HALK SAĞLIĞI HEMŞİRELİĞİ DERGİSİ
JOURNAL OF PUBLIC HEALTH NURSING

Araştırma Makalesi/Research Article *2020 - 2(3)*

Nutrition Knowledge Levels of Obese and Overweight Factory Workers and Related Factors*

Obez ve Fazla Kilolu Fabrika İşçilerinin Beslenme Bilgi Düzeyleri ve Etkili Faktörler

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Abstract

Objective: The aim of the study is to determine nutrition knowledge levels of obese and overweight factory workers and related factors.

Material and Methods: Data on 88 workers were used for statistical analysis. Participants had different BMI values and these values evaluated according to the WHO classification [<18.5 underweight, 18.5-24.9 normal, 25.0-29.9 overweight, ≥30.0 as obese]. Introductory information form with 18 questions and Adult Nutrition Knowledge Scale were utilized to collect data and SPSS Windows Version 20.00 Packet program was used to evaluate. Chi-square test, One-Way ANOVA, Pearson Correlation Analysis, and Independent t-tests were used in the analyzes.

Results: The mean age of workers was 43.71±6.21, minimum was 22, maximum was 52. The mean score of Adult Nutrition Knowledge Scale on Basic Nutrition was 45.80 ± 5.66, and on Food Preference was 33.52 ± 5.38. Statistically meaningful association was found between Food Preference and daily meals ($p<0,05$). There is no statistically significant difference between the scale and other related factors ($p> 0.05$).

Conclusions: Participants in the study had a moderate level of knowledge on Basic Nutrition and Food Preferences. It has been determined that the number of meals per day affected Food Preferences. Age, BMI values, marital status, smoking and alcohol use, body mass index values, having any health problem have no effect on nutrition knowledge. Nutrition training programs should include strategies to acquire healthy lifestyle behaviors for workers. In addition, further large-scale studies with different group analyses are required to emphasize the importance of nutrition in occupational health areas.

Key words: Knowledge, Obese, Nutrition, Worker.

* Geliş Tarihi: 14.09.2020 / Kabul Tarihi: 14.12.2020
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Atıf; *Saraç, E., Yıldız, E (2020). Nutrition knowledge levels of obese and overweight factory workers and related factors. Halk Sağlığı Hemşireliği Dergisi, 2(3): 184-196.*

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Öz

Amaç: Bu çalışmanın amacı, obez ve fazla kilolu fabrika işçilerinin beslenme bilgi düzeylerini ve ilişkili faktörleri belirlemektir.

Yöntem: İstatistiksel analiz için 88 işçinin verileri kullanılmıştır. Katılımcıların farklı BKI değerleri olduğu belirlenmiş ve bu değerler WHO sınıflandırmasına göre [<18.5 zayıf, 18.5-24.9 normal, 25.0-29.9 fazla kilolu, ≥30.0 obez] değerlendirilmiştir. Verilerin toplanmasında 18 soruluk Tanıtıcı Özellikler Formu, Yetişkin Beslenme Bilgisi Ölçeği kullanılmış, veriler SPSS Windows 20.00 Paket programında değerlendirilmiştir. Analizlerde ki-kare testi, Tek Yönlü ANOVA, Pearson Korelasyon Analizi ve Bağımsız t-testleri kullanılmıştır.

Bulgular: Çalışmaya alınan işçilerin ortalama yaşı 43.71±6.21, minimum yaş 22, maksimum ise 52 idi. Yetişkin Beslenme Bilgisi Ölçeği Temel Beslenme Bilgisi puan ortalamaları 45.80±5.66, Besin Tercihi puan ortalamaları 33.52±5.38'tür. Besin Tercihi puan ortalaması ile günlük öğün sayısı arasında istatistiksel olarak anlamlı farklılık bulunmuştur ($p<0,05$). Ölçek ile diğer ilişkili faktörler arasında istatistiksel olarak anlamlı farklılık yoktur ($p>0,05$).

