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Original article

The evaluation of the nutritional habits of 14-25 years old people with skin problems

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Summary. *Objective:* To investigate the nutritional habits of the 14-25 years old people with skin problems. *Design:* We performed a cross-sectional study with random sampling of participants. Skin problems was questioned with questionnaire form. Last three days food consumption was recorded and food consumption frequencies were questioned. Also anthropometric measurements were taken. *Setting:* A state university and two high school in Samsun, Turkey. *Subjects:* Students *(n =400*) aged between 14-25 years. *Results:* Among students, 251 were women and 149 men. 219 of them have skin problems and 181 didn't have any skin problems. Mean BMI (body mass index) of students was 20.95±2.67 kg/ in women and 22.65±3.17 kg/ in men. Mean body mass index in students with skin problem (SP) was 21.55 ± 2.91 kg/m^2 and without SP was 21.61±3.07 kg/. Among students who have SP problems (n = 219), acne (35.2%) was the first skin problem. Gender, sleep duration, physical activity, frequency of eating out, consumption of tea with food, french fries consumption, daily water intake amount had a significant difference on skin problems ($p<0.05$). More skin problems were found in individuals eating patisseries ($p<0.05$). Those who not have skin problems were found to consume more milk, yogurt, buttermilk and mineral water ($p<0.05$). *Conclusions:* In this study, it was showed that skin problems could be affected by environmental and personal properties. In order to establish a relationship between these problems and nutrition these properties should be examined. There is not enough research on this subject and another randomized controlled trials are needed to determine the relationship.

Key words: Nutrition; nutritional habit; skin problem; student

Introduction

The skin, largest organ of our body, acts as a barrier to the external environment, protecting the body from environmental contamination and from potential pathogens outside. Skin maintains hydration and regulates body temperature, also has a storage organ. The most important storage material is carbohydrates. In addition, the subcutaneous fat layer acts as a large fat reservoir. Large amounts of blood in the skin vessels are stored dynamically. Skin is also a water reservoir. One of the most important tasks of the skin is the ability to store and synthesize vitamin D. 7-dehydrocholesterol, the precursor of vitamin D in the skin, is converted to vitamin D due to the effect of ultraviolet rays. The skin-colored dye melanin protects the skin and the body against the harmful rays of the sun. Some substances in the body are thrown out through the sweat glands in the skin (1).

Epidermal cells of the skin are regenerated every 28-31 days. To meet the energy needs of this regeneration, skin also needs protein, carbohydrates and fats as well as micronutrients. From these micronutrients, Vitamin A is responsible for cell differentiation and multiplication; vitamin C involves in the cross-linking of synthesis and collagen. B vitamins are responsible for the protection from cellular oxidative effect, energy production, DNA synthesis and cell renewal,

while Vitamin E provides cellular protection for free radical effects. Therefore, adequate and balanced nutrition is required to maintain skin health and function (2). The role of foods that activate skin diseases and various skin diseases caused by a lack of nutrition is well known. An imbalance in the diet, insufficiency or excess of specific nutrients, and toxic substances may disrupt the balance of the skin (3). The clinical picture in the absence of essential fatty acids is similar to the clinical picture in zinc deficiency. Hair and eyebrows show widespread dilution and whitening (4).

Skin diseases can cause metabolic imbalances and nutritional disorders. The demand for nutrients in the skin changes under stressful conditions. It is known that with excessive inflammation of the skin, it increases the specific nutrient requirements such as folic acid and protein. Photo-protective potential of antioxidants, (5) effects of micro nutrient supplementation on skin immune system (6) and modulating effects of fatty acids on skin diseases, (4,7) have been the subjects of a significant number of studies. For example, essential fatty acid (EFA) deficiency has been shown to increase epidermal permeability and transepidermal water loss. The antioxidants in the diet also play an important role in maintaining the homeostasis of the oxidative balance. Vitamin C (ascorbic acid), vitamin E (tocopherol), beta-carotene and carotenoids, polyphenols and micronutrients such as selenium are considered as antioxidants in the diet. Since all antioxidants work together, it is important to provide water and oil-soluble antioxidants by purchasing different vegetables and fruits. Tocopherols, tocotrienols (vitamin E) and ascorbic acid (vitamin C) show their antioxidant properties with carcinoids reacting to free radicals, peroxyl radicals and single molecular oxygen (8). Malnutrition, which is one of the most important problems of inadequate nutrition, may manifest itself by disrupting the health of the skin, changes in the skin (xerosis, hair loss, nail changes) (9).

