood test before coronary angiography. If a person has yet to undergo relevant tests, the blood sample provided to the research team with prior consent was used. The methods and procedures of using the kits employed in this study have been described in detail in the previous study (Arabi *et al.*, 2024).

Other variables

The study participants were asked to provide

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information related to their age, gender, level of education, economic status, smoking habits, history of diseases in their first-degree family, use of drugs and supplements, menopause status (for women), and receipt of disease-prevention medications. This information was collected through a demographic questionnaire.

Ethical considerations

This study was conducted according to the guidelines of the Declaration of Helsinki, and all procedures involving human subjects/patients were approved by Shahid Sadoughi University of Medical Sciences. Moreover, written informed consent was obtained from all subjects/patients.

Data analysis

The authors employed the Kolmogorov-Smirnov test to assess normality. Chi-square and Independent t-tests were used to compare qualitative and quantitative variables between different groups. To compare the average INQ of nutrients with GS and SS and the average tertiles of INQ with lipid profile, FBS, and body composition factor, they used the Analysis of Covariance (ANCOVA). Binary logistic regression was used to calculate the odds ratio (OR) and 95% confidence interval after multivariable adjustment. The analyses were first adjusted for age, energy, and sex in the first model, and additionally, for married, menopausal status, physical activity, economic status, job, educational level, smoking, drug addiction, diabetes, and BMI in model 2. Additionally, the authors utilized a fully adjusted multivariable linear regression model for the association between INQ of various nutrients and cardiometabolic indices. Statistical data analysis was performed using IBM SPSS software version 26, and a P-value< 0.05 was considered significant.

Results

The final analysis of this cross-sectional study was performed on 612 participants undergoing coronary angiography separately for GS and SS, as shown in **Table 1**. Participants with higher scores of GS and SS were older and had lower BMI than those with lower scores ($P<0.05$). There was a significant difference in the frequency of gender, occupation, menopausal status, smoking, and drug use in GS and SS groups ($P<0.05$), as well as economic status within the GS subgroups ($P<0.05$).

An INQ for every nutrient is provided in **Table 2**. This table indicates that individuals with lower GS and SS scores have higher INQs for linoleic acid, linolenic acid, magnesium, and zinc, while lower INQs are found for iron. Compared to individuals with higher scores of SS, healthy individuals have a higher INQ of manganese to SS, and with higher scores of GS, they have a higher INQ of fiber ($P<0.05$).

Multivariable-adjusted odds ratios and 95% CIs for GS and SS scores across tertile categories of INQ in crude and adjusted models are presented in **Table 3**. Individuals with higher scores of INQ for fiber, linoleic acid, protein, riboflavin, and zinc showed a significantly lower probability of vascular occlusion based on GS and SS in the crude model. Nevertheless, no significant association was shown after adjusting for possible confounding variables. A higher INQ of linolenic acid was significantly associated with a lower probability of vascular occlusion based on the GS and SS indices in the crude model ($P<0.05$). This association remained significant after full adjustment for SS (OR=0.5; 95% CI: 0.28-0.88, $P=0.03$) in model 2. Individuals in the third tertile of INQ had a lower risk of vascular occlusion based on the GS (OR=0.53; 95% CI: 0.29-0.94) compared with those in the first tertile. As per GS, the crude model exhibited a stronger association between the INQ of choline and a lower OR; however, the adjusted models did not demonstrate this association. Furthermore, there was no significant relationship between the INQ of vitamin D and the probability of vascular occlusion in the crude model. However, in model 1, a higher INQ of vitamin D was associated with a lower risk of atherosclerosis. According to SS, a higher INQ of vitamin B6 was associated with a lower OR in the crude model, but no such association was found in models 1 and 2. The significant association between INQ of Linolenic acid and GS and SS is illustrated in the finalized model in

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Figure 1.

Table 4 shows the relationship between the category of INQ score for each nutrient and the mean levels of TC, TG, LDL-C, HDL-C, and FBS among all populations and subgroups stratified by diabetes status. In crude and adjusted models for all subjects, higher INQ of fiber was shown to have a significant association with lower TC, and higher INQ of vitamin B6 was shown to have a significant association with higher TC. Furthermore, a significant association between higher INQ of riboflavin and vitamin D and higher TC was observed in the adjusted model. In the subgroup of diabetics, it was shown that in the crude model, there is a significant association between a higher INQ of fiber and a lower TC. In the non-diabetic subgroup, there is an inverse relationship with TC the higher the fiber INQ in the crude and adjusted models. Furthermore, a higher INQ of riboflavin has a significant and direct association with TC level. A significant association was shown between higher INQ of vitamin B6 and higher TG, and higher INQ of fiber and lower LDL-C in all populations and the subgroup of non-diabetics. In all populations and the subgroup of non-diabetics, a significant association was found between higher INQ of protein and higher HDL-C in the crude and remained significant after adjustment for confounders. Compared to the first tertile, the population in the second tertile of INQ of linoleic acid had higher levels of HDL-C. In the non-diabetic subgroup and the adjusted model, there was a significant association between higher protein INQ and higher FBS. among non-diabetic participants in the crude and adjusted model.

Table 5 shows how the INQ of each nutrient tertile is related to body composition factors. In the crude model, INQ of protein and choline is linked to lower visceral fat percentage in all populations and in both diabetic and non-diabetic groups. But this link did not remain significant after adjustment for confounders. INQ of riboflavin was linked to lower visceral fat percentage in all populations and in the diabetic group. In the crude model, however, this link was only shown in the adjusted model for the non-diabetic group. INQ of zinc was linked to lower visceral fat percentage in all populations and in the diabetic group. Furthermore, INQ of vitamin B6 was linked to lower visceral fat percentage in all populations and in both diabetic and non-diabetic groups, in the crude and adjusted models. INQ of fiber, linoleic acid, linolenic acid, protein, riboflavin, choline, and zinc was linked to higher body fat percentage in all populations and in both diabetic and non-diabetic groups. The same link was found for INQ of carbohydrate and vitamin B6 in all populations and the diabetic group. These links, however, disappear after accounting for other factors. INQ of fiber, linoleic acid, linolenic acid, and zinc was linked to lower skeletal muscle percentage in all populations and in both diabetic and non-diabetic groups. The same link was found for the INQ of riboflavin and choline in all populations and for the INQ of protein and choline in the diabetic group. In the unadjusted model, INQ of fiber and linoleic acid was linked to higher BMI in all populations and the diabetic group. The same was true for the INQ of zinc in all populations. However, in the adjusted model, INQ of choline was linked to lower BMI in the diabetic group, and INQ of vitamin B6 was linked to lower BMI in the non-diabetic group.

Discussion

According to this study, a higher intake of the INQ of linoleic acid is linked to a lower odd of vascular occlusion based on GS and SS. Furthermore, an increase in fiber INQ is associated with decreased levels of TC and LDL-C. On the other hand, an increase in INQ of riboflavin and vitamin D is directly related to the rise in TC. The intake of protein has a direct relationship with the levels of HDL-C and FBS. Additionally, an increase in INQ of vitamin B6 is linked to an increase in TC, TG, and visceral fat percentage. Also, the INQ of vitamin B6 and choline has an inverse relationship with BMI.

Consistent with the results of this study, an umbrella review on 52 meta-analyses found that higher dietary fiber intake was associated with

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significant reductions in the TC and LDL (Fu *et al.*, 2022). Additionally, data from another meta-analysis imply that every seven g/day increments in fiber consumption may reduce CVD risk by 9% (Threapleton *et al.*, 2013). Dietary fiber is effective in reducing TC and LDL-C by increasing the rate of excretion of bile acids (Bartley *et al.*, 2010, Pereira *et al.*, 2004).

The results of a meta-analysis on 47 randomized controlled trials (RCTs) showed that alpha-linolenic acid (ALA) intake enhanced lipid profile by reducing TG, TC, LDL-C, and VLDL levels. (Yue *et al.*, 2021). Moreover, meta-analysis studies conducted on cohort studies indicated that dietary ALA intake was associated with reduced risk of mortality from CVD (Naghshi *et al.*, 2021, Yue *et al.*, 2021). ALA benefits heart health due to its anti-inflammatory properties and ability to combat obesity and diabetes (Yuan *et al.*, 2022).

Results of a large population study revealed that consumption of proteins in breakfast was positively related to HDL-C (Berryman *et al.*, 2021). Furthermore, in the systematic review and meta-analysis of Santesso *et al.* (Santesso *et al.*, 2012), the results indicated that HDL-C levels were higher in diets with higher protein content compared to those with lower protein content. Nevertheless, increasing dietary protein consumption while reducing carbohydrate intake is widely regarded as a beneficial approach for mitigating cardiometabolic risks. This notion is substantiated by numerous studies that have demonstrated improvements in blood lipid profiles among obese and overweight individuals (Clifton *et al.*, 2009, Gardner *et al.*, 2007, Layman *et al.*, 2009). Proteins can exhibit varying effects on cholesterol metabolism depending on the type and composition of their amino acids. The exact processes by which plant proteins lower plasma cholesterol levels are unclear. However, there is evidence that plant proteins may reduce dietary cholesterol absorption and increase neutral and acidic sterols in feces. Additionally, there is growing evidence that animal proteins are digested faster than plant proteins. The higher proportion of phosphorylated amino acids in animal proteins can potentially interact with calcium and affect bile acid reabsorption (Forsythe *et al.*, 1986). The results showed a positive linkage between riboflavin intake and TC. However, the results of other studies did not exactly confirm the statements made in this study. A cross-sectional study of 668 postmenopausal women showed a negative relationship between riboflavin intake and non-alcoholic fatty liver disease (Li *et al.*, 2023). Riboflavin may help reduce lipid peroxidation (Ashoori and Saedisomeolia, 2014). Many animal studies have suggested that riboflavin deficiency has negative effects on lipid peroxidation (Huang *et al.*, 2010, Wang *et al.*, 2011). Findings from a large cross-sectional study in Korea suggested that low riboflavin intake was significantly associated with increased HDL-C levels in men (Shin and Kim, 2019).

Studies that assessed the effects of dietary choline and betaine on body composition (Gao *et al.*, 2016, Konstantinova *et al.*, 2008) have inconsistent results. A cross-sectional survey of 3214 Canadian subjects showed that dietary choline was associated with better body composition (Gao *et al.*, 2016). On the other hand, the results of a large population-based study in Norway showed a positive relation between choline and BMI, percent body fat, and waist circumference (Konstantinova *et al.*, 2008). The relationship between choline and body composition is complex and not entirely understood (Zhong *et al.*, 2020). However, a study has suggested that a diet rich in both choline and betaine can lower the likelihood of hepatic steatosis linked to visceral obesity, with the extent of risk reduction correlating with the intake levels (Chang *et al.*, 2022). In addition, the results of an animal study showed that choline and betaine supplementation may provide therapeutic benefits for the management of obesity and type 2 diabetes, as they have significant metabolic effects on fat breakdown, the tricarboxylic acid cycle, and mitochondrial oxidative phosphorylation processes (Sivanesan *et al.*, 2018). In accordance with the results, a randomized controlled trial performed on 44 obese and overweight women reported the

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beneficial effect of vitamin B6 supplementation in reducing BMI and improving body composition (Haidari *et al.*, 2021). Pyridoxine may be beneficial in regulating adipocytokine levels and ameliorating obesity by enhancing fat oxidation in skeletal muscle (Hagiwara *et al.*, 2009).