Sonuç ve Öneriler: Çalışmaya katılanların Temel Beslenme ve Besin Tercihleri bilgi düzeyleri orta seviyededir. Günlük öğün sayısının besin tercihlerini etkilediği belirlenmiştir. Yaş, BKI, medeni durum, sigara ve alkol kullanma durumu, beden kitle indeksi değerleri, herhangi bir sağlık sorunu olma durumunun beslenme bilgisi üzerinde bir etkisi yoktur. Beslenme eğitim programları, işçiler için sağlıklı yaşam tarzı davranışları kazanmaya yönelik stratejileri içermelidir. Ayrıca iş sağlığı alanında beslenmenin önemini vurgulamak için farklı grup analizleri ile daha büyük ölçekli çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Bilgi Düzeyi, Beslenme, Obez, İşçi.

INTRODUCTION

Adequate and balanced nutrition is an important factor in protecting health and preventing diseases as well as increasing the quality of life. (Turkey Nutrition Guide, 2015). According to the World Health Organization Global Nutrition Report (2018), two billion adults in the world are obese. In Turkey, according to the nutrition and health research 64% of men and 67% of women were overweight and obese. In order to establish National Nutrition Policies that will ensure adequate and balanced nutrition of a society, it is necessary to have nutrition and health data on all communities in that country (Turkey Nutrition Guide, 2015). Ensuring the health and safety of employees', who have a significant contribution to the national economy is possible with adequate and balanced nutrition. While the rate of illness increases in workers who are not fed adequately, the rate of attendance also decreases. Of course, employess' age, other illnesses or gender are affected on nutrition behaviors but always, workers must have a high level of nutritional knowledge whether if they have other effective factors or not.

Healthy eating behaviors of workers not only provide bodily benefits, but also achieve psychological and social well-being (Akay &Demir,2020). Appropriate foods with high-energy need to be taken in their diet program which is suitable for hard work conditions. For both increasing efficiency and protecting health, workers should be assembled in jobs suitable to their working conditions and their physical and psychological state (Allan, Querstret, Banas, Bruin, 2016). Their performance is impacted by unbalanced and inadequate nutrition negatively. In addition, their immune system gets weakened correspondingly. Accordingly, problems in focusing on the work and a decrease in the efficiency of the work occur (Fereli&Aktac&Günes, 2016). However, the likelihood of occupational accidents increases.

In this context, the importance of occupational health professionals is once again revealed. Perhaps the most important of these professionals are the occupational health nurses who work with the occupational practitioner. While the occupational health nurse plays a role in protecting and promoting the health of the employees, it is also obliged to ensure that they are protected against occupational risks that they may be exposed to. They are responsible for monitoring employees with chronic diseases, controlling their work in units suitable for their physical and psychological conditions, and training for occupational and individual health (Topcu &Ardahan, 2019). In addition, occupational health nurses are responsible for ensuring that employees adopt the right health behavior in nutrition, as in every subject.

In literature, some negativities were encountered in the evaluations made in terms of the nutrition and health status of workers. So, studies on nutrition and health behaviors of workers are needed. It is thought that this study, which evaluates the nutrition information of factory employees, will contribute to the healthy nutrition and occupational health nursing literature. In this context, study was carried out to determine nutrition knowledges of factory workers and related factors in Erzurum.

Research Questions

1. What is the nutrition knowledge levels of workers with different body mass indexes?
2. Does age of workers affect nutrition knowledge?
3. Does education affect nutrition knowledge level?
4. Does income level affect nutrition knowledge level?
5. Does smoking affect nutrition knowledge?

6. Does alcohol use affect nutrition knowledge?
7. Does previous healthy nutrition training affect nutritional knowledge?
8. Does the presence of health workers in the family affect the nutrition knowledge?
9. Does the presence of any health problems affect the nutritional knowledge level?
10. Does the number of meals per day affect nutrition knowledge?
11. Does Body Mass Index affect nutrition knowledge?

MATERIAL AND METHODS

Participants

The population of the study comprised of 88 workers. In factory, there were 88 obese and overweight participants and all included in the study. Also, their specialty was vehicle maintenance. The questionnaire was responded to all participants and all of them enrolled for statistical analysis. Workers were informed about the study and their informed consents were obtained. Workers who agreed to participate were included in the study.

