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Research Paper – Araştırma Makalesi

TRANSIT WORKERS MAY BE UNDER THE RISK FOR EATING DISORDERS: A CROSS-SECTIONAL STUDY IN TURKIYE

TRANSIT SÜRÜCÜLER YEME BOZUKLUKLARI AÇISINDAN RISK ALTINDA OLABILIR: TÜRKIYE'DE YAPILAN KESITSEL BIR ÇALIŞMA

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Özet

Bu çalışma, Türkiye'de Metro İstanbul'da çalışan transit sürücülerde yeme bozukluğu riskini ve ilişkili faktörleri (aşırı yeme, laksatif kullanımı gibi) belirlemek amacıyla planlanmış ve yürütülmüştür. Transit sürücüler (n=249) medeni durum, eğitim, uyku süresi, fiziksel aktivite durumu ve REZZY ve Yeme Bozukluğu Değerlendirme Ölçeği (EDE-Q-TR) ölçekleri olarak yeme bozukluğu formları ile değerlendirilmiştir. Her katılımcı için boy uzunluğu ve vücut ağırlığı ölçülmüştür. Ölçekler, laksatif kullanımı ve uyku, egzersiz süreleri arasındaki ilişkileri incelemek için parametrik olmayan testler ve Spearman korelasyonu kullanılmıştır. Katılımcıların çoğu erkek olup, yaş ortalamaları 38,31±6,15 yıl olarak saptanmıştır. SCOFF ve EDE-Q-TR puanları (kısıtlama, yeme endişesi, vücut endişesi, ağırlık endişesi) arasında pozitif istatistiksel olarak anlamlı korelasyonlar bulunmuştur. SCOFF ve EDE-Q-TR toplam puanları cinsiyete göre karşılaştırıldığında, kadınların daha yüksek puanlara sahip olduğu ($p<0,001$, çoğunlukla), ancak yine erkeklerin kesme sınırından daha yüksek puanlara sahip olduğu görülmüştür. Haftada 150 dakikadan fazla egzersiz yapan katılımcıların yeme bozukluğu riski diğer gruplara göre daha yüksek bulunmuştur. Transit çalışanlarının yeme bozukluğu riski altında olduğu görülmüştür. Transit çalışanları yolcuları taşıdığı için daha sağlıklı olmaları gerekmektedir. Şirketlerin sağlıklı beslenme önerileri ve uygulamaları konusunda diyetisyen görüşmelerini göz önünde bulundurmaları önerilmektedir.

Anahtar Kelimeler: Yeme bozuklukları, tıkınırcasına yeme bozukluğu, laksatifler, uyku süresi, transit sürücüler

Abstract

This study was planned and conducted to determine eating disorder risk and related factors (such as laxative usage) in transit workers working in Metro Istanbul in Turkiye. Transit drivers (n=249) reported marital status, education, sleep duration, physical activity status and eating disorder questionnaires as Turkish form of SCOFF and Eating Disorder Examination Questionnaire (EDE-Q-TR) scales. Height and body weight were measured for each participant. Nonparametric tests and Spearman's correlation were used to examine associations between scales, laxative usage and sleep, exercise durations. Participants were mostly male, with a total mean age of 38.31±6.15 years. Positive statistically significant correlations were found between SCOFF and EDE-Q-TR scores (restriction, eating concern, body concern, weight concern). When total scores of SCOFF and EDE-Q-TR were compared by gender, females had higher scores ($p<0.001$, mostly), but again, males had higher scores than the cut-off. Participants that exercised for more than 150 minutes a week were found to be having higher risk of eating disorders than the other groups. Transit workers were at risk of eating disorders. Because transit workers carrying lives, they need to be healthier than passengers. Dietitian interventions about healthy nutrition recommendations and practices from companies are recommended.

Keywords: Eating disorders, binge eating disorder, laxatives, sleep duration, transit workers

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1. INTRODUCTION

The high prevalence of eating disorders – especially binge eating disorder- causing obesity and high body weight in the population has become an essential public health problem due to serious health problems such as hypertension, type 2 diabetes, hypercholesterolemia, cardiovascular diseases and some types of cancer (Galmiche et al., 2019, pp. 1402-1413). Weight gain in adulthood may increase the risk of disease, regardless of initial body weight. On average, adults gain about 1-2 pounds per year in United States (US) (Ogden et al., 2006, pp. 1549-1555). Compared to other occupational groups, transit workers are in a higher group in terms of obesity, sedentary life, and unhealthy nutrition (Ragland et al., 1987, pp. 208-218). Both individual behaviors and work environment variables lead to a higher prevalence of obesity and the risk of gaining excess weight in this occupational group (Apostolopoulos et al., 2011, pp. 122-143).