The researchers found a direct relationship between vitamin B6 and TC, TG, and visceral fat percentage. On the other hand, the results of a 12-week trial on hyperglycemic patients showed that vitamin B6 supplementation can reduce TC (Hlais *et al.*, 2012). The precise mechanism by which vitamin B6 affects the lipid profile is unclear. Vitamin B6 has been found to be connected with several processes, including the desaturation and elongation of fatty acids, methylation of phospholipids, and the transfer of unsaturated fatty acids from triglycerides to phospholipids. It has been reported that increased delta desaturase activity can lead to increased synthesis of prostaglandin E1, which may suppress cholesterol production and thus affect cholesterol concentration (Harripersad and Burger, 1997, Pregnolato *et al.*, 1994).

A meta-analysis of 13 studies conducted by Huang *et al*. has shown that individuals with a vitamin D deficiency have higher levels of TC compared with those with normal levels (Huang *et al.*, 2023). However, it has been observed in this study and other studies that the Iranian population, particularly women, has low levels of vitamin D (Emdadi *et al.*, 2016, Jasemi *et al.*, 2023). This factor may have influenced the results of this study. Studies have shown that vitamin D deficiency can be associated with a higher risk of cardiovascular diseases, increased inflammation, and oxidative stress (Surdu *et al.*, 2021). Also, studies have shown that vitamin D deficiency has a negative effect on lipid profile levels, and an inverse relationship between vitamin D levels and TC, LDL-C, and TG has been pointed out in studies (Dziedzic *et al.*, 2016, Lupton *et al.*, 2016). Another study revealed that vitamin D deficiency increases serum cholesterol concentration by reducing vitamin D receptor activity and thereby increasing hepatic cholesterol biosynthesis (Li *et al.*, 2016).

This study had a decent sample size, used a validated FFQ, and extracted macronutrients and micronutrients. However, some limitations could affect the results. Cross-sectional studies, which examine exposure and outcome simultaneously, cannot establish causality. Additionally, such studies can be subject to temporal and survival/selective biases. The INQ is based on the RDA but does not define the recommended intake for all nutrients. In this study, dietary information was collected using an FFQ, which may not be entirely accurate. The authors controlled for multiple potential confounding variables in the analysis, but residual confounding may still exist.

Conclusion

This study found that consuming more linolenic acid is linked to a lower chance of developing coronary artery occlusion based on GS and SS. The study also discovered that TC is positively associated with riboflavin, vitamin B6, and vitamin D INQ but negatively associated with fiber INQ. Additionally, LDL-C is inversely related to fiber intake. Fiber INQ was also inversely associated with LDL-C levels, while vitamin B6 and choline INQ were inversely associated with BMI. The study also found that higher levels of vitamin B6 are directly related to TC, TG, and visceral fat percentage. Prospective studies are needed to confirm or reject these findings.

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Authors' contribution

Najafi A, Sasanfar B, and Salehi-Abargouei A participated in the study design and analysis and drafted the initial version. Sasanfar B, Toorang F, and Salehi-Abargouei A helped with data analysis. Taftian M, Ahmadi Vasmehjani A, and Motallaei M contributed to data collection. Salehi-Abargouei A supervised the study, and all the authors reviewed the final version of the manuscript.

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Table 1. Participants' overall characteristics across category of Gensini and Syntax score.

Variables	Gensini Score			Syntax Score		
	Without coronary stenosis (n=406)	With coronary stenosis (n=206)	P-value[c]	Without coronary stenosis (n=407)	With coronary stenosis (n=205)	P-value[c]
Age (y)	55.88 ± 9.72[a]	58.02 ± 9.30	0.01	55.66 ± 9.74	58.47 ± 9.12	0.001
Body mass index (kg/m^2)	27.84 ± 4.56	27.10 ± 3.92	0.04	27.91 ± 4.52	26.98 ± 3.99	0.01
Physical activity (MET-h/week)	67.26 ± 116.94	64.28 ± 120.29	0.76	69.80 ± 121.39	59.17 ± 110.81	0.29
Gender			<0.001			<0.001
Male	200 (49.4)[b]	165 (80.1)		206 (50.7)	159 (77.6)	
Female	205 (50.6)	41 (19.9)		200 (49.3)	46 (22.4)	
Job			<0.001			<0.001
Employee	19 (4.7)	11 (5.4)		18 (4.4)	12 (5.9)	
Worker	36 (8.9)	18 (8.8)		38 (9.4)	16 (7.8)	
Retired	42 (10.4)	45 (22.0)		44 (10.8)	43 (21.1)	
Freelance	111 (27.4)	89 (43.4)		114 (28.1)	86 (42.2)	
Housewife/unemployed	197 (48.6)	42 (20.5)		192 (47.3)	47 (23.0)	
Education			0.24			0.41
Uneducated	102 (25.2)	40 (19.6)		100 (24.7)	42 (20.7)	
No university degree	276 (68.3)	147 (72.1)		279 (68.9)	144 (70.9)	
University degree	26 (6.4)	17 (8.3)		26 (6.4)	17 (8.4)	
Married			0.08			0.45
Unmarried	1 (0.2.0)	4 (1.9)		2 (0.5)	3 (1.5)	
Married	371 (92.3)	189 (91.7)		373 (92.6)	187 (91.2)	
divorced/widowed	30 (7.5)	13 (6.3)		28 (6.9)	15 (7.3)	
Economic status			0.02			0.14
Low	150 (37)	55 (26.8)		147 (36.2)	58 (28.4)	
Middle	114 (28.1)	75 (36.6)		119 (29.3)	70 (34.3)	
High	141 (34.8)	75 (36.6)		140 (34.5)	76 (37.3)	
Menstrual			<0.001			<0.001
Yes	59 (14.5)	6 (2.9)		139 (34.2)	41 (20.0)	
No	145 (35.7)	35 (17.0)		60 (14.7)	5 (2.4.0)	
Male	202 (49.8)	165 (80.1)		208 (51.1)	159 (77.6)	

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Smoking			<0.001			<0.001
No	303 (74.6)	111 (53.9)		297 (73.0)	117 (57.1)	
Former	12 (3.0)	8 (3.9)		14 (3.4)	6 (2.9)	
Current	91 (22.4)	87 (42.2)		96 (23.6)	82 (40.0)	
Drug addiction			0.006			0.01
No	337 (83.6)	151 (74.4)		335 (82.9)	153 (75.7)	
Former	10 (2.5)	3 (1.5)		11 (2.7)	2 (1.0)	
Current	56 (13.9)	49 (24.1)		58 (14.4)	47 (23.3)	
Alcohol consumption			0.70			0.17
No	384 (95.0)	195 (96.1)		381 (94.3)	198 (97.5)	
Yes	5 (1.2)	3 (1.5)		6 (1.5)	2 (1.0)	
Stopped drinking	15 (3.7)	5 (2.5)		17 (4.2)	3 (1.5)	
Diabetes			0.18			0.13
Yes	270 (66.7)	125 (61.3)		271 (66.9)	124 (60.8)	
No	135 (33.3)	79 (38.7)		134 (33.1)	80 (39.2)	

[a]: Values are mean±SD; [b]: n (%); [c]: χ2 Test for ordinal qualitative variables and t-test for continuous variables.

Table 2. Comparison of Index of Nutritional Quality (INQ) of the participants across category of Gensini and Syntax score.

	Gensini Score			Syntax Score		
	Without coronary stenosis (n=406)	**With coronary stenosis (n=206)**	**P-value[b]**	**without coronary stenosis (n=406)**	**With coronary stenosis (n=206)**	**P-value[b]**
Carbohydrate	3.09 ± 0.44[a]	3.12 ± 0.46	0.51	3.10 ± 0.45	3.11 ± 0.45	0.68
Fiber	1.52 ± 0.56	1.39 ± 0.54	0.007	1.50 ± 0.57	1.42 ± 0.52	0.08
Linoleic acid	0.0005 ± 0.0004	0.0004 ± 0.0003	0.02	0.0005 ± 0.0004	0.0004 ± 0.0003	0.001
Linolenic acid	0.13 ± 0.16	0.90 ± 0.90	0.006	0.13 ± 0.16	0.09 ± 0.09	<0.001
Protein	1.92 ± 0.48	1.85 ± 0.48	0.07	1.92 ± 0.49	1.84 ± 0.44	0.05
Thiamine	1.52 ± 0.37	1.51 ± 0.38	0.84	1.52 ± 0.38	1.51 ± 0.35	0.64
Riboflavin	14.04 ± 3.49	13.61 ± 3.56	0.15	14.05 ± 3.57	13.58 ± 3.4	0.12
Niacin	2.51 ± 0.98	2.50 ± 1.12	0.94	2.50 ± 0.96	2.52 ± 1.15	0.84
Pantothenic acid	1.36 ± 0.29	1.36 ± 0.29	0.77	1.36 ± 0.29	1.36 ± 0.29	0.81
Vitamin B_6	1.8 ± 0.48	1.76 ± 0.55	0.38	1.81 ± 0.49	1.74 ± 0.52	0.09
Folate	1.13 ± 0.3	1.17 ± 0.41	0.14	1.13 ± 0.36	1.16 ± 0.32	0.43
Vitamin B_{12}	1.85 ± 2.18	1.81 ± 1.49	0.82	1.89 ± 2.30	1.75 ± 1.07	0.41

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Choline	0.75 ± 0.32	0.71 ± 0.22	0.90	0.75 ± 0.32	0.72 ± 0.22	0.30
Vitamin C	3.07 ± 1.54	3.00 ± 1.69	0.61	3.05 ± 1.54	3.05 ± 1.70	0.99
Vitamin A	1.00 ± 0.45	1.02 ± 0.71	0.62	1.01 ± 0.58	1.00 ± 0.48	0.84
Vitamin D	0.18 ± 0.14	0.17 ± 0.19	0.57	0.18 ± 0.14	0.18 ± 0.19	0.92
Vitamin E	0.86 ± 0.35	0.84 ± 0.35	0.48	0.85 ± 0.35	0.86 ± 0.36	0.79
Vitamin K	2.31 ± 1.85	2.28 ± 3.07	0.86	2.39 ± 2.76	2.11 ± 1.11	0.16
Sodium	6.82 ± 3.25	6.59 ± 3.71	0.45	6.85 ± 3.35	6.53 ± 3.53	0.27
Potassium	1.01 ± 0.23	1.04 ± 0.28	0.15	1.01 ± 0.25	1.04 ± 0.26	0.25
Calcium	0.74 ± 0.22	0.78 ± 0.28	0.07	0.74 ± 0.23	0.78 ± 0.26	0.11
Phosphorus	2.16 ± 0.42	2.15 ± 0.39	0.87	2.16 ± 0.42	2.15 ± 0.38	0.88
Magnesium	1.18 ± 0.27	1.10 ± 0.27	0.002	1.18 ± 0.29	1.10 ± 0.23	0.002
Iron	1.77 ± 0.52	1.93 ± 0.47	<0.001	1.77 ± 0.56	1.93 ± 0.35	<0.001
Zinc	1.53 ± 0.39	1.41 ± 0.40	0.001	1.53 ± 0.41	1.41 ± 0.37	0.001
Selenium	1.83 ± 0.46	1.81 ± 0.65	0.63	1.83 ± 0.47	1.82 ± 0.63	0.94
Copper	0.002 ± 0.0005	0.002 ± 0.0005	0.39	0.002 ± 0.0005	0.002 ± 0.0005	0.30
Manganese	3.43 ± 1.34	3.27 ± 0.99	0.15	3.45 ± 1.37	3.23 ± 0.91	0.04
Fluoride	0.81 ± 0.62	0.81 ± 0.63	0.99	0.82 ± 0.63	0.80 ± 0.61	0.65

[a]: *Data are presented as mean ± SD;* [b]: *Obtained from the t-test.*

Table 3. Association between tertiles of Index of Nutritional Quality (INQ) with coronary artery disease based on Gensini and Syntax score.