Type, Universe and Sample of Research

The study is descriptive. Factory is in automotive sector. It has wide-ranging risks in terms of occupational safety. Workers in this sector may be exposed to serious physical and chemical hazards such as fingers, hands and feet being caught between moving machine parts, falling, contact with sharp objects, fire and explosion. When the employees of the factory with these risks do not have the knowledge of healthy nutrition, the dangers they may encounter are doubled. After the routine medical examination carried out by the occupational health practitioner; the individuals participated in the study. A questionnaire was applied to a group of 10 people outside the factory to evaluate the comprehensibility of the questions and the feedback. All questions were found understandable by the participants so none of them changed.

Data Collection

Introductory information form

The form consisted questions about age, marital status, education and income status, place of residence, mother and father education, state of being any health employee in the family, having any previous nutritional education, any health problems, smoking and alcohol use and the number of daily meals. Since the effects of age, BMI values, education, marital status, previous nutritional education, smoking and alcohol use on nutritional knowledge were determined in studies in the literature, these questions were included in the questionnaire form (Kadioglu and Ergun, 2015, Gumus, Tucer & Keser, 2019, Jones, Lamp, Neelon, Nicholson, Schneider, Wooten & Zidenberg 2015, Batmaz 2018, Yilmaz&Karaca,2019,). BMI results according to the WHO classification [<18.5 underweight, 18.5-24.9 normal, 25.0-29.9 overweight, ≥30.0 evaluated as obese] were used. The demographic characteristics of the participants are summarized in **Table 1.**

Adult Nutrition Knowledge Scale

Validity and reliability study of Adult Nutrition Knowledge Scale (ANK) was conducted by Batmaz in 2018. It consists of 20 propositions under the dimension “Basic Nutrition (BN) and 12 propositions under the dimension “Food Preference (FP)”. Participants were asked to answer to the questions “I strongly agree, agree, neither agree nor disagree, disagree, strongly

disagree." The correct propositions received were calculated as follows; "strongly agree" 4 points, "agree" 3 points, "neither agree nor disagree" 2 points, "disagree" 1 point, "absolutely disagree" 0 point. The wrong propositions received were calculated as follows; "strongly agree" 0 points, "agree" 1 point, "neither agree nor disagree" 2 points, "disagree" 3 points and "strongly disagree" 4 points. The maximum score of BN dimension is 80 and FP dimension is 48.

Ethical Prosedure

Participation in this study was voluntary. Employees filled out an informed consent form. They were also informed that they could withdraw from the study if not willing to respond to the questionnaire. And required permission was asked and received from the management of factory. Required permission for ANK Scale was asked and received from researcher Batmaz. Ethical approval from the Scientific Research Ethics Committee of Ataturk University was obtained for the study.

Data Assessments

SPSS (Statistical Program for Social Sciences) Windows Version 20.00 package program was used to evaluate data. Since the scale scores show a normal distribution (Kolmogorow-Smirnov), comparative analysis, mean ± standard deviation, chi-square test, One Way ANOVA, Pearson Correlation Analysis and t-test were applied to data. Statistical significance of differences was estimated at $p< 0.05$.

Research Limitations

The findings of the study are limited to 88 workers in the factory. It cannot be generalized for all workers working in public or private workplaces.

RESULTS

The participants were all male and the mean age was 43.71 ± 6.21. 96.6% of them are married and 55.7% are secondary school graduates. 76.1% have an average monthly income of 3001-5000 TL (Turkish Liras). The data on demographic characteristics are presented in Table-1.

The average score of BN was 45.80 ± 5.66, the highest was 62 and the lowest was 35. While the average score of FP was 33.52 ± 5.38, the highest was 46 and the lowest was 12. The knowledge of BN and FP were moderate. The distribution of items in the ANK Scale, BN, FP and the average scores were presented in Table-2 and Table-3.