Inadequate nutrition, an imbalance in diet, inadequacy or excess of specific nutrients and toxic substances can disrupt the balance of the skin. Although young individuals have a high level of concern about their appearance, the wrong nutritional preferences and the wrong eating habits can trigger the formation of skin problems that are important to them. The aim of this study was to determine nutritional status of individuals aged 14-24 with and without skin problems such as acne, skin dryness and grease, hair loss, and to investigate the relationship between these skin problems and nutrition.

Methods

Study participants

This research, which was planned as a descriptive study in the survey model, was conducted on the students of Ondokuz Mayıs University, Recep Tanriverdi Vocational and Technical Anatolian High School and Garip Zeycan Yildirim Science High School with the individuals who accepted to participate in the study voluntarily. The population of the study consisted of 400 people aged 14-25 of which 219 had skin problems and 181 didn't have any skin problems.

Procedure of investigation

It was desired to reach more individuals, but food consumption records influenced the participation of individuals in the study, and sufficient control group could not be reached. Underweight (BMI <18.50) or obese individuals (BMI> 30.00) were not included in the study sample. Because both can create skin problems. With the same justification, individuals with any disease were excluded from the study due to the exclusion criteria.

This study was carried out after obtaining the necessary permission and approval from the relevant institutions. They were informed about the study and their consent was obtained. The data were collected by a researcher by face to face interview technique. Skin problems such as skin lubrication, skin dryness, wilt, skin blemishes, redness, pimples, hair loss, hair breakage, flaking and abscess have been questioned. The weights of the individuals were measured by means of portable scales and a non-stretched tape measure, and body mass indexes (BMI: body weight (kg) / height (m^2) were calculated. According to the classification determined by the World Health Organization, BMI <18.50 kg/m^2 was classified as underweight; 18.50-24.99 kg/m^2 was classified as normal; 25.00-29.99 kg/m^2 was classified as overweight; 30.00-34.99 kg/m^2 was classsified as class I obese; 35.00-39.99 kg/m^2 was

classsified as class II obese; ≥40.00 kg/m^2 was classsified as class III obese (10).

At the same time, 3-day food consumption record and nutrient consumption frequencies of the individuals were taken and their nutrition habits were questioned.

Food consumption of individuals was determined by taking 3 consecutive days (1 day on the weekend) of food consumption records. Energy, macronutrients and micronutrients were calculated using the BeBiS®7 (Nutritional Information Systems) package program by determining the amount of nutrients in each portion of the meals consumed by individuals (11).

Statistical analysis

The data were recorded to the computer in SPSS 21.0 package program. Continuous variables were given as mean ± SD, median and range, and categorical variables were given as numbers and percentages. The chi-square and Fisher's exact chi-square tests were used for cross tables. P <0.05 was considered significant in all tests.

Results

Characteristics of participants

A total of 400 people was included to study who 200 high school and 200 university students aged between 18-25 years. Among them, 251 women (62.8%) and 149 (37.2%) men, 219 of them have skin problems and 181 didn't have any skin problems (Table 1). Mean body weight and height were 55.55 ± 7.76 kg and 162.85 ± 6.41 cm for women; 69.9 ± 11.05 kg and 175.62 ± 7.29 cm for men. Mean BMI is 20.95±2.67 kg/ for women and 22.65±3.17 kg/for men. Mean BMI in individuals with skin problem (SP) was 21.55 ± 2.91 kg/m^2 while individuals without skin problems had mean BMI of 21.61±3.07 kg/. For both high school and university students (n = 219), acne (35.2%) was the first skin problem, followed by skin lubrication (24.2%), hair damage (17.2%) and hair loss (15.3%). Problems such as redness (3.7%), skin blemishes (3.3%), pallor (2.8%), scaling (1.8%), abduction abscess (1.8%) are also reported as skin problems.