Variables	Coronary stenosis based on Gensini Score			P-value[b]	Coronary stenosis based on SYNTAX Score			P-value[b]
	T_1	T_2	T_3		T_1	T_2	T_3	
Carbohydrate								
Crude	Ref	0.92 (0.61-1.40)[a]	1.07 (0.70-1.61)	0.75	Ref	0.88 (0.58-1.34)	1.09 (0.72-1.65)	0.67
Model 1	Ref	1.03 (0.65-1.63)	1.06 (0.68-1.64)	0.78	Ref	0.95 (0.60-1.49)	1.06 (0.68-1.64)	0.78
Model 2	Ref	0.97 (0.57-1.65)	0.99 (0.60-1.65)	0.92	Ref	0.97 (0.58-1.63)	1.06 (0.64-1.73)	0.98
Fiber								
Crude	Ref	0.76 (0.50-1.14)	0.54 (0.35-0.82)	0.004	Ref	0.94 (0.62-1.41)	0.62 (0.41-0.95)	0.03
Model 1	Ref	0.93 (0.59-1.14)	1.35 (0.75-2.42)	0.39	Ref	1.10 (0.69-1.74)	1.27 (0.71-2.26)	0.42
Model 2	Ref	1.12 (0.66-1.89)	1.31 (0.66-2.61)	0.64	Ref	1.26 (0.75-2.13)	1.33 (0.68-2.60)	0.43
Linoleic acid								
Crude	Ref	0.96 (0.64-1.44)	0.51 (0.33-0.78)	0.002	Ref	0.98 (0.65-1.47)	0.48 (0.31-0.74)	0.001

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Model 1	Ref	1.12 (0.69-1.81)	0.91 (0.55-1.50)	0.71	Ref	1.06 (0.66-1.71)	0.76 (0.46-1.26)	0.28
Model 2	Ref	1.08 (0.61-1.88)	0.88 (0.50-1.56)	0.80	Ref	1.01 (0.58-1.74)	0.69 (0.40-1.21)	0.39
Linolenic acid								
Crude	Ref	0.75 (0.50-1.12)	0.39 (0.25-0.60)	<0.001	Ref	0.72 (0.48-1.07)	0.40 (0.26-0.61)	<0.001
Model 1	Ref	0.86 (0.54-1.37)	0.67 (0.40-1.11)	0.12	Ref	0.79 (0.49-1.25)	0.62 (0.38-1.03)	0.06
Model 2	Ref	0.68 (0.40-1.16)	0.53 (0.29-0.94)	0.79	Ref	0.68 (0.40-1.14)	0.50 (0.28-0.88)	0.03
Protein								
Crude	Ref	0.61 (0.40-0.92)	0.57 (0.37-0.87)	0.008	Ref	0.62 (0.41-0.94)	0.58 (0.38-0.88)	0.01
Model 1	Ref	0.79 (0.50-1.24)	1.02 (0.63-1.63)	0.97	Ref	0.77 (0.49-1.22)	0.95 (0.59-1.52)	0.80
Model 2	Ref	0.75 (0.44-1.26)	0.87 (0.51-1.48)	0.64	Ref	0.79 (0.47-1.31)	0.78 (0.46-1.31)	0.33
Riboflavin								
Crude	Ref	0.78 (0.52-1.17)	0.60 (0.39-0.91)	0.01	Ref	0.83 (0.55-1.25)	0.62 (0.41-0.95)	0.03
Model 1	Ref	0.92 (0.59-1.44)	1.00 (0.62-1.59)	0.98	Ref	0.94 (0.60-1.48)	0.95 (0.59-1.51)	0.83
Model 2	Ref	0.85 (0.51-1.43)	0.9 (0.53-1.54)	0.88	Ref	0.87 (0.53-1.44)	1.01 (0.60-1.69)	0.93
Vitamin B_6								
Crude	Ref	1.02 (0.68-1.54)	0.73 (0.48-1.22)	0.15	Ref	0.92 (0.61-1.38)	0.56 (0.37-0.87)	0.01
Model 1	Ref	1.5 (0.96-2.36)	1.19 (0.75-1.89)	0.41	Ref	1.26 (0.81-1.97)	0.86 (0.54-1.37)	0.58
Model 2	Ref	1.45 (0.88-2.37)	1.03 (0.61-1.71)	0.79	Ref	1.1 (0.67-1.78)	0.82 (0.49-1.36)	0.52
Choline								
Crude	Ref	0.8 (0.53-1.21)	0.57 (0.37-0.87)	0.01	Ref	0.96 (0.64-1.44)	0.65 (0.43-1.00)	0.05
Model 1	Ref	0.98 (0.62-1.54)	1.04 (0.64-1.69)	0.86	Ref	1.14 (0.73-1.79)	1.11 (0.68-1.81)	0.64
Model 2	Ref	0.91 (0.55-1.50)	1.1 (0.64-1.89)	0.72	Ref	1.15 (0.70-1.89)	1.31 (0.76-2.26)	0.31
Vitamin D								
Crude	Ref	1.14 (0.76-1.72)	0.65 (0.42-1.004)	0.05	Ref	1.12 (0.75-1.69)	0.81 (0.53-1.23)	0.34
Model 1	Ref	1.13 (0.72-1.79)	0.62 (0.39-0.98)	0.03	Ref	1.12 (0.71-1.76)	0.81 (0.51-1.27)	0.34
Model 2	Ref	1.02 (0.62-1.67)	0.7 (0.42-1.15)	0.14	Ref	1.04 (0.63-1.71)	0.91 (0.55-1.48)	0.64
Zinc								
Crude	Ref	0.82 (0.55-1.23)	0.4 (0.26-0.62)	<0.001	Ref	0.75 (0.50-1.13)	0.4 (0.26-0.62)	<0.001
Model 1	Ref	1.16 (0.76-1.79)	1.09 (0.61-1.92)	0.67	Ref	0.99 (0.64-1.53)	0.87 (0.49-1.52)	0.67
Model 2	Ref	1.11 (0.69-1.79)	0.92 (0.48-1.74)	0.96	Ref	0.91 (0.57-1.47)	0.69 (0.37-1.30)	0.35

[a]: Data are presented as OR and 95% CI; [b]: Obtained from the binary logistic regression; ***Model 1****: adjusted for age, energy, and sex;* ***Model 2****:* ***Model 1*** *+ adjusted for married, menopausal status, physical activity, economic status, job, educational level, smoking, drug addiction, Diabetes, and body mass index..*

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Table 4. Association between tertiles of Index of Nutritional Quality (INQ) and lipid profile and fasting blood sugar.

Variables	TC		TG		LDL-C		HDL-C		FBS	
	Crude	Adjusted[e]	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted
All population										
Carbohydrate										
T_1	209.10 ± 8.94[d]	211.77 ± 9.84	150.63 ± 7.16	155.80 ± 7.18	97.98 ± 3.55	95.91 ± 3.84	49.10 ± 1.07	49.13 ± 1.15	135.78 ± 4.61	139.6 ± 4.5
T_2	193.43 ± 8.78	193.54 ± 9.46	147.33 ± 7.14	141.61 ± 7.02	98.54 ± 3.54	98.56 ± 3.76	47.33 ± 1.07	47.04 ± 1.13	131.31 ± 4.62	127.05 ± 4.45
T_3	188.73 ± 8.81	189.24 ± 9.47	167.54 ± 7.11	165.77 ± 6.97	95.31 ± 3.54	95.92 ± 3.75	49.73 ± 1.05	49.50 ± 1.11	134.98 ± 4.67	131.52 ± 4.48
P-value[c]	0.24	0.22	0.1	0.05	0.78	0.85	0.25	0.26	0.76	0.13
Fiber										
T_1	220.84 ± 8.64 [a]	219.96 ± 10.83 [a]	153.67 ± 7.04	153.19 ± 8.02	105.30 ± 3.42 [a]	106.18 ± 4.16 [a]	47.54 ± 1.05	47.84 ± 1.27	131.23 ± 4.60	134.66 ± 5.23
T_2	183.32 ± 8.53 [b]	184.13 ± 9.34 [b]	148.83 ± 6.94	149.10 ± 6.92	93.08 ± 3.42 [b]	90.95 ± 3.65 [b]	49.10 ± 1.04	48.99 ± 1.11	132.66 ± 4.60	131.14 ± 4.5
T_3	186.12 ± 9.20 [b]	188.65 ± 11.76	165.01 ± 7.57	161.41 ± 8.82	92.90 ± 3.73 [b]	92.65 ± 4.63	49.72 ± 1.12	48.83 ± 1.39	138.56 ± 4.69	132.13 ± 5.42
P-value	0.003	0.04	0.27	0.55	0.01	0.02	0.33	0.79	0.50	0.87
Linoleic acid										
T_1	197.43 ± 9.25	189.63 ± 11.2	149.67 ± 7.46	142.77 ± 8.25	95.82 ± 3.67	94.00 ± 4.37	47.44 ± 1.11	47.68 ± 1.31	136.81 ± 4.72	134.21 ± 5.11
T_2	200.08 ± 8.73	200.60 ± 9.69	161.37 ± 7.02	161.72 ± 7.12	100.65 ± 3.47	99.47 ± 3.82	49.77 ± 1.05	49.56 ± 1.15	135.51 ± 4.62	131.59 ± 4.63
T_3	193.60 ± 8.73	202.17 ± 9.55	154.31 ± 7.07	156.86 ± 7.06	95.34 ± 3.50	96.72 ± 3.77	48.90 ± 1.05	48.33 ± 1.12	130.17 ± 4.57	132.21 ± 4.53
P-value	0.87	0.70	0.51	0.25	0.49	0.66	0.31	0.55	0.56	0.93
Linolenic acid										
T_1	199.97 ± 9.03	201.82 ± 10.91	156.20 ± 7.31	150.14 ± 8.07	96.81 ± 3.62	98.37 ± 4.31	48.39 ± 1.09	49.26 ± 1.29	141.47 ± 4.71	137.59 ± 5.03
T_2	203.28 ± 8.68	203.51 ± 9.48	155.92 ± 7.06	157.62 ± 7.03	99.66 ± 3.48	99.30 ± 3.75	48.64 ± 1.05	48.54 ± 1.12	129.77 ± 4.54	127.57 ± 4.39
T_3	187.53 ± 8.93	187.87 ± 10.04	153.89 ± 7.21	154.63 ± 7.39	95.39 ± 3.55	92.70 ± 3.93	49.2 ± 1.07	47.88 ± 1.17	131.47 ± 4.63	133.37 ± 4.71
P-value	0.41	0.48	0.97	0.80	0.68	0.44	0.86	0.75	0.16	0.32
Protein										
T_1	199.65 ± 9.01	198.86 ± 10.26	151.43 ± 7.28	154.61 ± 7.57	98.37 ± 3.58	99.81 ± 3.99	47.96 ± 1.07	48.77 ± 1.18	129.48 ± 4.65	126.68 ± 4.74
T_2	193.20 ± 8.67	196.16 ± 9.40	157.47 ± 7.03	153.56 ± 6.97	94.22 ± 3.46	93.35 ± 3.7	46.87 ± 1.03 [a]	46.22 ± 1.10 [a]	132.22 ± 4.60	132.58 ± 4.46
T_3	198.52 ± 9.01	198.63 ± 9.77	156.94 ± 7.25	154.69 ± 7.19	99.63 ± 3.60	97.53 ± 3.83	51.55 ± 1.07 [b]	50.77 ± 1.13 [b]	140.59 ± 4.63	138.52 ± 4.53
P-value	0.85	0.97	0.80	0.99	0.52	0.49	0.005	0.01	0.21	0.22
Riboflavin										
T_1	195.29 ± 8.61	184.60 ± 9.44 [a]	154.84 ± 6.97	151.67 ± 7.03	100.24 ± 3.38	98.34 ± 3.66	48.47 ± 1.02	48.72 ± 1.10	137.17 ± 4.64	134.99 ± 4.62
T_2	186.36 ± 8.81	190.60 ± 9.37	148.97 ± 7.12	153.33 ± 6.97	95.71 ± 3.56	94.13 ± 3.76	48.07 ± 1.07	47.56 ± 1.12	127.18 ± 4.56	128.89 ± 4.42
T_3	210.55 ± 9.17	221.38 ± 10.21[b]	162.91 ± 7.46	158.4 ± 7.63	95.56 ± 3.72	97.93 ± 4.08	49.82 ± 1.12	49.43 ± 1.22	138.24 ± 4.67	134.14 ± 4.69
P-value	0.16	0.02	0.40	0.81	0.55	0.68	0.50	0.51	0.17	0.58