Environmental factors contribute significantly to weight gain and the development of high body weight and obesity (Ragland et al., 1987, pp. 208-218). The majority of the adult population spends a significant part of their day at work. The physical condition of the workplace provides opportunities and exposures that influence individual food choices and physical activity behaviors (Pourabdian et al., 2020, pp. 8-10). Long or shift work, no scheduled breaks or meals, and lack of options for healthy food and physical activity on transport routes or transport hubs (e.g. bus or train garage) are some of the variables (Oğuz Karlıdere, 2022, pp.636-641). It can be difficult for transit workers to reach healthy dietary options and find areas for physical activity (Ragland et al., 1987, pp. 208-218; Apostolopoulos et al., 2011, pp. 122-143). The prevalence of obesity and high body weight is extremely high in this metropolitan transit worker population compared to US national data (French, Story Jeffery, 2001, pp. 636-641). The findings in a study have been noted as alarming because of the potential serious health risks that such high obesity presents in terms of health care costs and the economic costs of lost workdays due to illness and disability (French et al., 2007, pp. 1-12). This is alarming due to the potential severe health risks, increased healthcare costs, and economic costs associated with lost workdays due to illness and disability.

Despite these challenges, transit workers report food choices and physical activity behaviors seem to indicate overall healthy patterns. Fruit and vegetable intake and frequency of snacks, sweets, and fast food appear to be normal when hit with the more general population (Finkelstein et al., 2004, pp.18-24). Among transit workers, energy intake and fruit and vegetable intake are normal, while the average fat-to-energy percentage is higher (French, Story Jeffery, 2001, pp. 636-641). It has been observed that the levels of light, moderate, and vigorous physical activity reported by transport workers are low. The energy intake of tractor drivers can go up to 3200 kcal and, bus and tram drivers tend to be more physically active in their spare time (Escoto et al., 2010, pp.1-10; Rütten et al., 2003, pp. 371-376). It can be affected by so many reasons like sleep problems. A study measured the sleep status of tram drivers working three-week morning, noon, and evening shifts. Rest breaks have been associated with reducted sleepiness (Igamberdyeva, Abramova Voronina, 2020, pp. 54-55). All these results underscore the need for nutrition, mental health, and fatigue management in transit workers.

Shift work among public transportation employees can disrupt their circadian rhythm. This disruption can often lead to irregular sleep pattern, reduced sleep duration, and decreased sleep quality (Igamberdyeva, Abramova Voronina, 2020, pp. 54-55). Such disturbances can

negatively impact both physical and cognitive performance, increasing the risk of workplace accidents. Additionally, chronic circadian rhythm disruptions have been linked to long-term health issues, including cardiovascular diseases, metabolic disorders, and mental health problems (Mond et al., 2004, pp. 551-567). In this present study, the risk of eating disorders and relationships between laxative usage, sleep, and exercise duration in transit workers who work in the biggest subway company in Turkiye.

2. MATERIALS AND METHODS

Study procedures was carried out in accordance with the Declaration of Helsinki and approved by the Ethics Committee Approval from Istanbul Okan University Clinical Research Ethics Committee dated 17.02.2021 (ref 022021/133) was obtained. For the study application, written permission from Metro Istanbul Inc. was taken. The universe of the research consisted of 700 transit workers. The universe of the research consisted of 700 transit workers. The study sample was found to be 249 participants with a 95% confidence interval and a 5% margin of error. Participants who wished to contribute to the study voluntarily were verbally provided information about the details (objectives, procedure, data usage). A written informed consent form was obtained, which describes voluntary participation and anonymity. After the participants signed the voluntary consent form, a questionnaire form was applied by face-to-face interview technique. The questionnaire form consisted of three parts in total. The first part was about determining sociodemographic characteristics such as age, gender, marital status, sleep, and physical activity questions (as minutes per day) and health related questions such as chronic conditions. Body weight and height was measured with a calibrated scale and stadiometer; therefore, researchers wrote down the anthropometric information in the second part. The last part used scales such as the SCOFF Eating Disorders Scale and Eating Disorder Examination Questionnaire (EDE-Q-TR).