All individuals consumed protein, vitamin A and vitamin E over RDA recommendations. Vitamin C,

Table 1 Distribution of various properties to the condition of skin problem of students

Variables	SP (+) (n=219)		SP (-) (n=181)		X/ p
BMI (kg/m^2)	n	%	n	%	
18.5-24.99	191	87.2	153	84.6	x=3.370
25.0-29.99	28	12.8	28	15.5	P=0.338
Sex					
Female	156	71.2	95	52.5	X=14.900/
Male	63	28.8	86	47.5	P=0.000
Sleep					
<7 hours	47	21.5	32	17.7	X=7.199
7-8 hours	127	58.0	127	70.2	P=0.027
>8 hpurs	45	20.5	22	12.2	
Physical Activity					
Existent	55	25.1	60	33.1	X=3.123
Non-existent	164	74.9	121	66.9	P=0.049
Smoking					
Yes	40	18.3	33	18.2	X=0.000
No	179	81.7	148	81.8	P=0.549
Frequency of Eating Out					
Everyday	45	20.5	41	22.7	X=14.671
2-3 times a week	82	37.4	57	31.5	P=0.012
Once a week	34	15.5	50	27.6	
2-3 times a month	25	11.4	20	11.0	
Once a month	26	11.9	8	4.4	
None	7	3.2	5	2.8	
Tea Consumption With Food					
Yes	113	51.6	73	40.3	X=5.056
No	106	48.4	108	59.7	P=0.016
Alcohol Consumption					
Yes	7	3.2	3	1.7	X=0.963
No	212	96.8	178	98.3	P=0.258
French Fries Consumption					
Yes	132	60.3	91	50.3	X=4.015
No	87	39.7	90	49.7	P=0.029
Daily Water Intake (lt)					
< 0.5 lt	18	8.2	11	6.1	X=13.693
1 lt	70	32.0	31	17.1	P=0.018
1.5 lt	54	24.7	58	32.0	
2 lt	56	25.6	59	32.6	
2.5 lt	13	5.9	15	8.3	
3 lt	8	3.7	7	3.9	
Salt Consumption					
No salt	8	3.7	7	3.9	X=0.946
Little salty	48	21.9	46	25.4	p=0.814
Normal salty	142	64.8	109	60.2	
Very salty	21	9.6	19	10.5	

zinc and iron were consumed under the RDA recommendations (Table 2).

Only skin problems were found in individuals who eat in patisserie-type places (p=0.007) (Table 3).

When the food consumption frequencies of the individuals were examined, it was determined that those without skin problems consumed more milk, yogurt, ayran (p = 0.027) and mineral water (p = 0.039) (Table 4).

Gender (p = 0.001), sleep duration (p = 0.027), physical activity (p = 0.049), frequency of eating out (p = 0.012), consumption of tea with food (p = 0.016), french fries consumption (p = 0.029), daily water intake (p = 0.018) had a significant difference on skin problems (Table 1).

Discussion

Adolescent period has significant physical and psychosocial changes. The hormonal changes that are dynamic are the period in which physical growth and pubertal changes occur. Growth and development may be adversely affected by insufficient and unbalanced nutrition. One of the most common problems about the nutrition of young people is the inadequate intake of iron, calcium and some minerals. Furthermore, the obesity with consumption of sugary and fatty foods and consumption of large amounts of foods passing through chemical processes also raise many problems (12).

90% of the skin changes are caused by chronic sun exposure. Intrinsic aging is observed in all skin regions with age progression, whereas, extrinsic aging findings may occur at any age depending on the degree of contact with the sun. In intrinsic aging, the skin is thin and atrophic. It has fine lines on it. Dermal support is also lose due to tissue changes. With the advancement of age, the function of sweat and sebaceous glands decreases. Thus, the skin becomes more dry when compared to younger age. In photoaging, the skin thickens, its color becomes yellowish, its elasticity disappears, rough and deep wrinkles are observed compared to in-

Table 2 Distribution of macro and micronutrients individuals with skin problems

Energy and Nutrients	(n=219)	SP (-) (n=181)		RDI
	±S	±S	±S	
Energy (kkal)	1525.58±335.04	1571.33±293.72	1546.28±317.45	-
Protein (gr)	62.46±52.04	68.81±71.51	65.33±61.62	50-60gr
Fat (gr)	64.82±17.91	70.89±59.42	67.57±42.15	-
Carbohydrate (gr)	172.81±39.13	177.71±35.27	175.03±37.47	-
Vitamin A (mg)	842.13±331.63	869.48±316.91	854.50±324.94	800-1000
Vitamin E (mg)	12.54±10.09	12.26±4.89	12.42±8.16	10
Vitamin C (mg)	52.52±28.22	54.87±27.49	53.58±27.88	60
Zinc (mg)	6.67±1.97	7.78±1.98	7.72±1.98	15-12
Iron (mg)	7.14±1.85	7.52±1.85	7.35±1.80	12-15