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Vitamin B_6										
T_1	188.26 ± 8.44	185.59 ± 9.16 [a]	141.12 ± 6.74 [a]	144.00 ± 6.74 [a]	95.91 ± 3.34	95.82 ± 3.56	47.78 ± 1.01	47.99 ± 1.07	133.49 ± 4.57	134.28 ± 4.46
T_2	189.32 ± 8.70	189.58 ± 9.55	149.18 ± 6.92 [a]	147.21 ± 7.01 [a]	96.01 ± 3.51	94.05 ± 3.80	49.16 ± 1.06	48.42 ± 1.14	133.73 ± 4.67	131.6 ± 4.59
T_3	217.05 ± 9.44	222.75 ± 10.26 [b]	180.61 ± 7.57 [b]	175.5 ± 7.58 [b]	100.80 ± 3.85	101.39 ± 4.14	49.52 ± 1.15	49.41 ± 1.22	135.10 ± 4.67	131.92 ± 4.61
P-value	0.04	0.01	<0.001	0.005	0.56	0.41	0.46	0.69	0.96	0.90
Choline										
T_1	192.23 ± 8.63	182.20 ± 9.83	152.10 ± 6.98	151.30 ± 7.30	93.75 ± 3.42	91.54 ± 3.83	47.42 ± 1.03	47.31 ± 1.15	133.80 ± 4.62	134.02 ± 4.81
T_2	192.83 ± 8.90	197.68 ± 9.67	157.38 ± 7.18	158.6 ± 7.16	98.73 ± 3.54	98.56 ± 3.81	48.54 ± 1.06	48.44 ± 1.14	127.24 ± 4.62	126.92 ± 4.47
T_3	206.81 ± 9.13	215.57 ± 10.25	156.82 ± 7.42	153.12 ± 7.61	99.95 ± 3.69	101.19 ± 4.08	50.46 ± 1.10	50.06 ± 1.21	141.29 ± 4.63	136.92 ± 4.65
P-value	0.43	0.08	0.84	0.76	0.41	0.23	0.13	0.29	0.10	0.27
Vitamin D										
T_1	191.88 ± 8.81	192.53 ± 9.60	153.16 ± 7.17	151.71 ± 7.17	94.91 ± 3.56	94.41 ± 3.81	47.96 ± 1.07	47.09 ± 1.13	133.59 ± 4.63	131.56 ± 4.56
T_2	186.23 ± 8.46	184.06 ± 8.95 [a]	152.76 ± 6.93	153.31 ± 6.72	97.11 ± 3.40	95.10 ± 3.55	49.11 ± 1.03	48.92 ± 1.06	128.63 ± 4.58	129.57 ± 4.43
T_3	215.14 ± 9.21	221.61 ± 10.05 [b]	160.23 ± 7.44	158.34 ± 7.44	99.98 ± 3.67	101.70 ± 3.96	49.12 ± 1.11	49.73 ± 1.19	139.99 ± 4.64	136.99 ± 4.49
P-value	0.05	0.01	0.71	0.80	0.61	0.34	0.67	0.26	0.22	0.47
Zinc										
T_1	195.32 ± 9.07	192.52 ± 10.78	154.26 ± 7.32	154.72 ± 7.94	97.75 ± 3.61	98.55 ± 4.17	47.76 ± 1.08	48.68 ± 1.25	128.68 ± 4.61	126.87 ± 5.01
T_2	200.8 ± 8.88	200.90 ± 9.48	149.27 ± 7.17	152.53 ± 7.00	98.00 ± 3.53	97.42 ± 3.69	47.93 ± 1.06	48.12 ± 1.10	137.64 ± 4.69	138.44 ± 4.49
T_3	194.95 ± 8.73	199.84 ± 10.97	162.20 ± 7.04	155.53 ± 8.05	96.26 ± 3.52	94.56 ± 4.29	50.48 ± 1.05	48.80 ± 1.28	136.06 ± 4.59	132.81 ± 5.29
P-value	0.87	0.82	0.43	0.95	0.93	0.82	0.13	0.89	0.34	0.20
With diabetes										
Carbohydrate										
T_1	231.05 ± 18.79	207.33 ± 20.93	190.25 ± 14.49	175.69 ± 15.92	94.88 ± 6.39	84.38 ± 7.03	50.18 ± 2.04	49.52 ± 2.20	185.46 ± 12.15	188.11 ± 13.19
T_2	208.65 ± 14.07	222.99 ± 15.31	172.93 ± 10.85	173.94 ± 11.65	99.91 ± 4.82	101.14 ± 5.22	47.41 ± 1.54	46.61 ± 1.63	158.52 ± 9.39	153.15 ± 10.15
T_3	194.06 ± 14.75	195.53 ± 16.10	194.44 ± 11.38	203.32 ± 12.25	91.35 ± 5.06	91.77 ± 5.50	48.50 ± 1.62	48.39 ± 1.72	164.91 ± 10.02	164.88 ± 10.87
P-value	0.30	0.48	0.36	0.18	0.47	0.17	0.55	0.57	0.20	0.12
Fiber										
T_1	258.91 ± 18.34 [a]	242.15 ± 23.06	199.24 ± 14.50	201.02 ± 17.75	99.68 ± 6.40	100.02 ± 7.85	46.48 ± 2.04	46.49 ± 2.42	166.25 ± 12.92	149.18 ± 15.69
T_2	202.92 ± 14.90	202.93 ± 16.66	187.67 ± 11.78	186.71 ± 12.83	97.19 ± 5.25	94.85 ± 5.73	49.45 ± 1.67	49.67 ± 1.77	167.83 ± 10.03	160.07 ± 10.87
T_3	186.00 ± 13.30 [b]	196.86 ± 17.46	174.83 ± 10.54	174.19 ± 13.45	92.18 ± 4.69	89.88 ± 6.00	48.70 ± 1.49	47.26 ± 1.85	167.32 ± 9.24	175.48 ± 11.71
P-value	0.006	0.30	0.38	0.56	0.59	0.66	0.52	0.44	0.99	0.49
Linoleic acid										
T_1	222.69 ± 16.17	195.93 ± 21.88	173.01 ± 12.48	170.85 ± 17.00	93.36 ± 5.52	89.52 ± 7.50	44.63 ± 1.72 [a]	44.72 ± 2.28	167.89 ± 10.71	165.83 ± 14.71
T_2	191.07 ± 14.89	191.16 ± 16.83	194.58 ± 11.49	191.29 ± 13.00	97.87 ± 5.12	97.90 ± 5.86	51.09 ± 1.60 [b]	51.27 ± 1.78	170.45 ± 10.09	166.1 ± 11.28
T_3	214.00 ± 15.56	241.54 ± 18.43	184.98 ± 12.01	191.03 ± 14.32	95.28 ± 5.36	94.18 ± 6.41	49.15 ± 1.67	47.39 ± 1.95	163.32 ± 10.46	164.64 ± 12.4
P-value	0.32	0.10	0.44	0.65	0.83	0.70	0.02	0.07	0.88	0.99
Linolenic acid										

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T_1	224.88 ± 15.13	221.78 ± 20.05	191.05 ± 11.70	198.86 ± 15.30	96.97 ± 5.17	97.24 ± 6.75	48.33 ± 1.65	50.28 ± 2.07	175.90 ± 10.19	180.12 ± 12.84
T_2	208.23 ± 15.41	206.26 ± 17.81	189.01 ± 11.92	185.32 ± 13.59	96.64 ± 5.36	96.90 ± 6.12	48.96 ± 1.71	48.44 ± 1.88	155.36 ± 10.04	149.79 ± 10.86
T_3	190.04 ± 16.00	200.01 ± 18.87	173.21 ± 12.37	168.80 ± 14.39	93.05 ± 5.46	87.36 ± 6.39	48.04 ± 1.75	44.70 ± 1.96	171.49 ± 10.91	168.71 ± 12.47
P-value	0.28	0.76	0.52	0.41	0.85	0.47	0.92	0.16	0.32	0.20
Protein										
T_1	228.50 ± 16.34	220.28 ± 19.45	202.27 ± 12.57	209.50 ± 14.72	98.35 ± 5.57	101.77 ± 6.54	47.56 ± 1.78	48.16 ± 2.03	161.94 ± 11.15	159.95 ± 12.97
T_2	197.99 ± 15.02	206.06 ± 16.12	178.60 ± 11.55	178.56 ± 12.20	96.05 ± 5.16	93.19 ± 5.48	47.85 ± 1.65	46.29 ± 1.70	166.77 ± 10.31	164.7 ± 10.92
T_3	201.50 ± 15.28	204.53 ± 16.75	175.88 ± 11.75	170.73 ± 12.67	92.73 ± 5.26	88.22 ± 5.72	49.86 ± 1.68	49.39 ± 1.77	171.98 ± 9.89	170.48 ± 10.74
P-value	0.33	0.82	0.25	0.15	0.76	0.33	0.58	0.44	0.79	0.83
Riboflavin										
T_1	206.01 ± 16.25	190.03 ± 17.37	189.86 ± 12.54	191.57 ± 13.38	93.09 ± 5.52	92.00 ± 5.90	48.28 ± 1.76	48.65 ± 1.82	168.06 ± 10.86	160.09 ± 11.81
T_2	198.78 ± 16.76	218.20 ± 18.51	179.74 ± 12.93	183.34 ± 14.26	98.80 ± 5.75	99.34 ± 6.40	47.00 ± 1.83	45.80 ± 1.98	158.78 ± 11.04	163.05 ± 12.06
T_3	216.97 ± 14.14	219.76 ± 16.01	184.53 ± 10.91	180.43 ± 12.33	95.31 ± 4.84	91.74 ± 5.51	49.60 ± 1.54	48.84 ± 1.70	173.01 ± 9.50	171.78 ± 10.62
P-value	0.69	0.40	0.85	0.82	0.77	0.63	0.55	0.47	0.61	0.75
Vitamin B_6										
T_1	205.91 ± 16.31	198.42 ± 17.81	180.26 ± 12.45	184.48 ± 13.62	96.52 ± 5.56	95.90 ± 6.03	46.09 ± 1.77	45.87 ± 1.87	167.34 ± 10.79	171.83 ± 11.9
T_2	193.26 ± 14.50	200.28 ± 16.18	169.05 ± 11.07	170.57 ± 12.37	91.51 ± 4.98	87.29 ± 5.53	49.51 ± 1.58	47.74 ± 1.71	164.74 ± 10.03	159.77 ± 11.07
T_3	228.68 ± 15.83	232.37 ± 17.98	207.79 ± 12.09	202.31 ± 13.75	99.66 ± 5.45	100.11 ± 6.19	49.44 ± 1.73	50.22 ± 1.91	170.03 ± 10.47	165.54 ± 11.83
P-value	0.25	0.33	0.05	0.24	0.53	0.30	0.28	0.29	0.93	0.77
Choline										
T_1	214.09 ± 16.97	195.95 ± 19.66	182.46 ± 13.06	187.98 ± 15.11	84.91 ± 5.67	84.96 ± 6.62	46.88 ± 1.82	47.38 ± 2.05	168.26 ± 11.12	171.85 ± 13.14
T_2	207.33 ± 15.81	205.55 ± 16.91	192.04 ± 12.17	188.15 ± 13.00	101.01 ± 5.33	97.93 ± 5.76	47.28 ± 1.71	45.92 ± 1.78	157.39 ± 10.76	158.29 ± 11.64
T_3	205.10 ± 14.39	223.79 ± 16.92	180.43 ± 11.07	179.56 ± 13.00	98.98 ± 4.84	97.67 ± 5.77	50.55 ± 1.56	50.04 ± 1.79	174.29 ± 9.49	168.38 ± 11.05
P-value	0.91	0.58	0.76	0.88	0.08	0.29	0.22	0.28	0.49	0.63
Vitamin D										
T_1	202.27 ± 15.98	197.21 ± 17.33	176.95 ± 12.39	174.36 ± 13.41	95.56 ± 5.52	94.23 ± 6.00	47.84 ± 1.78	46.49 ± 1.87	165.08 ± 10.30	165.75 ± 11.15
T_2	186.43 ± 14.71	191.21 ± 15.56	173.51 ± 11.41	176.95 ± 12.04	88.93 ± 5.03	86.40 ± 5.30	47.62 ± 1.62	46.91 ± 1.65	161.66 ± 10.86	160.17 ± 11.35
T_3	237.98 ± 15.38	243.45 ± 17.12	204.35 ± 11.92	204.36 ± 13.24	103.11 ± 5.3	102.90 ± 5.94	49.92 ± 1.71	50.47 ± 1.85	174.26 ± 10.08	170.7 ± 10.78
P-value	0.05	0.06	0.13	0.21	0.15	0.12	0.57	0.26	0.67	0.82
Zinc										
T_1	212.04 ± 17.35	188.85 ± 21.41	192.43 ± 13.36	195.47 ± 16.45	89.80 ± 5.86	88.43 ± 7.24	47.08 ± 1.87	48.05 ± 2.25	155.97 ± 11.68	149.51 ± 14.58
T_2	211.72 ± 16.61	213.13 ± 17.70	181.13 ± 12.79	185.63 ± 13.59	97.29 ± 5.61	97.68 ± 6.00	48.12 ± 1.79	46.84 ± 1.86	183.30 ± 10.88	179.97 ± 11.82
T_3	203.81 ± 13.66	220.41 ± 16.94	181.16 ± 10.51	177.56 ± 13.01	98.16 ± 4.68	94.97 ± 5.80	49.54 ± 1.50	48.59 ± 1.81	163.06 ± 9.01	165.01 ± 11.35
P-value	0.90	0.55	0.79	0.74	0.50	0.60	0.57	0.79	0.19	0.22
Without diabetes										
Carbohydrate										
T_1	201.02 ± 9.83	209.36 ± 10.87	136.54 ± 7.66	138.78 ± 7.66	99.13 ± 4.33	101.14 ± 4.65	48.71 ± 1.27	49.17 ± 1.35	118.99 ± 3.18	117.66 ± 3.18