Table 1: The Demographic Characteristics of Participants

Demographic Characteristics	**Mean±SD**	
Age	43.71±6.21	
Education	**n**	**%**
Primary Education	28	31.8
Secondary Education	49	55.7
University and above	11	12.5
Marital Status		
Married	85	96.6
Single	3	3.4
Monthly Income Stuation		
1000-3000TL	5	5.7
3001-5000TL	67	76.1
5001 TL and above	16	18.2
Health Employee Relative		
Yes	7	8
No	81	92
Previous Healthy Nutrition Training		
Yes	14	15.9
No	74	84.1
Smoking		
Yes	36	40.9
No	52	59.1
Alcohol Use		
Yes	2	2.3
No	86	97.7
Any Health Problems		
Yes	32	36.4
Hayır	56	63.6
How Many Meals Do You Eat per Day		
2 meals	6	6.8
3 meals	68	77.3
4 meals	9	10.2
5 meals	5	5.7
BMI Values of WHO		
25-29kg/m2 (Overweight)	49	55.7
30 kg/m2 and Above (Obese)	39	44.3

Table 2: Distribution of Responses to Basic Nutrition Knowledge Scale

PROPOSALS	Certainly Agree		Agree		Neither Agree nor Disagree		Disagree		Absolutely Disagree		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Natural fresh fruit juices are free from sugar	24	27.3	31	35.2	7	8.0	24	27.3	2	2.3	88	100
Carrots are a good source of vitamin A.	16	18.2	50	**56.8**	14	15.9	6	6.8	2	2.3	88	100
Vitamins and minerals give energy.	19	21.6	50	**56.8**	13	14.8	5	5.7	1	1.1	88	100
Carbohydrates are the main source of energy.	21	23.9	40	**45.5**	16	18.2	7	8.0	4	4.5	88	100
Frozen products have lower nutritional value than fresh foods.	23	26.1	37	**42.0**	18	20.5	8	9.1	2	2.3	88	100
Fruits contents high protein	13	14.8	26	29.5	26	29.5	20	22.7	3	3.4	88	100
Eggs and red meat are similar in terms of the amount of protein they contain.	15	17.0	38	43.2	18	20.5	15	17.0	2	2.3	88	100
Consuming olive oil raises cholesterol.	10	11.4	13	14.8	22	25.0	35	**39.8**	8	9.1	88	100
Dry bean market has high fiber content.	15	17.0	34	**38.6**	29	33	9	10.2	1	1.1	88	100
Fats in processed meat products such as salami and sausages are harmful to health.	17	19.3	42	47.7	19	21.6	8	9.1	2	2.3	88	100
The calcium mineral found in milk and dairy products is important for bone and dental health.	19	21.6	45	51.1	18	20.5	6	6.8	-	-	88	100
The best source of vitamin D, which is necessary for preventing bone resorption, is the sun.	17	19.3	43	48.9	23	26.1	4	4.5	1	1.1	88	100
Vitamin E is a highly effective vitamin for the sense of sight.	13	14.8	32	36.4	34	38.6	6	6.8	3	3.4	88	100
Vitamin C in orange strengthens immunity and protects against colds and flu infections.	18	20.5	44	50.0	20	22.7	4	4.5	2	2.3	88	100
Because of the vitamins it contains, it is beneficial for the nervous system to consume whole grain (brown) bread.	8	9.1	45	51.1	24	27.3	10	11.4	1	1.1	88	100
Excessive consumption of salt does not affect blood pressure.	18	20.5	12	13.6	12	13.6	29	**33.0**	17	19.3	88	100
Since red meat contains vitamin B12, it is effective in preventing forgetfulness.	10	11.4	31	35.2	29	33.0	15	17.0	3	3.4	88	100
Red- and purple-colored vegetables and fruits are protective against cancer	10	11.4	34	38.6	33	37.5	9	10.2	2	2.3	88	100
The saturated fat content of the fish is higher than that of red meat.	8	9.1	33	37.5	30	34.1	12	13.6	5	5.7	88	100
Fats contain less energy than protein and carbohydrates	12	13.6	24	27.3	24	27.3	15	17.0	13	14.8	88	100