Table 3 Distribution of eating places individuals with skin problems

Eating Places	SP (+)				SP (-)				
	Yes		No		Yes		No		
	n	%	n	%	n	%	n	%	X/ p
Fast-food	146	66.7	73	33.3	113	62.4	68	37.6	0.779/0.218
Patisserie	67	30.6	152	69.4	35	19.3	146	80.7	**6.610/0.007**
Home-Style Dining Places	32	14.6	187	85.4	34	18.8	147	81.2	1.252/0.163
Kebab Restaurant etc.	106	48.4	113	51.6	83	45.9	98	54.1	0.258/0.342
Local Dining Places	20	9.1	199	90.9	11	6.1	170	93.9	1.294/0.171

Table 4 Certain foods consumption of with and without skin problems

Food Consumption		Everyday %	3-4 times a week %	1-2 times a week %	2-3 times a week %	Rare or never %	X/P
Dairy	SP (+)	6.8	14.2	43.8	20.1	15.1	**12.642**
	SP (-)	12.7	17.7	45.9	17.7	6.1	**0.027**
Red meat	SP (+)	1.8	9.1	51.6	27.4	10.1	4.610
	SP (-)	1.1	10.5	48.6	26.0	13.8	0.465
White meat	SP (+)	1.8	6.8	58.9	21.9	10.5	2.880
	SP (-)	1.7	7.2	58.6	17.7	14.9	0.718
Salami and Sausage	SP (+)	4.1	4.1	17.4	23.3	51.2	2.588
	SP (-)	2.8	5.5	19.9	19.9	51.9	0.763
Egg	SP (+)	12.8	9.1	47.5	16.9	13.7	1.303
	SP (-)	13.3	9.4	51.4	15.5	10.5	0.935
Nuts	SP (+)	5.9	6.8	23.7	25.6	37.9	1.081
	SP (-)	5.5	6.6	23.2	22.1	42.6	0.956
Legumes	SP (+)	3.2	11.0	37.4	26.9	21.5	3.953
	SP (-)	5.5	7.7	42.5	27.1	17.1	0.556
Bread and Grains	SP (+)	6.8	13.2	56.2	16.0	7.7	4.005
	SP (-)	8	12.2	58.0	18.8	8.3	0.549
Vegetable	SP (+)	51.6	11.9	26.5	5.5	4.5	4.548
	SP (-)	53.0	9.9	30.4	4.4	2.2	0.473
Fruit	SP (+)	31.1	11.4	28.3	15.1	14.2	6.247
	SP (-)	37.0	11.6	27.6	16.6	7.2	0.283
Olive	SP (+)	51.1	10.0	20.5	4.1	14.2	1.211
	SP (-)	53.0	8.8	18.8	3.3	16.1	0.944
Vegetable oil	SP (+)	16.0	9.6	32.0	21.0	21.4	5.696
	SP (-)	10.5	11.0	29.3	24.3	24.8	0.458
Butter	SP (+)	14.2	13.7	42.0	16.0	14.1	2.562
	SP (-)	18.8	11.0	40.9	17.7	11.6	0.767
Honey / Jam / Molasses	SP (+)	29.2	10.5	34.2	8.7	17.3	6.154
	SP (-)	35.4	15.5	28.7	6.6	13.8	0.291
Chocolate	SP (+)	26.0	14.2	32.9	10.0	16.9	3.932
	SP (-)	21.0	10.5	37.6	9.4	21.5	0.559
Dessert	SP (+)	3.7	5.5	16.0	34.7	40.1	3.987
	SP (-)	2.2	5.5	14.4	29.8	48.1	0.551
Juice	SP (+)	11.4	9.1	35.6	14.2	29.7	5.872
	SP (-)	11.0	5.5	29.8	14.9	38.7	0.319
Soda	SP (+)	5.9	7.3	26.5	16.9	43.4	2.632
	SP (-)	6.6	5.0	29.8	12.7	45.8	0.756
Mineral water	SP (+)	3.7	5.5	13.7	14.2	63.5	11.732
	SP (-)	6.1	1.1	14.9	20.4	57.4	0.039
Pickles	SP (+)	5.0	4.6	18.7	19.2	52.5	3.340
	SP (-)	2.8	3.3	18.2	19.9	55.8	0.648
Mayonnaise	SP (+)	6.8	5.9	25.6	15.1	46.6	1.937
	SP (-)	6.6	3.3	25.4	16.0	48.6	0.858

trinsic aging, irregular pigmented lesions due to solar damage and telangiectasias. Also benign, premalignant, malignant lesions may develop on the skin with signs of aging (13-15).