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T_2	180.56 ± 11.24	175.43 ± 12.19	125.09 ± 8.97	122.55 ± 8.82	97.31 ± 5.08	95.88 ± 5.38	47.26 ± 1.49	47.49 ± 1.56	110.56 ± 3.65	112.65 ± 3.56
T_3	184.44 ± 10.97	183.07 ± 11.69	147.78 ± 8.63	143.05 ± 8.35	97.76 ± 4.91	98.19 ± 5.12	50.50 ± 1.47	49.97 ± 1.44	116.66 ± 3.57	113.46 ± 3.46
P-value	0.33	0.09	0.19	0.22	0.95	0.76	0.28	0.51	0.21	0.52
Fiber										
T_1	207.78 ± 9.44 [a]	214.31 ± 11.89 [a]	138.35 ± 7.45	131.34 ± 8.43	107.24 ± 4.10 [a]	109.88 ± 4.96 [a]	47.90 ± 1.23	48.54 ± 1.49	120.54 ± 3.13	120.39 ± 3.62
T_2	171.13 ± 10.22 [b]	170.41 ± 11.36 [b]	125.43 ± 8.06	125.39 ± 8.08	89.98 ± 4.52 [b]	89.04 ± 4.88 [b]	48.77 ± 1.34	49.16 ± 1.43	111.57 ± 3.49	112.89 ± 3.49
T_3	186.26 ± 12.83	179.12 ± 16.31	152.94 ± 10.35	157.32 ± 11.82	93.85 ± 8.58	92.38 ± 7.07	50.95 ± 1.69	49.32 ± 2.04	113.91 ± 3.82	109.14 ± 4.51
P-value	0.03	0.03	0.10	0.08	0.01	0.01	0.34	0.95	0.13	0.19
Linoleic acid										
T_1	181.84 ± 11.03	180.85 ± 13.16	135.26 ± 8.75	128.51 ± 9.39	97.41 ± 4.91	95.12 ± 5.67	49.22 ± 1.44	49.39 ± 1.64	119.85 ± 3.50	117.48 ± 3.7
T_2	205.96 ± 10.64	203.15 ± 12.09	138.97 ± 8.40	139.60 ± 8.59	102.11 ± 4.73	100.76 ± 5.26	48.74 ± 1.39	48.27 ± 1.53	114.87 ± 3.50	117.87 ± 3.62
T_3	181.76 ± 10.29	186.86 ± 11.28	136.31 ± 8.21	136.94 ± 8.10	95.37 ± 4.62	99.60 ± 4.90	48.75 ± 1.34	49.19 ± 1.40	112.98 ± 3.37	114.99 ± 3.35
P-value	0.18	0.44	0.95	0.69	0.58	0.76	0.96	0.87	0.35	0.58
Linolenic acid										
T_1	182.22 ± 11.13	186.60 ± 13.17	131.37 ± 8.79	125.03 ± 9.35	96.69 ± 5.02	97.8 0± 5.77	48.43 ± 1.46	48.81 ± 1.67	119.96 ± 3.59	115.42 ± 3.8
T_2	200.13 ± 10.38	201.06 ± 11.40	135.73 ± 8.24	135.61 ± 8.13	101.03 ± 4.60	102.13 ± 4.91	48.33 ± 1.35	48.98 ± 1.42	115.42 ± 3.41	114.19 ± 3.37
T_3	186.09 ± 10.56	182.66 ± 12.00	142.95 ± 8.29	143.97 ± 8.45	96.79 ± 4.68	95.60 ± 5.15	49.86 ± 1.36	49.02 ± 1.48	112.58 ± 3.37	114.87 ± 3.48
P-value	0.45	0.51	0.62	0.35	0.75	0.65	0.67	0.99	0.32	0.97
Protein										
T_1	183.78 ± 10.57	184.06 ± 12.07	123.48 ± 8.29	122.04 ± 8.52	98.39 ± 4.65	99.54 ± 5.13	48.19 ± 1.34	48.86 ± 1.46	114.34 ± 3.36	108.94 ± 3.41 [a]
T_2	189.81 ± 10.52	192.86 ± 11.65	143.53 ± 8.29	140.47 ± 8.27	92.46 ± 4.65	93.37 ± 5.02	46.08 ± 1.34 [a]	46.36 ± 1.43 [a]	113.18 ± 3.45	114.21 ± 3.39
T_3	196.50 ± 11.02	195.01 ± 12.18	144.16 ± 8.58	144.16 ± 8.54	104.56 ± 4.89	103.29 ± 5.21	52.71 ± 1.40 [b]	51.77 ± 1.48 [b]	120.30 ± 3.56	121.99 ± 3.53 [b]
P-value	0.70	0.81	0.13	0.17	0.20	0.38	0.003	0.03	0.30	0.03
Riboflavin										
T_1	189.94 ± 9.94	181.85 ± 11.21	137.34 ± 7.87	129.11 ± 8.05	103.82 ± 4.29	101.65 ± 4.72	48.56 ± 1.27	48.52 ± 1.38	112.20 ± 3.37	119.81 ± 3.43
T_2	179.85 ± 10.20	178.29 ± 10.76 [a]	133.65 ± 8.04	134.80 ± 7.70	93.60 ± 4.58	93.02 ± 4.76	48.48 ± 1.33	48.43 ± 1.36	112.97 ± 3.28	110.45 ± 3.22
T_3	204.12 ± 12.24	220.99 ± 13.78 [b]	140.96 ± 9.77	145.45 ± 9.90	95.84 ± 5.59	102.00 ± 6.12	50.06 ± 1.64	50.39 ± 1.75	111.77 ± 3.71	114.29 ± 3.79
P-value	0.31	0.04	0.84	0.47	0.23	0.34	0.71	0.64	0.06	0.14
Vitamin B_6										
T_1	180.09 ± 9.63	178.69 ± 10.6	123.03 ± 7.50 [a]	122.36 ± 7.48 [a]	95.62 ± 4.21	95.82 ± 4.49	48.55 ± 1.23	48.68 ± 1.3	117.57 ± 3.32	113.57 ± 3.30
T_2	186.01 ± 10.89	187.03 ± 12.15	134.22 ± 8.43	135.02 ± 8.54	99.00 ± 4.91	100.83 ± 5.31	48.75 ± 1.45	49.60 ± 1.54	114.39 ± 3.58	116.13 ± 3.59
T_3	208.65 ± 11.64	211.33 ± 12.74	160.70 ± 9.17 [b]	154.66 ± 9.05 [b]	101.69 ± 5.35	100.71 ± 5.69	49.58 ± 1.54	48.66 ± 1.60	115.26 ± 3.51	114.94 ± 3.46
P-value	0.15	0.15	0.007	0.02	0.66	0.72	0.86	0.88	0.79	0.87
Choline										
T_1	182.56 ± 9.73	174.65 ± 11.29	138.67 ± 7.72	129.82 ± 8.08	97.81 ± 4.32	96.18 ± 4.83	47.67 ± 1.27	47.41 ± 1.40	118.02 ± 3.34	113.59 ± 3.51
T_2	183.68 ± 10.64	190.18 ± 11.86	136.31 ± 8.40	140.01 ± 8.47	96.83 ± 4.71	98.85 ± 5.15	49.17 ± 1.37	50.05 ± 1.48	112.53 ± 3.40	111.89 ± 3.35

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T_3	208.36 ± 11.86	213.44 ± 13.19	134.91 ± 9.48	137.74 ± 9.52	100.92 ± 5.44	102.16 ± 5.83	50.38 ± 1.56	49.86 ± 1.65	117.00 ± 3.66	119.42 ± 3.66
P-value	0.19	0.11	0.95	0.68	0.84	0.75	0.39	0.40	0.48	0.29
Vitamin D										
T_1	185.87 ± 10.44	189.91 ± 11.68	139.86 ± 8.23	136.45 ± 8.34	94.00 ± 4.66	94.21 ± 5.05	47.89 ± 1.35	46.99 ± 1.44	115.87 ± 3.5	114.76 ± 3.51
T_2	186.11 ± 10.21	180.27 ± 11.03	139.60 ± 8.14	140.42 ± 7.94	102.53 ± 4.56	100.99 ± 4.79	50.08 ± 1.33	50.33 ± 1.38	112.70 ± 3.33	113.07 ± 3.31
T_3	198.91 ± 11.42	205.29 ± 12.71	129.68 ± 8.89	127.39 ± 8.94	97.74 ± 5.00	100.96 ± 5.44	48.55 ± 1.47	49.58 ± 1.57	119.08 ± 3.53	116.86 ± 3.49
P-value	0.63	0.33	0.63	0.54	0.42	0.57	0.50	0.24	0.42	0.73
Zinc										
T_1	187.33 ± 10.41	191.33 ± 12.3	136.00 ± 8.20	130.94 ± 8.68	101.72 ± 4.59	104.70 ± 5.18	48.10 ± 1.34	49.43 ± 1.51	117.88 ± 3.26	112.85 ± 3.56
T_2	194.96 ± 10.35	195.22 ± 11.24	131.53 ± 8.15	133.46 ± 7.98	97.91 ± 4.57	97.28 ± 4.78	47.70 ± 1.33	48.23 ± 1.38	115.70 ± 3.43	115.78 ± 3.34
T_3	186.67 ± 11.45	183.92 ± 14.65	144.49 ± 9.02	142.91 ± 10.24	94.39 ± 5.15	92.70 ± 6.21	51.36 ± 1.48	49.24 ± 1.78	113.26 ± 3.75	116.24 ± 4.38
P-value	0.82	0.83	0.56	0.70	0.56	0.36	0.14	0.81	0.64	0.8