Table 3: Distribution of Responses to Food Preference Knowledge Scale

PROPOSALS	Certainly Agree		Agree		Neither Agree nor Disagree		Disagree		Absolutely Disagree		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
It is healthier for diabetics to consume the fruit itself (without peeling, if possible) instead of fruit juice.	5	7.0	2	.1	6	8.2	4	.5	1	.1	88	100
Consuming fiber foods instead of sugary foods prevents constipation.	5	7.0	5	2.5	15	7.0	-	-	3	.4	88	100
An individual who wants to reduce the amount of fat he receives with foods should prefer chicken grill instead of chicken roast	5	7.0	6	2.3	7	9.3	8	.1	2	.3	88	100
The person who wants to increase the protein in a meal should prefer egg spinach instead of wheat spinach.	5	7.0	9	5.7	6	8.2	7	.0	1	.1	88	100
Instead of sweet biscuits at a snack, it is better to consume whole wheat bread.	2	5.0	5	2.5	5	.7	5	.7	1	.1	88	100
It is better to put 3-4 dried apricots instead of wafers in children's lunchbox.	1	3.9	**2**	**0.5**	4	.5	1	.1	-	-	88	100
It is better for an adult to meet their fluid needs by consuming water instead of drinks such as tea and coffee.	2	5.0	4	1.4	7	.0	5	.7	-	-	88	100
Instead of taking vitamins and minerals directly from foods, it is more beneficial than to take vitamins in the form of drugs.	8	0.5	4	5.9	9	0.2	**31**	**5.2**	6	8.2	88	100
Proteins in foods of animal origin (such as meat, fish, milk, eggs) are important for body health	7	9.3	**9**	**7.0**	2	.3	8	.1	2	.3	88	100
White bread is more healthy than whole grain bread.	0	1.4	7	9.3	5	7.0	**3**	**7.5**	3	4.8	88	100
Coleslaw should be preferred instead of sauerkraut to reduce salt intake.	2	3.6	2	**9.1**	1	3.9	2	.3	1	.1	88	100
Someone who wants to reduce the amount of fat from food may prefer light milk.	4	5.9	9	5.7	8	0.5	6	.8	1	.1	88	100

Table 4: Comparison of Factors Associated with Adult Nutrition Knowledge Scale

	Basic Nutrition X±SD	Food Preference X±SD
Education		
Primary Education	46.68±6.06	46.68±6.06
Secondary Education	44.82±5.36	44.82±5.36
University and Above	48.00±5.40	48.00±5.40
	*F: 1.949 p:0.149	*F: 1.949 p:0.149
Marital Status		
Married	45.81±5.71	33.45±5.45
Single	45.67±5.03	35.67±2.08
	**t: 0.043 p:0.965	**t: -0.700 p:0.486
Monthly Income Situation		
1000-3000TL	45.00±5.43	45.00±5.43
3001-5000TL	46.17±5.50	46,19±5,50
5001TL and above	45.44±6.47	44.44±6.47
	*F: 0.671 p:0.514	*F: 0.671 p:0.514
How Many Meals Do You Eat per Day		
2 meals	47.17±10.07	**38.17±5.95**
3 meals	45.84±5.31	33.90±4.76
4 meals	44.78±4.35	29.44±6.98
5 meals	45.60±7.37	30.20±4.76
	*F: 0.212 p:0.888	***F: 4.420 p:0.006**
Smoking		
Yes	46.17±6.03	33.47±5.17
No	45.56±5.44	33.56±5.58
	**t: 4.494 p:0.623	**t: -0.073 p:0.942
Alcohol Use		
Yes	44.00±1.41	32.00±2.83
No	45.85±5.72	33.56±5.43
	**t: -0.455 p:0.651	**t: -0.403 p:0.688
Father Education		
Primary School	45.06±5.21	45.76±5.79
Secondary School	48.29±6.94	46.55±5.35
High School	47.75±4.65	43.50±0.71
	*F:2.548 p:0.084	*F:0.258 p:0.773
Any Health Problems		
Yes	45.03±5.46	33.50±5.61
No	46.25±5.77	33.54±5.31
	**t: -0.971 p:0.334	**t: -0.030 p:0.976
BMI Values		
25-29kg/m2 (Overweight)	45.49±5.69	32.94±5.24
30kg/m2 and Above (Obese)	46.21±5.68	34.26±5.54
	**t: -0.587 p: 0.559	**t: -1.142 p:0.256
Earlier Healthy Nutrition Training Status		
Yes	46.79±5.45	34.00±5.04
No	45.62±5.72	33.43±5.47
	**t:0.704 p:0.484	**t:0.360 p:0.720