The majority of the individuals in our adolescent age group are in the limits of the women with lower skin problems (with or without skin problems). Individuals in this study have normal BMI and had no effect on skin problems. It has already been selected from individuals with normal BMI to avoid skin problems being affected by obesity or extreme weakness.

The role of androgens in the formation of acne,

one of the biggest problems of individuals, has been the subject of many researches. Increased serum androgen amounts can only be seen in women with advanced or treatment-resistant acne (16). Most of the female patients are known to have increased acne lesions during the premenstrual period, and this study has also made a statistically significant difference in gender skin problems.

Individuals with sleep problems are more likely to develop chronic diseases such as hypertension, diabetes, depression, obesity and cancer. Also, they are exposed to a high rate of mortality and their quality of life and productivity were revealed to decrease (17). In one study, it has been shown that internal aging increases in individuals with sleep problems, skin barrier function decreases and satisfaction from their appearance decreases (18). Acute sleep deprivation has been shown to exacerbate psoriasis inflammation in animal models (19) and to reduce the perception of health and attractiveness (20, 21). In our study, skin problems were more common in patients with sleep problems and this difference was statistically significant.

In evaluating the skin, changeable lifestyle factors such as stress level associated with obesity and cardiovascular morbidity and mortality should be evaluated (22). Although it is not seen in the literature looking for a direct relationship between skin health and physical activity, the importance of skin integrity and health is obvious due to the control of body heat in individuals who exercise. Physical activity can be effective in tightening the skin and protecting the skin elimination and barrier. Thus, the health of the skin is also preserved. In our study, one out of every three people who had no skin problems had physical activity and only one out of four people who had skin problems declared physical activity ($p < 0.05$). The lack of studies on sports or physical activity and skin health in the literature and the fact that the studies were only aimed at maintaining body temperature prevented us from discussing this issue in more detail.

Sun is an important cause of skin dryness (23). Washing hands frequently with soap and liquid detergents also removes water and oil from the skin. Frequent showering and hot water washing are also important causes of dryness of the skin. (24). The cause of the spill may be familial (25) as well as stress conditions and hormonal disorder (26). Smoking negatively affects the health of the skin, direct finger, nail and tooth changes, and causes vascular disorders. Smoking is also associated with the development, progression and severity of psoriasis (27**)**. Up to 95% of patients with Palmoplantar pustulosis are smokers (28)**.** The smoker's face is defined as a clinical sign in chronic smokers. These include facial wrinkles with atrophic skin and plenty of orange / purple complexion (29**)**. It is also reported that high exposure to postnatal and prenatal cigarette / tobacco may increase the risk of eczema in the baby and that fish consumption during pregnancy may reduce the risk of infantile eczema (30). Although there are many studies (27-30) showing a relationship between skin and cigarette in the literature, no relation was found in this study. The reason for this difference can be caused by the fact that the research is mostly questioned by acne, hair loss, grease, dryness and so on.

One of the important results of this study was the increase in skin problems of individuals as the frequency of food outside the home increased ($p < 0.005$). This may be due to individuals having to choose unhealthy food while eating outside the home, the use of poor quality fats, etc. In addition, when eating outside home foods with more than glycemic load may be the reason for this result. The lack of studies on the subject in the literature has affected our discussion.

Spoon-shaped nail (acquired coilony), hair loss, glossitis with loss of papillae, angular cheilitis and itching was seen in chronic iron deficiency (31). It is known that some of the important clinical findings of iron deficiency are such as hair loss, dryness in the skin, scaling itching. Some studies have identified a direct relationship between iron deficiency and / or iron deficiency anemia and alopecia (32-34) not shown in others (35, 36). In severe anemia due to iron deficiency, pallor, tachycardia and low blood pressure are expected in the skin and conjunctiva. Coilonia, glossitis and angular stomatitis are among the skin findings seen in iron deficiency anemia (37). Hair loss is in the 4th place among skin problems in this study. The consumption of tea together with food significantly hampers the absorption of iron, which results in a statistically significant relationship between the tea consumption and the skin problems. Anemia, which

is an important problem of adolescent and school age children, may be the problem of this research universe. Because the consumption of tea with food prevents the absorption of iron causes deficiency. In this study, iron deficiency anemia was not questioned. However, low iron intake is not sufficient to diagnose anemia. Blood hemoglobin levels should be examined for iron deficiency anemia. The level of iron in the body may also be reduced without anemia.