*[a, b]: Values with different superscripts were significantly different. (P <0.05); [C]: ANCOVA was used. Bonferroni was used for multiple comparisons; [d]: Data are presented as mean ± SE; [e]: Adjusted for age, energy, sex, married status, menopausal status, physical activity, economic status, job, educational level, smoking, drug addiction, diabetes, and body mass indec. **TC**: total cholesterol; **TG**: Triglyceride; **LDL-C**: Low density lipoprotein; **HDL-C**: High density lipoprotein; **FBS**: Fasting blood sugar.*

Table 5. Association between tertiles of Index of Nutritional Quality (INQ) and body composition factor**.**

Variables	Waist circumference		Visceral fat percentage		Body fat percentage		Skeletal muscle percentage		Body mass index	
	Crude	Adjusted[f]	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted
All population										
Carbohydrate										
T_1	99.05 ± 0.89	99.84 ± 0.65	10.56 ± 0.29	10.69 ± 0.16	30.78 ± 0.79 [a]	32.11 ± 0.33	31.36 ± 0.75	30.58 ± 0.70	27.30 ± 0.31	27.49 ± 0.31
T_2	100.49 ± 0.88	100.04 ± 0.65	10.9 ± 0.28	11.00 ± 0.15	34.02 ± 0.79 [b]	32.68 ± 0.32	29.27 ± 0.74	30.08 ± 0.69	27.74 ± 0.3	27.45 ± 0.30
T_3	100.63 ± 0.89	100.14 ± 0.65	11.38 ± 0.29	10.96 ± 0.15	32.80 ± 0.80	32.62 ± 0.33	29.82 ± 0.75	29.99 ± 0.70	27.73 ± 0.31	27.75 ± 0.31
P-value[d]	0.38	0.94	0.14	0.35	0.01	0.41	0.13	0.81	0.52	0.76
Fiber										
T_1	99.63 ± 0.9	100.53 ± 0.76	11.11 ± 0.29	10.76 ± 0.15	26.85 ± 0.71 [a]	32.13 ± 0.38	32.98 ± 0.73 [a]	29.22 ± 0.81	26.86 ± 0.31 [a]	27.83 ± 0.36
T_2	99.76 ± 0.89	99.68 ± 0.65	11.05 ± 0.28	10.93 ± 0.15	31.81 ± 0.7 [b]	32.44 ± 0.33	31.39 ± 0.71 [a]	31.51 ± 0.70	27.44 ± 0.30	27.46 ± 0.31
T_3	100.82 ± 0.89	99.82 ± 0.77	10.67 ± 0.29	10.96 ± 0.18	39.06 ± 0.71 [c]	32.84 ± 0.39	25.99 ± 0.72 [b]	29.88 ± 0.83	28.47 ± 0.30[b]	27.4 ± 0.36
P-value	0.58	0.69	0.51	0.73	< 0.001	0.52	< 0.001	0.06	0.001	0.69
Linoleic acid										
T_1	99.1 ± 0.9	100.26 ± 0.72	11.16 ± 0.29	10.94 ± 0.17	28.24 ± 0.76 [a]	32.78 ± 0.36	33.28 ± 0.74 [a]	30.82 ± 0.78	26.83 ± 0.31 [a]	27.27 ± 0.34
T_2	100.56 ± 0.89	99.32 ± 0.67	11.30 ± 0.29	10.82 ± 0.16	33.16 ± 0.76 [b]	32.73 ± 0.34	29.20 ± 0.74 [b]	29.51 ± 0.73	27.84 ± 0.31	27.96 ± 0.32
T_3	100.52 ± 0.88	100.42 ± 0.66	10.39 ± 0.28	10.89 ± 0.16	36.26 ± 0.75 [c]	31.93 ± 0.33	27.96 ± 0.72 [b]	30.30 ± 0.71	28.08 ± 0.30 [b]	27.46 ± 0.31

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P-value	0.42	0.45	0.05	0.87	< 0.001	0.15	< 0.001	0.48	0.01	0.32
Linolenic acid										
T_1	99.28 ± 0.89	99.94 ± 0.71	11.42 ± 0.29	10.94 ± 0.17	28.84 ± 0.76 [a]	33.06 ± 0.36	32.98 ± 0.73 [a]	31.04 ± 0.76	26.97 ± 0.31 [a]	27.5 ± 0.34
T_2	100.9 ± 0.89	100.32 ± 0.64	10.94 ± 0.29	10.79 ± 0.15	32.26 ± 0.76 [b]	32.27 ± 0.32	29.77 ± 0.73 [b]	29.52 ± 0.69	27.65 ± 0.31	27.7 ± 0.31
T_3	100.02 ± 0.90	99.74 ± 0.68	10.46 ± 0.29	10.93 ± 0.16	36.78 ± 0.77 [c]	32.09 ± 0.35	27.55 ± 0.74 [b]	30.13 ± 0.74	28.17 ± 0.31 [b]	27.48 ± 0.32
P-value	0.43	0.81	0.06	0.77	< 0.001	0.15	< 0.001	0.36	0.02	0.86
Protein										
T_1	100.38 ± 0.89	99.24 ± 0.68	12.04 ± 0.29 [a]	11.13 ± 0.16	29.47 ± 0.78 [a]	32.50 ± 0.35	31.56 ± 0.76	29.60 ± 0.74	27.55 ± 0.31	28.27 ± 0.32 [a]
T_2	101.10 ± 0.88	101.11 ± 0.64	10.62 ± 0.28 [b]	10.71 ± 0.15	33.07 ± 0.76 [b]	32.32 ± 0.32	29.81 ± 0.73	30.33 ± 0.69	27.65 ± 0.3	27.49 ± 0.30
T_3	98.68 ± 0.90	99.64 ± 0.66	10.19 ± 0.28 [b]	10.82 ± 0.16	35.22 ± 0.79 [b]	32.59 ± 0.33	29.02 ± 0.76	30.70 ± 0.71	27.58 ± 0.31	26.92 ± 031 [b]
P-value	0.14	0.10	< 0.001	0.19	< 0.001	0.84	0.05	0.58	0.97	0.10
Riboflavin										
T_1	99.77 ± 0.89	99.20 ± 0.67	11.50 ± 0.28 [a]	10.91 ± 0.16	29.95 ± 0.78 [a]	32.82 ± 0.34	31.32 ± 0.74 [a]	29.38 ± 0.72	27.44 ± 0.31	27.96 ± 0.31
T_2	100.76 ± 0.89	100.26 ± 0.64	10.99 ± 0.29	10.73 ± 0.15	32.67 ± 0.78 [b]	32.21 ± 0.32	30.79 ± 0.74 [a]	31.33 ± 0.69	27.75 ± 0.31	27.64 ± 0.3
T_3	99.67 ± 0.90	100.56 ± 0.66	10.33 ± 0.29 [b]	11.01 ± 0.16	35.21 ± 0.79 [c]	32.38 ± 0.33	28.22 ± 0.75 [b]	29.93 ± 0.71	27.59 ± 0.31	27.08 ± 0.31
P-value	0.63	0.34	0.01	0.45	< 0.001	0.42	0.008	0.13	0.78	0.16
Vitamin B_6										
T_1	101.18 ± 0.89	100.00 ± 0.65	11.83 ± 0.28 [a]	10.85 ± 0.16	30.29 ± 0.78 [a]	31.87 ± 0.33	30.67 ± 0.75	29.71 ± 0.71	27.74 ± 0.31	28.26 ± 0.31 [a]
T_2	99.86 ± 0.90	99.80 ± 0.65	10.56 ± 0.29 [b]	10.61 ± 0.15 [a]	34.25 ± 0.79 [b]	33.00 ± 0.33	30.23 ± 0.75	31.13 ± 0.70	27.77 ± 0.31	27.43 ± 0.31
T_3	99.17 ± 0.88	100.22 ± 0.66	10.43 ± 0.28 [b]	11.20 ± 0.16 [b]	34.25 ± 0.78 [b]	32.55 ± 0.33	29.47 ± 0.75	29.82 ± 0.71	27.27 ± 0.31	26.98 ± 0.31 [b]
P-value	0.26	0.90	0.001	0.03	0.001	0.06	0.52	0.29	0.44	0.01
Choline										
T_1	100.40 ± 0.90	99.78 ± 0.70	11.63 ± 0.29 [a]	10.82 ± 0.17	29.26 ± 0.78 [a]	32.64 ± 0.35	31.80 ± 0.76 [a]	29.48 ± 0.76	27.44 ± 0.31	28.06 ± 0.33
T_2	100.05 ± 0.89	99.57 ± 0.64	11.12 ± 0.28 [a]	10.84 ± 0.15	32.83 ± 0.76 [b]	32.70 ± 0.32	29.58 ± 0.73	29.80 ± 0.68	27.77 ± 0.30	27.73 ± 0.30
T_3	99.76 ± 0.89	100.66 ± 0.67	10.09 ± 0.29 [b]	10.99 ± 0.16	35.59 ± 0.78 [c]	32.08 ± 0.34	29.05 ± 0.75 [b]	31.34 ± 0.72	27.56 ± 0.31	26.92 ± 0.32
P-value	0.88	0.48	0.001	0.75	< 0.001	0.37	0.02	0.18	0.75	0.05
Vitamin D										
T_1	100.37 ± 0.9	100.19 ± 0.66	11.13 ± 0.29	10.76 ± 0.16	32.22 ± 0.79	32.45 ± 0.33	29.52 ± 0.75	29.74 ± 0.71	27.86 ± 0.31	27.75 ± 0.31
T_2	100.00 ± 0.89	99.54 ± 0.64	10.97 ± 0.29	10.93 ± 0.15	33.30 ± 0.79	32.92 ± 0.33	30.60 ± 0.75	31.03 ± 0.70	27.62 ± 0.30	27.53 ± 0.30
T_3	99.81 ± 0.89	100.30 ± 0.64	10.72 ± 0.29	10.96 ± 0.15	31.12 ± 0.79	32.03 ± 0.32	30.28 ± 0.75	29.87 ± 0.69	27.29 ± 0.31	27.41 ± 0.30
P-value	0.90	0.67	0.60	0.63	0.09	0.16	0.58	0.37	0.43	0.73
Zinc										
T_1	100.06 ± 0.88	99.88 ± 0.72	11.47 ± 0.28 [a]	10.76 ± 0.17	26.86 ± 0.69 [a]	32.14 ± 0.36	32.88 ± 0.71 [a]	29.99 ± 0.78	26.86 ± 0.3 [a]	27.97 ± 0.34
T_2	99.82 ± 0.89	99.53 ± 0.63	11.13 ± 0.28	10.97 ± 0.15	31.66 ± 0.71 [b]	32.17 ± 0.32	31.56 ± 0.72 [a]	31.15 ± 0.68	27.60 ± 0.31	27.78 ± 0.30
T_3	100.33 ± 0.90	100.63 ± 0.78	10.21 ± 0.29 [b]	10.93 ± 0.18	39.56 ± 0.71 [c]	33.14 ± 0.39	25.77 ± 0.73 [b]	29.47 ± 0.83	28.34 ± 0.31 [b]	26.92 ± 0.36
P-value	0.92	0.56	0.007	0.64	< 0.001	0.15	< 0.001	0.24	0.003	0.14
With diabetes										