2.1. SCOFF Questionnaire

Screening instrument for detecting eating disorders was developed as abbreviation for sick, control, one, fat, food as SCOFF by Hill et al. by collecting the letters selected from each question to determine the risk of eating disorder (Hill et al., 2010, pp. 344-351). Turkish validity and reliability study was published by Aydemir et al. (Aydemir et al., 2015, pp. 31-35). The scale consists of five questions, and the cut-off is two or more points on the scale, where 1 point is given to each item, considered at risk for eating disorders. Although it was originally designed to detect only anorexia and bulimia nervosa, it is also used in the detection of mixed eating behaviors in epidemiological studies (Richter et al., 2017, pp. 81-88).

2.2. Eating Disorder Examination Questionnaire (EDE-Q-TR)

Eating Disorders Examination Questionnaire (EDE-Q)) was developed by Fairburn and Beglin (16). The Turkish validity and reliability study of the scale constructed by Yücel et al., under the name of EDE-Q-TR, with a total of 28 questions (7-point Likert) (Fairburn Beglin, 1994, pp. 363-370). The participants' dietary habits and personal satisfaction in the last 28 days were classified as follows, with four subscales reflecting the psychological problem of eating disorders. Sub-scales were named R, restraint; EC, eating concern; SC, shape concern; and WC, weight concern, and they present a reflection of the severity of the eating disorder! 's psychopathology. EDE-Q-TR scale's Cronbach alpha value was 0.93. Although its original or

Turkish form had no cut-off, there is a suggested global cut-off of 1.68 (Yücel et al., 2011, pp. 509-511).

2.3. Statistical Analysis

The data obtained from the study were analyzed in the SPSS 25.0 package program. In addition to descriptive statistics, the data were analyzed in terms of normality assumptions, and Shapiro-Wilk values were determined as $p<0.05$. Also, the division of Skewness and Kurtosis values to errors was found to vary between ±1.96. Therefore, the Mann-Whitney U test and Kruskal-Wallis H test, which are nonparametric tests, were applied to determine whether there was a significant difference between the scale and its sub-dimensions and the sociodemographic data of the participants. In cases where a significant difference was detected in the Kruskal-Wallis H test, the post-hoc test was tested to determine the direction of the difference. The Games-Howell test was used because the variances were not distributed homogeneously, and the sample numbers were unequal. Finally, multiple regression analysis was performed. The level of significance was determined as $p<0.05$ in all analyzes.

3. RESULTS

In Table 1, descriptive results and questionnaires as SCOFF and Eating Disorder Examination Questionnaire (EDE-Q-TR) results were shown. For the question of 'how many hours a day you sleep', the mean sleep duration of the participants was about 6 hours a day (Table 1). Also, the SCOFF scale mean score of the transit workers participated in this study was under cut-off value, but Eating Disorder Examination Questionnaire (EDE-Q-TR) score tended to be the cutoff point (2.53±1.91) for the global score. When mean scores of EDE-Q-TR subscales was examined, the highest score was as Shape Concern (EDE-SC) 2.99±2.06 (Table 1).

Table 1: Participants' Age, Anthropometric Measurements, Sleep Duration and Total Scale Scores (n=249)

Variables	Median (min-max)	$\bar{X} \pm SD$
Age (year)	37 (26-53)	38.31±6.15
Height (cm)	178 (156-193)	177.13±6.94
Body weight (kg)	89 (54-128)	87.81±16.01
Sleep duration (hour)	6 (4-10)	6.25±0.80
Scales		
SCOFF	1 (0-5)	1.04±1.20
EDE-Q-TR	2.4 (0-6)	2.53±1.92
EDE-R	1.2 (0-6)	2.15±2.12
EDE-EC	2.4 (0-6)	2.40±2.04
EDE-SC	3.5 (0-6)	2.99±2.06
EDE-WC	2.6 (0-6)	2.57±1.90

In Table 2, it can be seen that three-quarters of our study included male participants (n=195). Scale and subscale sores were analyzed according to gender, laxative usage (a question from SCOFF) and sleep duration in Table 2. Based on gender we found that female participants were more tend to have eating disorder risk than males (SCOFF $p<0.001$, EDE-Q-TR $p=.001$). Even if females had more Restriction (EDE-R), Eating Concern (EDE-EC), Shape Concern (EDE-SC) and Weight Concern (EDE-WC) scores than males (EDE-R, EDE-SC, EDE-WC

p<0.001; EDE-EC p=0.036), it was found that males had higher scores than global cut-off of EDE-Q-TR. Participants who were using laxative regularly had more eating disorder risk (EDE-SC p<0.001, SCOFF, EDE-Q-TR and other subscale scores p<0.05). The scores of those who exercised for more than 150 minutes were found to be higher scores than the other groups in terms of EDE-Q-TR score and EDE-R subscale score (p=0.033, p<0.001, respectively). When other scales and subscales were evaluated, no significant differences were found between the exercise groups.