Alcohol is the cause of morbidity and mortality and has been shown to cause multiple health problems, including liver failure, neurological damage, hematological disorders and nutritional disorders. Skin abnormalities caused by alcohol may also cause morbidity, but have been overshadowed by other diseases associated with alcohol use. In addition to cutaneous stigmia associated with chronic alcoholic liver disease, alcohol can increase skin diseases directly or for more than one reason. Alcohol use is particularly involved in the development of increased sensitivity to skin and systemic infections, psoriasis and discoid eczema. Alcohol use may also exacerbate adolescent acne and rosacea, porphyria, and cutaneous acne (38). Alcohol stimulates histamine release and can thus exacerbate skin lesions (39). As it is known, excessive intake of alcohol and fatty foods is associated with the low intake of fresh vegetables and fruit consumption. Therefore, alcohol intake should be limited in patients with psoriasis. We did not find any relationship between alcohol and skin problems in our study because of the fact that the age range of our study group is in the early period of life can eliminate the possibility of being a chronic alcoholic.

In the Western diet, ω-6 PUFAs are significantly higher concentrations. Because of these oils, processed foods and vegetable oils ω-6 PUFAs is more dominant than ω-3 PUFAs. While the ratio of ω-6/ ω-3 PUFA in non-westernized diets is estimated to be between 2: 1-3: 1, it has been found to increase to 10: 1 in today's American diets (40). Thus, the western diet may advance the proinflammatory cytokine and eicosanoid profile, and may be the basis for various inflammatory diseases such as acne. As a matter of fact, in this study, no relationship was found between the type of fat or fat consumption and skin problems, individuals who consume cips have more skin problems ($p<0.005$) (Table 2, Table4).

The skin is a reservoir of water and helps maintain body temperature between normal limits. For example, excess sweat from the sweat glands in hot weather moisturizes the body surface. This is partially vaporized by body temperature and tried to be removed from the body surface. Thus, a part of the body temperature is used for this process to provide heat loss and thus cooling (41). Therefore, water consumption is very important. In this study, statistically significant difference was found individuals with skin problems (64.9% of individuals with skin problems; 55.2% of those without skin problems consumed 2 liters of water) consumed less water (Table 1).

There was no relationship between salt consumption and this study. Because individuals who participated in this study were younger, they did not have health problems like hypertension.

Vitamin C is a cofactor for procollagen proline / lysine hydroxylase and is therefore important for collagen synthesis and extracellular matrix (31). Vitamin C is both helpful in the absorption of iron and also helps in the conversion of cholesterol to bile acid and increases the bioavailability of selenium (42). Scurvy is a disease that ascorbic acid deficiency caused by increased collagen fragility and reduced production. Dermatological manifestations in the early period of the disease include petechiae, echymoses, corkscrew or swan neck hair, follicular hyperkeratosis and perifollicular bleeding (43). Larger studies are needed to investigate these issues. The skin manifestations of zinc deficiency are dermatitis, secondary infection, poor wound healing, extremely brittle hair, and sparse or balding skin and pubic hair. Dermatitis, alopecia, nail defects are also associated with zinc deficiency (31). The skin and its attachments are rich in zinc. Approximately 20% of whole body zinc is found in the skin. Zinc is found 5-6 times more in the epidermis layer than in the dermis. Bullous pustular dermatitis, alopecia, parakeratosis and delay in wound healing are skin manifestations observed in zinc deficiency. Antioxidants play a critical role in skin health. Vitamin E and vitamin C are well known for their antioxidant effects on the skin. Topical zinc preparations in the form of divalan zinc ions have been reported to provide a good photoprotective antioxidant effect. Zinc protects from ultraviolet radiation, accelerates wound healing (44,45). While all

of the individuals in this study consumed protein, vitamin A and vitamin E over RDA recommendations, they consumed vitamin C, zinc and iron under RDA recommendations (Table 2). Therefore, these deficiencies may be the cause of skin problems in individuals.