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Carbohydrate										
T_1	100.95 ± 1.65	101.73 ± 1.17	10.85 ± 0.53	10.88 ± 0.29	32.08 ± 1.60	33.98 ± 0.61	29.86 ± 1.07	28.61 ± 0.88	27.87 ± 0.62	27.99 ± 0.63
T_2	102.36 ± 1.29	102.09 ± 0.93	10.88 ± 0.4	11.27 ± 0.22	35.78 ± 1.24	33.85 ± 0.47	28.74 ± 0.83	29.81 ± 0.68	28.34 ± 0.47	28.02 ± 0.48
T_3	100.88 ± 1.38	100.77 ± 0.98	11.81 ± 0.44	11.32 ± 0.23	33.47 ± 1.32	34.04 ± 0.50	29.25 ± 0.89	28.99 ± 0.71	28.19 ± 0.50	28.35 ± 0.51
P-value	0.68	0.62	0.23	0.46	0.16	0.96	0.71	0.54	0.83	0.87
Fiber										
T_1	100.09 ± 1.76	102.67 ± 1.4	11.17 ± 0.57	10.85 ± 0.34	26.54 ± 1.53 [a]	34.16 ± 0.73	33.28 ± 1.04 [a]	29.54 ± 1.05	27.03 ± 0.65 [a]	27.63 ± 0.75
T_2	102.22 ± 1.38	102.96 ± 0.98	11.29 ± 0.43	11.05 ± 0.24	32.02 ± 1.17 [b]	33.76 ± 0.50	30.91 ± 0.79 [a]	30.07 ± 0.72	27.83 ± 0.49	27.98 ± 0.52
T_3	101.61 ± 1.24	99.79 ± 1.01	11.14 ± 0.40	11.49 ± 0.25	39.54 ± 1.08 [c]	34.00 ± 0.52	25.69 ± 0.73 [b]	28.37 ± 0.75	29.01 ± 0.45 [b]	28.49 ± 0.53
P-value	0.63	0.10	0.96	0.35	< 0.001	0.88	< 0.001	0.31	0.03	0.69
Linoleic acid										
T_1	99.85 ± 1.47	101.13 ± 1.32	11.54 ± 0.46	11.14 ± 0.32	28.05 ± 1.31 [a]	34.08 ± 0.67	32.07 ± 0.91 [a]	28.75 ± 0.96	27.17 ± 0.54 [a]	27.80 ± 0.70
T_2	100.8 ± 1.36	100.40 ± 0.99	11.33 ± 0.44	11.34 ± 0.25	34.43 ± 1.22 [b]	34.14 ± 0.52	28.68 ± 0.86 [b]	29.06 ± 0.75	28.14 ± 0.50	28.37 ± 0.53
T_3	103.73 ± 1.40	103.07 ± 1.09	10.76 ± 0.44	11.10 ± 0.26	39.16 ± 1.25 [c]	33.64 ± 0.56	27.12 ± 0.87 [b]	29.85 ± 0.80	29.07 ± 0.50 [b]	28.18 ± 0.57
P-value	0.13	0.18	0.45	0.76	< 0.001	0.79	< 0.001	0.67	0.03	0.83
Linolenic acid										
T_1	99.20 ± 1.40	100.42 ± 1.16	11.53 ± 0.44	11.20 ± 0.28	29.43 ± 1.27 [a]	34.34 ± 0.59	31.17 ± 0.88 [a]	28.84 ± 0.85	27.18 ± 0.51 [a]	27.85 ± 0.61
T_2	102.37 ± 1.37	101.84 ± 0.98	11.02 ± 0.44	11.07 ± 0.24	33.65 ± 1.25 [a]	33.60 ± 0.50	29.20 ± 0.87	29.04 ± 0.73	28.30 ± 0.50	28.35 ± 0.53
T_3	102.98 ± 1.45	102.39 ± 1.11	11.03 ± 0.46	11.33 ± 0.27	39.56 ± 1.32 [b]	33.93 ± 0.57	27.03 ± 0.92 [b]	29.89 ± 0.82	29.08 ± 0.52 [b]	28.19 ± 0.58
P-value	0.13	0.52	0.65	0.76	< 0.001	0.66	0.006	0.65	0.03	0.84
Protein										
T_1	101.53 ± 1.53	100.49 ± 1.15	12.39 ± 0.48 [a]	11.58 ± 0.28	29.84 ± 1.45 [a]	33.52 ± 0.59	31.37 ± 0.98 [a]	29.50 ± 0.86	28.04 ± 0.56	29.07 ± 0.59
T_2	102.31 ± 1.37	102.58 ± 0.96	10.97 ± 0.42	11.11 ± 0.23	35.28 ± 1.27 [b]	34.13 ± 0.49	29.09 ± 0.85	29.75 ± 0.71	28.35 ± 0.51	27.93 ± 0.51
T_3	100.64 ± 1.37	101.36 ± 0.98	10.47 ± 0.43 [b]	10.98 ± 0.23	36.21 ± 1.3 [b]	34.09 ± 0.50	27.58 ± 0.87 [b]	28.51 ± 0.72	28.12 ± 0.50	27.56 ± 0.51
P-value	0.69	0.37	0.01	0.24	0.003	0.71	0.01	0.45	0.90	0.18
Riboflavin										
T_1	102.07 ± 1.49	102.00 ± 1.07	11.82 ± 0.45 [a]	11.32 ± 0.25	30.88 ± 1.39 [a]	34.29 ± 0.54	30.72 ± 0.94	28.75 ± 0.77	27.94 ± 0.54	28.58 ± 0.55
T_2	102.61 ± 1.49	101.34 ± 1.09	11.81 ± 0.46 [a]	11.47 ± 0.26	35.51 ± 1.43	34.11 ± 0.56	29.15 ± 0.95	30.03 ± 0.80	28.65 ± 0.54	28.40 ± 0.57
T_3	100.20 ± 1.30	101.33 ± 0.95	10.22 ± 0.41 [b]	10.89 ± 0.23	35.53 ± 1.25 [b]	33.55 ± 0.48	28.01 ± 0.84	29.03 ± 0.70	27.99 ± 0.48	27.56 ± 0.49
P-value	0.43	0.88	0.01	0.24	0.02	0.59	0.10	0.50	0.58	0.36
Vitamin B_6										
T_1	102.81 ± 1.46	102.32 ± 1.08	12.35 ± 0.44 [a]	11.63 ± 0.25 [a]	30.25 ± 1.35 [a]	33.63 ± 0.54	30.81 ± 0.92	29.1 ± 0.79	27.96 ± 0.53	28.75 ± 0.56
T_2	101.53 ± 1.36	100.78 ± 0.98	10.98 ± 0.42	10.62 ± 0.23 [b]	37.07 ± 1.27 [b]	34.38 ± 0.50	28.13 ± 0.86	29.39 ± 0.72	28.77 ± 0.49	28.33 ± 0.51
T_3	100.20 ± 1.30	101.62 ± 1.06	10.24 ± 0.45 [b]	11.40 ± 0.26	34.52 ± 1.37	33.78 ± 0.55	28.74 ± 0.93	29.20 ± 0.80	27.69 ± 0.54	27.26 ± 0.56
P-value	0.44	0.58	0.004	0.01	0.001	0.57	0.09	0.96	0.30	0.18
Choline										
T_1	102.24 ± 1.57	102.6 ± 1.19	11.88 ± 0.49 [a]	11.14 ± 0.30	29.85 ± 1.48 [a]	34.49 ± 0.62	31.44 ± 1 [a]	28.85 ± 0.9	27.86 ± 0.57	28.67 ± 0.62