X: Mean, SD: Standard Deviation.
**t: Independent t test
*F: OneWay ANOVA test. $p < 0.05$ represented statistical significance.

Table 5: The Relationship Between Age and Basic Nutrition and Food Preference Knowledges

		Age
Basic Nutrition	**r**	-0.034
	p	0.752
Food Preference	**r**	0.088
	p	0.414

∗Correlation Analysis were used. p < .05 represented statistical significance.

According to ***Table-2;*** "Carrot is a good source of vitamin A" statement was agreed with by 56.8% and "Vitamins and minerals give energy" statement was agreed with by 56.8% of the participants. "Consuming olive oil increases cholesterol" statement was disagreed with by 39.8% and "Excessive consumption of salt does not affect blood pressure" statement was disagreed with by 33%, either.

According to the responses given to the Food Preference in **Table-3;** 70.5% of participants agreed with the statement "Putting 3-4 dried apricots instead of wafer in children's lunchbox and 67% also agreed with the statement "protein in animal-derived foods (meat, fish, milk, eggs) are important for body health". "Instead of taking vitamins and minerals directly from foods is more beneficial than to take vitamins in the form of medicines" statement was disagreed %35.2 and "White bread is healthier than whole-grain bread" was disagreed with 37.5%, either.

In Table-4 and Table-5, the relationship between ANK Scale and related factors were examined. One Way ANOVA Test and independent t-tests were conducted to examine whether marital status, income status, having previous nutrition education, father education, BMI values affected knowledge or not. The results revealed that there was no statistically significant difference between them (p> 0.05).

However, there was no meaningful association between BN and FP (p>0.05) with father education. There was a significant association between meal frequency and FP (p<0.05). Knowledge of participants who ate 2 meals per day were higher than others (38.17±5.95).

DISCUSSION

Healthy nutrition behaviors affect all individuals during lifetime. In society, there are some special groups that should eat healthy and high energy nutrients. One of them is factory workers who should get more energy to work efficiently. Inadequate and unbalanced nutrition and unhealthy food consumption of workers decrease their performance, reduce their resistance to diseases and increase the rate of diseases and may lead to occupational accidents. As a result, workers' health is affected and job productivity decreases (Cakmak &Kızıl, 2018). So, workers' nutrition knowledge and behaviors are important.

In present study, the proposal "Carbohydrates are the main source of energy (45.5%) and the fiber content of the bean market is high (38.6%)" was answered mostly correct by workers. Previously reported that the energy requirement was met primarily from carbohydrates and it was necessary to eat legumes to meet the need for pulp (Yücel, 2015). "The nutritional value of frozen products is lower than that of fresh foods" (42%) has been answered correctly. Most of the respondents answered correctly to the proposal that "Coleslaw should be preferred to reduce salt intake" (59.1%). Similar with the findings, in literature it is stated, individuals with hypertension accepted that salt is harmful and they

reduced salt consumption (Arslantaş, Sevinc, Cetinkaya, Gunay & Aykut, 2019). 67% of participants replied correct answer to "the proteins in animal origin foods (meat, fish, milk, eggs) are very important for body health". This finding is consistent with previous data showing that egg is useful and necessary nutrient in terms of nutritional value and the proteins it contains (Akay & Demir, 2020).

The subscales of the ANK scale were compared with the mean scores of BN and FP (Table-4). BN and FP knowledge were not impacted by BMI values and the presence of a health problem. In previous data, as the BMI increases, the nutrition knowledge decreases (Gumus, Tucer & Keser, 2019). This result might be due to the difference in sample size.

