Proceedings

Adherence to Mediterranean Diet among Adults in Lebanon.

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Abstract: The prevalence of obesity, cardiovascular and metabolic diseases in Lebanon has attained alarming rates. Studies have shown a positive effect of adherence to Mediterranean diet MedDiet on the prognosis of chronic diseases and obesity. The aim of this cross-sectional study was to assess the adherence to MedDiet among 1030 Lebanese adults. Mean adherence to the MedDiet among adults in Lebanon was not sufficiently adequate and was lower than a healthy score (60.8%, mean adherence 8/14 <9). National awareness about MedDiet should be spread among adult population to increase the adherence which can be reflected positively on their health.

Keywords: Mediterranean diet; adherence; physical activity, adult population, lebanon

1. Introduction

Increase in prevalence of obesity has become a worldwide major health problem in adults, as well as among children and adolescents [1,2]. Recent studies suggest that people with obesity are at increased risk of severe COVID-19 [3,4].   It is clear that eating habits and lifestyle have changed during COVID-19 lockdown [5]. A dietary plan inspired by the principles of the Mediterranean Diet is associated with numerous health benefits and has been demonstrated to exert a preventive effect towards numerous pathologies, including obesity [6]. It is important to assess the degree of adherence to the MedDiet through accurate measurement tools such as dietary scores [7]. The association between adherence to the Mediterranean diet and physical health function, controlled for confounding effects of age, smoking, BMI, alcohol consumption, and educational level have been suggested to contribute to the beneficial effect of the MedDiet [8].

In Lebanon, obesity is a major health problem, because of its relationship with serious medical illnesses and significant economic consequences [9]. No studies were found to assess the adherence to MedDiet among the adult population. Some studies have focused on the factors associated with adherence to MedDiet and dietary habits among Universiy students [10, 11] and high school adolescents [12,13]. Because of poor adherence to MedDiet [14], national awareness should be spread among adult population to increase the adherence which can be reflected positively on their health. Public health initiatives and medical interventions in the management of obesity, are the most appropriate actions for obesity prevention and for healthcare sustainability.

Therefore, the aim of this study was to assess the adherence to MedDiet among a large sample of general Lebanese adult population.

2. Materials and Methods

2.1. Population

The participants of the population were recruited randomly from all the provinces of Lebanon. A total of 1030 participants aged 18 and above were asked to participate during the period between December 2020 and June 2021.

2.2. Study Tool

An online survey was distributed throughout multiple platforms of social media. The structure of the survey included (1) the socio-economic and demographic data along with the weekly adherence to physical activity; (2) the validated Mediterranean Diet Assessment tool. The validated Mediterranean diet (Med-diet) tool contained 14 items (1-point criteria for each item) to assess the participant's adherence to the diet pattern [11]. The overall score of < 9 points represented participants with low adherence while the overall score of $\geq$ 9 points was used to identify participants with high adherence.

2.3. Study Analysis

The data were analyzed by using the Statistical Package for the Social Sciences, version 21 (SPSS). Descriptive statistics were used to explore the characteristics of the sample population. Their high adherence to the Mediterranean Diet was determined by the Med-Diet score $\geq$ 9. The significant difference among the variables of gender, age, education, income, physical activity, and adherence to the Mediterranean diet were examined using the chi-square test.

3. Results

The majority of the participants are residents of the two provinces (North and Mount Lebanon) with a sex ratio of M: F= 1:2.08 and a mean age of 29 (SD= 10.413). Looking at the education level and the monthly income, about three-quarters of the participants, were well-educated (either university students or graduates) with very low financial income (not exceeding 150 USD per month). Even though half of the participants had declared about their physical activity, however around 20% were only committed to a regular program of 30-minute exercises at least 3 times per week.

The descriptive studies of the respondents are represented in Table 1. The healthy consumption pattern of olive oil as a main culinary fat (Q1), vegetables (Q3), red meat (Q5), creamy products (Q6), carbonated beverages (Q7), legumes (Q9), white over red meat (Q13), and balanced meal (Q14) was positively observed among the majority of the respondents (60-86%). In contrast, the healthy consumption of wine (Q8) and fish products (Q10) was surprisingly observed among less than 20 % of the sample population only (low rate of consumption). The percentages of the remained questions (Q2, Q4, and Q11-12) were almost comparable among the participant who are committed or not to the healthy diet pattern. Looking at the overall Mediterranean diet survey, the mean score of the sample population was 8.01 (SD= 2.179) and 39.2% of the participants only showed high adherence to the pattern of the Mediterranean diet ($\geq$ 9 overall scores).