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T_2	101.27 ± 1.42	99.74 ± 1	11.88 ± 0.43 ^{a}	11.2 ± 0.24	33.68 ± 1.29	33.73 ± 0.51	28.86 ± 0.88	28.91 ± 0.74	28.6 ± 0.51	28.91 ± 0.52 ^{a}
T_3	101.17 ± 1.3	102.31 ± 0.97	10.09 ± 0.41 ^{b}	11.23 ± 0.24	37.35 ± 1.23 ^{b}	33.76 ± 0.51	27.93 ± 0.83 ^{b}	29.79 ± 0.73	28.04 ± 0.48	27.08 ± 0.51 ^{b}
P-value	0.85	0.1	0.003	0.98	0.001	0.61	0.02	0.66	0.58	0.04
Vitamin D										
T_1	102.23 ± 1.43	101.42 ± 1.02	11.8 ± 0.44	11.07 ± 0.25	34.3 ± 1.36	33.59 ± 0.51	28.82 ± 0.91	29.11 ± 0.75	28.58 ± 0.52	28.81 ± 0.53
T_2	101.16 ± 1.47	101.02 ± 1.01	11.15 ± 0.47	11.19 ± 0.25	35.02 ± 1.44	34.58 ± 0.52	29.35 ± 0.96	29.52 ± 0.76	28.28 ± 0.53	28.02 ± 0.53
T_3	101.12 ± 1.36	102.12 ± 0.96	10.67 ± 0.43	11.31 ± 0.23	33.04 ± 1.32	33.74 ± 0.49	29.4 ± 0.87	29.12 ± 0.71	27.7 ± 0.51	27.59 ± 0.51
P-value	0.82	0.72	0.19	0.79	0.58	0.36	0.88	0.90	0.47	0.26
Zinc										
T_1	102.09 ± 1.6	100.53 ± 1.29	12.51 ± 0.5 ^{a}	11.31 ± 0.31	28.17 ± 1.39 ^{a}	33.47 ± 0.65	32.1 ± 0.95 ^{a}	29.71 ± 0.93	27.96 ± 0.58	29.38 ± 0.67
T_2	101.27 ± 1.46	101.93 ± 1.04	11.13 ± 0.44	11.23 ± 0.25	31.75 ± 1.24 ^{a}	33.8 ± 0.53	31.24 ± 0.85 ^{a}	30.58 ± 0.75	27.62 ± 0.54	27.86 ± 0.55
T_3	101.29 ± 1.26	101.88 ± 1.03	10.43 ± 0.39 ^{b}	11.1 ± 0.25	39.68 ± 1.11 ^{b}	34.36 ± 0.53	25.76 ± 0.75 ^{b}	27.9 ± 0.75	28.7 ± 0.45	27.55 ± 0.53
P-value	0.91	0.66	0.006	0.89	< 0.001	0.62	< 0.001	0.06	0.28	0.12
Without diabetes										
Carbohydrate										
T_1	98.4 ± 1.06	98.95 ± 0.79	10.46 ± 0.35	10.59 ± 0.19	30.36 ± 0.91	31.3 ± 0.39	31.81 ± 0.97	31.4 ±0.93	27.11 ± 0.36	27.2 ± 0.36
T_2	99.25 ± 1.19	98.75 ± 0.88	10.88 ± 0.39	10.87 ± 0.21	32.83 ± 1.03	32.08 ± 0.44	29.67 ± 1.09	30 ± 1.03	27.29 ± 0.4	27.17 ± 0.4
T_3	100.43 ± 1.15	99.9 ± 0.86	11.13 ± 0.38	10.73 ± 0.2	32.33 ± 1	31.82 ± 0.43	30.2 ± 1.06	30.62 ± 1.02	27.46 ± 0.39	27.41 ± 0.39
P-value	0.43	0.6	0.42	0.63	0.15	0.41	0.3	0.6	0.81	0.89
Fiber										
T_1	99.52 ± 1.05	99.68 ± 0.9	11.08 ± 0.34	10.66 ± 0.21	26.85 ± 0.82 ^{a}	31.16 ± 0.45	32.98 ± 0.94 ^{a}	29.05 ± 1.06	26.8 ± 0.35	27.75 ± 0.4
T_2	98.41 ± 1.14	97.99 ± 0.86	10.91 ± 0.37	10.85 ± 0.2	31.69 ± 0.89 ^{b}	31.81 ± 0.43	31.67 ± 1.02 ^{a}	32.35 ± 1.01	27.21 ± 0.38	27.16 ± 0.39
T_3	100.12 ± 1.23	99.89 ± 1.11	10.31 ± 0.4	10.67 ± 0.26	38.64 ± 0.96 ^{c}	32.32 ± 0.56	26.25 ± 1.1 ^{b}	31.15 ± 1.3	28.04 ± 0.41	26.69 ± 0.5
P-value	0.57	0.25	0.33	0.77	< 0.001	0.35	< 0.001	0.08	0.70	0.33
Linoleic Acid										
T_1	98.77 ± 1.13	99.83 ± 0.89	10.96 ± 0.37	10.88 ± 0.21	28.24 ± 0.94 ^{a}	32.04 ± 0.45	33.94 ± 1.01 ^{a}	31.56 ± 1.05	26.65 ± 0.38	27.08 ± 0.4
T_2	100.42 ± 1.15	98.55 ± 0.9	11.29 ± 0.37	10.45 ± 0.21	32.43 ± 0.97 ^{b}	31.98 ± 0.45	29.49 ± 1.05 ^{b}	29.97 ± 1.06	27.67 ± 0.39	27.77 ± 0.4
T_3	98.83 ± 1.11	99.14 ± 0.85	10.19 ± 0.36	10.82 ± 0.2	34.72 ± 0.94 ^{b}	31.11 ± 0.43	28.44 ± 1.01 ^{b}	30.58 ± 1	27.54 ± 0.37	26.96 ± 0.38
P-value	0.51	0.63	0.1	0.31	< 0.001	0.25	< 0.001	0.59	0.12	0.3
Linolenic acid										
T_1	99.34 ± 1.14	99.6 ± 0.91	11.34 ± 0.37	10.76 ± 0.21	28.46 ± 0.95 ^{a}	32.32 ± 0.45	34.02 ± 1.02 ^{a}	32.17 ± 1.07	26.83 ± 0.38	27.41 ± 0.41
T_2	100.09 ± 1.14	99.49 ± 0.85	10.9 ± 0.37	10.64 ± 0.2	31.51 ± 0.95 ^{a}	31.64 ± 0.42	30.08 ± 1.02 ^{b}	29.8 ± 0.99	27.29 ± 0.38	27.34 ± 0.38
T_3	98.55 ± 1.12	98.5 ± 0.87	10.18 ± 0.37	10.77 ± 0.21	35.39 ± 0.95 ^{b}	31.16 ± 0.44	27.84 ± 1.02 ^{b}	30.27 ± 1.03	27.7 ± 0.38	27.03 ± 0.39
P-value	0.63	0.64	0.08	0.89	< 0.001	0.22	< 0.001	0.26	0.27	0.79
Protein										
T_1	99.72 ± 1.09	98.49 ± 0.85	11.81 ± 0.36 ^{a}	10.87 ± 0.2	29.25 ± 0.94 ^{a}	31.92 ± 0.43	31.66 ± 1.02	29.76 ± 1.01	27.27 ± 0.37	27.83 ± 0.38
T_2	100.37 ± 1.13	100.47 ± 0.85	10.43 ± 0.36 ^{b}	10.51 ± 0.2	31.74 ± 0.95	31.38 ± 0.42	30.27 ± 1.04	30.64 ± 0.99	27.26 ± 0.38	27.23 ± 0.38

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T_3	97.74 ± 1.17	98.65 ± 0.89	10.09 ± 0.37 [b]	10.79 ± 0.21	34.70 ± 0.99 [b]	31.80 ± 0.44	29.88 ± 1.07	31.89 ± 1.04	27.31 ± 0.40	26.64 ± 0.40
P-value	0.25	0.19	0.002	0.42	< 0.001	0.64	0.44	0.36	0.99	0.12
Riboflavin										
T_1	98.97 ± 1.11	97.83 ± 0.85	11.42 ± 0.36	10.65 ± 0.20	29.53 ± 0.94 [a]	32.00 ± 0.43	31.63 ± 1.01	29.70 ± 1.01	27.27 ± 0.37	27.64 ± 0.39
T_2	99.76 ± 1.1	99.62 ± 0.81	10.54 ± 0.36	10.41 ± 0.19 [a]	31.41 ± 0.93 [a]	31.30 ± 0.41	31.53 ± 1.01	31.90 ± 0.95	27.27 ± 0.37	27.13 ± 0.37
T_3	99.21 ± 1.20	100.25 ± 0.92	10.40 ± 0.39	11.17 ± 0.21 [b]	34.91 ± 1.02 [b]	31.84 ± 0.46	28.40 ± 1.10	30.50 ± 1.08	27.31 ± 0.41	26.97 ± 0.42
P-value	0.87	0.14	0.11	0.03	0.001	0.45	0.05	0.27	0.99	0.49
Vitamin B_6										
T_1	100.43 ± 1.10	98.93 ± 0.84	11.58 ± 0.36	10.45 ± 0.20	30.31 ± 0.96	30.88 ± 0.42	30.60 ± 1.02	30.06 ± 0.99	27.64 ± 0.37	28.03 ± 0.37
T_2	98.85 ± 1.17	99.43 ± 0.88	10.31 ± 0.38	10.68 ± 0.20	32.59 ± 1.00	32.35 ± 0.43	31.47 ± 1.07	31.99 ± 1.02	27.14 ± 0.39	26.86 ± 0.39
T_3	98.6 ± 1.12	99.24 ± 0.84	10.48 ± 0.36	11.04 ± 0.20	32.57 ± 0.97	31.92 ± 0.42	29.9 ± 1.03	30.22 ± 0.99	27.04 ± 0.38	26.83 ± 0.38
P-value	0.45	0.91	0.03	0.12	0.16	0.05	0.57	0.34	0.48	0.04
Choline										
T_1	99.5 ± 1.09	98.48 ± 0.87	11.45 ± 0.36 [a]	10.62 ± 0.21	28.98 ± 0.93 [a]	31.80 ± 0.44	31.97 ± 1.01	29.84 ± 1.03	27.2 ± 0.37	27.60 ± 0.39
T_2	99.37 ± 1.12	99.42 ± 0.83	10.72 ± 0.36	10.68 ± 0.19	32.30 ± 0.94 [b]	32.06 ± 0.41	30.01 ± 1.02	30.42 ± 0.97	27.34 ± 0.38	27.14 ± 0.37
T_3	99.05 ± 1.20	99.75 ± 0.92	10.15 ± 0.39 [b]	10.89 ± 0.21	34.50 ± 1.01 [b]	31.20 ± 0.46	29.80 ± 1.09	32.06 ± 1.08	27.31 ± 0.4	26.99 ± 0.41
P-value	0.96	0.61	0.04	0.66	< 0.001	0.38	0.26	0.34	0.96	0.57
Vitamin D										
T_1	99.36 ± 1.14	99.42 ± 0.87	10.78 ± 0.37	10.54 ± 0.20	32.56 ± 0.98	31.83 ± 0.44	29.94 ± 1.04	30.16 ± 1.02	27.47 ± 0.39	27.15 ± 0.39
T_2	99.50 ± 1.11	99.82 ± 0.83	10.87 ± 0.36	10.83 ± 0.20	32.53 ± 0.96	32.03 ± 0.42	31.22 ± 1.02	31.71 ± 0.98	27.3 ± 0.37	27.31 ± 0.38
T_3	99.05 ± 1.15	99.37 ± 0.85	10.75 ± 0.38	10.79 ± 0.20	30.03 ± 0.99	31.22 ± 0.43	30.78 ± 1.06	30.24 ± 1.01	27.06 ± 0.38	27.30 ± 0.39
P-value	0.96	0.86	0.97	0.58	0.11	0.37	0.67	0.48	0.76	0.95
Zinc										
T_1	99.17 ± 1.06	99.49 ± 0.89	11.02 ± 0.35	10.53 ± 0.21	26.33 ± 0.81 [a]	31.51 ± 0.44	33.19 ± 0.95 [a]	30.02 ± 1.05	26.39 ± 0.35 [a]	27.22 ± 0.40
T_2	99.13 ± 1.12	98.35 ± 0.81	11.13 ± 0.36	10.82 ± 0.19	31.62 ± 0.85 [b]	31.26 ± 0.40	31.71 ± 0.99 [a]	31.67 ± 0.96	27.59 ± 0.37	27.66 ± 0.37
T_3	99.77 ± 1.25	99.86 ± 1.11	10.10 ± 0.40	10.86 ± 0.26	39.51 ± 0.94 [c]	32.52 ± 0.55	25.80 ± 1.11 [b]	30.48 ± 1.30	28.12 ± 0.41 [b]	26.81 ± 0.50
P-value	0.91	0.43	0.12	0.54	< 0.001	0.20	< 0.001	0.45	0.005	0.36

[a, ,b, c]: Values with different superscripts were significantly different. (P <0.05); [d]: ANCOVA was used. Bonferroni was used for multiple comparisons; [e]: Data are presented as mean ± SE ANCOVA was used. Bonferroni was used for multiple comparisons; [f]: Adjusted for age, energy, sex, married status, menopausal status, physical activity, economic status, job, educational level, smoking, drug addiction, diabetes, and body mass index.

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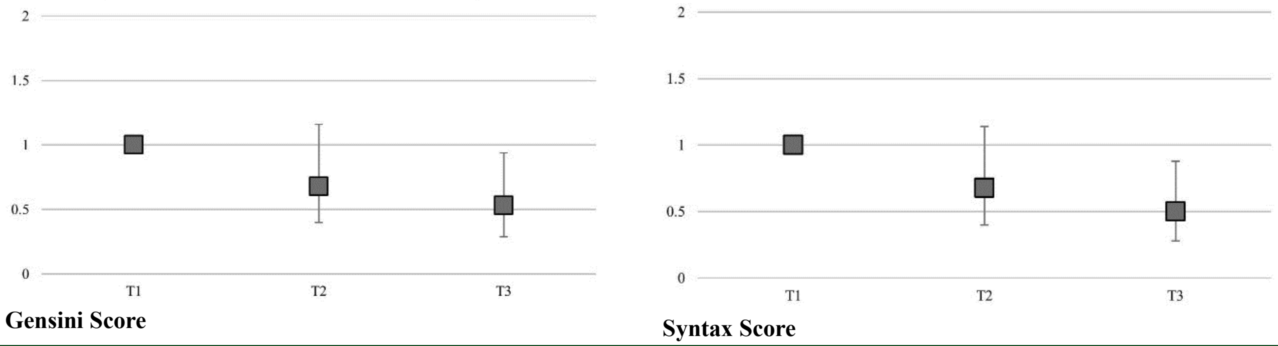

Figure 1. Adjusted odds ratio between Gensini and Syntax scores and INQ of Linolenic acid tertiles.

Conflicts of interest

The authors declared no conflicts of interest.

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