While a positive improvement was expected in nutrition knowledge and nutrition behaviors as the age increased, we could not find any result like this in our current study. Previous data showed that with increasing age, the risk for unhealthy eating behaviors has been found to increase (Kadioglu and Ergun, 2015). Also, Kadioglu et al. found that as age increased nutrition knowledge decreased just the opposite. In our present analyses, participants were overweight and obese. There are growing problems towards overweight and obesity in the world. According to the reports of WHO, obesity is on the rise in low- and middle-income countries. (WHO, 2015). Also, globally the prevalence of hypertension is the highest. Global burden of disease analyzes have been performed as of 2017 and according to the results of 1990-2016; high BMI values have been identified as one of the leading risk factors in disease formation (GBD,2016). Just like in the world, in Turkey too, for workers, it is the same because of their meals with high energy and also, they are inactive. As it reported that obesity is the leading factor, individuals, workers, women, school children and larger communities need to be trained on healthy eating behaviors.

There was a no statistically significant difference between father 's education and ANK Scale. While BN knowledge was not impacted by the number of meals per day, FP knowledge of workers who eat 2 meals a day were higher. In previous reports nutrition knowledge of men were higher (Batmaz, 2018). In our present study, there was no comparison between male and female workers because all workers in factory were male.

In our study participants' mean Body Mass Index value was 30.00±3.40. Previously reported in other studies mean Body Mass Index of males was 25.6 ± 7.8 (Batmaz, 2018). In present study, 44.3% of the participants had Body Mass Index measurements of 30 kg/m2 and above, while in previous data were 10.2% of men had a Body Mass Index of 30 kg/m2 and above (Wang et al, 2011). In these studies, different Body Mass Index values of males might be due to sample size and age differences. In our present study, we did not observe any significant correlation between Body Mass Index values and nutrition knowledge ($p > 0.05$). Like our study, previous data showed that there was no significant correlation between BMI values and nutrition knowledge (Tutuncu&Karaismailoglu, 2013). Also previous data showed that nutrition knowledge was impacted by education, but FP was not (Batmaz,2018). In our study, nutrition knowledge was not impacted by education either. Although not significant, as education level increases, BN and FP knowledge increases correspondingly. As determined in Lee's study, individuals' self-efficacy will increase after their education in nutrition (Lee, Cho, Kim, 2020).

CONCLUSIONS AND RECOMMENDATIONS

Considering the working conditions of factory workers and the risks they face; it is necessary to follow the nutritional habits and their knowledge in the field of occupational

health. It is important that these follow-ups are made by the occupational health nurse, who is the first occupational profession in contact with the workers.

In our study, obese and overweight factory workers' knowledge of nutrition was moderate. Nutrition knowledge of participants with low frequency of daily meals were found to be high. Also, age, BMI values, education, marital status, smoking, alcohol use, previous healthy nutrition training and having any health problem did not affect nutrition knowledge. In literature it is indicated that education programs on nutrition can have an important effect on workers' eating behaviors. Besides that, education programs also increase self-efficiency of factory workers about healthy nutrition. At this point, the public health nurse's attempt to provide individuals with self-efficacy comes to the fore. In line with these results, employees should be trained by occupational health professionals to acquire healthy eating behaviors, encouraged to acquire healthy lifestyle behaviors at both national and international levels. In order to prevent disruption of services in the field of occupational health and to avoid risks and dangers related to malnutrition, workers should be educated and equipped in this regard.

CONTRIBUTION TO RESEARCH

Idea- Esra Yıldız, Elif Saraç, Design- Esra Yıldız, Elif Saraç, Resources, Materials- Esra Yıldız, Elif Saraç, Data Collection-Elif Saraç, Data Analysis-Esra Yıldız, Elif Saraç, Literature Review- Esra Yıldız, Elif Saraç, Writing Manuscript- Esra Yıldız, Elif Saraç, Critical Review- Esra Yıldız, Elif Saraç.

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