Table 1. Frequency and Percentages of participants responding to the questions of the Mediterranean diet survey.

Med-Diet Survey	Frequency (Percentages)	
	Criteria: 1 point	Criteria: 0 point
Q1: Do you use olive oil as main Culinary fat?	YES	NO
	799 (77.6%)	231 (22.4%)
Q2 : How much olive oil do you consume in a given day (including oil used for frying, salads, out-of-house meals, etc.)?	$\geq$ 4 tbsp (1 pt)	< 4 tbsp
	618 (60%)	412 (40%)
Q3: How many vegetable servings do you consume per day? (1 serving : 200 g [consider side dishes as half a serving])	$\geq$ 2 servings	< 2 servings
	763 (74.1%)	267 (25.9%)
Q4: How many fruit units (including natural fruit juices) do you consume per day?	$\geq$ 3 servings	< 3 servings

		479 (46.5%)	551 (53.5%)
Q5: How many servings of red meat, hamburger, or meat products (ham, sausage, etc.) do you consume per day? (1 serving: 100–150 g)		< 1 serving	≥ 1 serving
		619 (60.1%)	411 (39.9%)
Q6: How many servings of butter, margarine, or cream do you consume per day? (1 serving: 12 g)		< 1 serving	≥ 1 serving
		642 (62.3%)	388 (37.7%)
Q7: How many sweet or carbonated beverages do you drink per day?		< 1 serving	≥ 1 serving
		669 (65%)	361 (35%)
Q8: How much wine do you drink per week?		≥ 7 glasses	< 7 glasses
		126 (12.2%)	904 (87.7%)
Q9: How many servings of legumes do you consume per week? (1 serving : 150 g)		≥ 3 servings	< 3 servings
		695 (67.5%)	335 (32.5%)
Q10: How many servings of fish or shellfish do you consume per week? (1 serving 100–150 g of fish or 4–5 units or 200 g of shellfish)		≥ 3 servings	< 3 servings
		204 (19.8%)	826 (80.2%)
Q11: How many times per week do you consume commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, or custard?		< 3 servings	≥ 3 servings
		607 (58.9%)	423 (41.1%)
Q12: How many servings of nuts (including peanuts) do you consume per week? (1 serving 30 g)		≥ 3 servings	< 3 servings
		444 (43.1%)	586 (56.9%)
Q13: Do you preferentially consume chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage?		YES	NO
		696 (67.6%)	334 (32.4%)
Q14: How many times per week do you consume vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)?		≥ 2 servings	< 2 servings
		890 (86.4%)	140 (13.6%)
Mediterranean Diet Pattern		Low Adherence	626 (60.8%)
		High Adherence	404 (39.2%)

4. Discussion

The study showed that men, smokers, younger subjects, participants who were less physically active and those with lower education levels, were less likely to adhere to a Mediterranean dietary pattern, thus highlighting the need for stronger efforts of health promotion in these groups [15]. The low financial income due to the economic crisis in Lebanon might be as well contributing in the low adherence to MedDiet, for a high adherence requires relatively high expenses [16]; 39.2% of participants showed adequate adherence to MedDiet compared to 59% in a study conducted in Lebanon using the same tools in 2018 [11], noting that the economic crisis started in 2019. Despite its high price relatively, more than half of the sample relies on olive oil as the main source of fat and use more than 4 table spoons per day due to its high availability in the local market [17]. The low consumption of fish (19.8%) confirms the outcome of different other studies among the adult population living in Lebanon [11, 18].

5. Conclusion

Mean adherence to the MedDiet among adults in Lebanon was not sufficiently adequate and was lower than a healthy score. National awareness about MedDiet should be spread among adult population to increase the adherence which can be reflected positively on their health. Improvement in foods' consumption is needed to increase MedDiet adherence in this sample of adults

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