Acne in the first place as the skin problem of individuals in this study. One out of four of the surveyed people had skin injury, hair breakage and hair loss., Also, skin problems such as skin dryness, redness, skin blemishes, pallor, scaling, and abscesses were observed. However, they also stated that they did not receive any support from the relevant experts. The future concerns of this age group, body and gender perceptions are different, growth is the last period of development is completed and stress and worries are experienced in this period can trigger these problems. In the literature, there is no study about skin health of this age group. Therefore, there was not enough discussion.

It has been reported that those who eat only in patisserie type have more skin problems (Table 3). This result has been interesting for us. Pastry type nutrition also means high glycemic-loaded nutrition. Due to the fact that it is cheaper in recent years, the use of fructose sugar in sweets and pastries increases the glycemic load of these foods. Long-term consumption of high glycemic load carbohydrates can lead to long-term hyperinsulinemia and insulin resistance (46). Recently, especially in developed societies, the consumption of refined foods with high glycemic index or the consumption of poor diets from omega 3 fatty acids contributed to the formation of acne lesions and the issue of diet was started to be discussed again. However, there are not enough studies to clarify this issue (47). Insulin, free insulin-like growth factor-1 (IGF-1) and concentrations of direct keratinocytes and insulin-like growth factor binding protein-3 (IGFBP-3) regulating apoptosis are affected. Hyperinsulinemia affects the sebaceous gland and follicular keratinization and may initiate an endocrine cascade that includes IGF, IGFBP-3, androgens and retinoid signaling pathways. The development of hyperinsulinemia and insulin resistance induces a pathological increase in serum concentrations of nonesterified fatty acids (NEFAs), which have been shown to induce the expression of epidermal growth factor receptor. Low glycemic load diet has proven to be beneficial in patients with acne vulgaris (47). In this study, the consumption of pastry, sweet, poacha, etc., which are frequently exposed to high glycemic feeding, may cause more skin problems in these individuals.

Some foods, such as chocolate, cheese, coffee, yoghurt, soy sauce and fermented soybeans, have been reported to play an important role in the activation of skin lesions in patients with atopic dermatitis (48). In this study, although atopic dermatitis was not directly questioned in individuals, those who did not have skin problems consumed more milk, yogurt, buttermilk ($p = 0.027$) and mineral water ($p= 0.039$) (Table 4).

Foods with a role in ninety percent of food allergies is wheat, milk, soy, shellfish, fish, eggs and pistachios (49). Apart from these, gluten, corn, red meat, sugar, yeast, strawberry, citrus fruits, mushrooms, tomatoes and soy can be allergic. Gluten and dairy products are very common among eczema patients, so care should be taken when re-adding gluten and dairy products to these patients. It has also been shown that there is no benefit of eggs and milk-free diet in patients with food allergy. The use of egg, cow's milk, or the use of elemental diet containing only amino acids, carbohydrates, fats and minerals has little benefit in improving atopic eczema in humans (50).

No significant difference was found between the individuals who had skin problem and consumption frequencies of chocolate, mayonnaise, ketchup, biscuit, pastry, cake, cookie, sausage, salami, sausage, sunflower seeds, chips and fruit. Although the foods, especially chocolates and nuts increased acne by patients, it was not possible to show any relationship between acne severity and total calorie intake. Therefore, seasonal differences in skin problems, sun exposure, genetic and personal care factors can be effective.

Conclusion

Gender, sleep duration, physical activity, frequency of eating outside the house, consumption of tea at dinner, french fries, daily water consumption have made a significant difference on skin problems. It has been found that some nutrients (vitamin C, zinc and iron are below the RDA recommendations) are inadequate. Skin problems are mostly seen in patisserie-fed

carbohydrates and those who do not have skin problems consume more milk, yogurt, buttermilk, mineral water, water. However skin problems are easily affected by many factors, such as environmental and personal factors. In order to establish a relationship between these problems and nutrition, individual and environmental factors should be examined. Individuals in what environment they live, personal care status habits should be examined. There is not enough research on the relationship between skin problems and nutrition. This situation obliges everyone to be content with incomplete data. More controlled research is needed to determine the relationship between people with skin problems and nutrition.

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