Table 2: Scale and subscale scores according to variables (n=249)

	SCOFF	EDE-Q-TR	EDE-R	EDE-EC	EDE-SC	EDE-WC
Gender						
Female (n=54)	2 (0-5)	3.4 (0-6)	3.7 (0-6)	2.7 (0-6)	4.1 (0-6)	3.4 (0-6)
Male (n=195)	1 (0-4)	2.3 (0-6)	1 (0-6)	2.4 (0-6)	3.3 (0-6)	2.4 (0-6)
U	3388	3738.5	3097	4293.5	3877	3744
p	0.000***	0.001**	0.000***	0.036*	0.003**	0.001**
Laxative Usage (LU)						
LU + (n=101)	1 (0-5)	3.1 (0-6)	2 (0-6)	3.2 (0-6)	4 (0-6)	3.2 (0-6)
LU – (n=148)	0.5 (0-5)	1.8 (0-6)	1.2 (0-6)	1.6 (0-6)	2.5 (0-6)	2.1 (0-6)
U	6013	5733.5	6531.5	5674.5	5325	5821
p	0.006**	0.002**	0.087	0.001**	0.000***	0.003**
Exercise Duration (minutes)						
Never (n=120)	1 (0-4)	1.8^{a} (0-6)	1^{a} (0-6)	1.5 (0-6)	2.8 (0-6)	1.9 (0-6)
<75 min. (n=95)	1 (0-5)	2.6^{ab} (0-6)	2^{ab} (0-6)	2.8 (0-6)	2.6 (0-6)	2.6 (0-6)
75-150 min. (n=21)	1 (0-5)	3.9^{b} (0-6)	2.8^{ab} (0-6)	3.2 (0-6)	4.5 (0-6)	3.2 (0-6)
>150 min. (n=13)	0 (0-4)	3.6^{b} (0.3-5.4)	4^{b} (0-6)	2.6 (0-6)	4 (0.5-5.8)	3.6 (0-5.2)
H	6.340	8.733	19.355	4.322	4.286	5.349
p	0.096	0.033*	0.000***	0.229	0.232	0.148

U: Mann-Whitney U Test; H: Kruskal-Wallis H Test *p<0.05; **p<0.01; ***p<0.001
a, b: The difference between medians that do not have a common letter is significant (p<0.05).

Strong correlations (p<0.001) were found between SCOFF, EDE-Q-TR total and subscale scores. When the results were examined, as the EDE-Q-TR total scores, EDE-R, EDE-EC, EDE-BC and EDE-WC scores increased, SCOFF total scores were effected with increases as 70.8%, 67%, 65.8%, 67.8% and 70%, respectively (Table 3). In the same table, it was found that there was no statistically significant correlation (p>0.05) between scale scores and age and sleep duration of the individuals participating in the study.

Table 3: Correlations between age, exercise, sleep duration and scale scores

		EDE-Q-TR	EDE-R	EDE-EC	EDE-SC	EDE-WC
SCOFF	s	0.708	0.670	0.658	0.678	0.700
	p	0.000***	0.000***	0.000***	0.000***	0.000***
Age (year)	s	-0.023	-0.091	-0.007	0.024	-0.034
	p	0.723	0.153	0.909	0.708	0.595
Sleep duration (hour)	s	-0.077	0.021	-0.105	-0.120	-0.069
	p	0.225	0.745	0.098	.059	0.275

s: Spearmans rank correlation coefficient. ***p<0.001.

It was shown in Table 4 that SCOFF scores (t=8.779; p<0.001) had an effect on EDE-Q-TR scores. Based on the results, it was found that a one-unit increase in the SCOFF score increased the EDE-Q-TR scores by 0.585 times, respectively. In addition, individuals who did not have a chronic disease affect their EDE-Q-TR scores 42.2% less than individuals with chronic disease (t=-2.927; p<0.01), and also individuals who had exercise have EDE-Q-TR scores compared to individuals who do not exercise. It was found that it affected EDE-Q-TR scores more than 27% (t=2.021; p<0.05) (Table 4).

Table 4: Associations between EDE-Q-TR scores and SCOFF questionnaire, gender, marital status, chronic diseases, exercise duration and laxative usage

	EDE-Q-TR		
	Coef. (95% CI)	t	p
(Constant)	-0.836 (-1.689. .017)	-1.930	0.055
SCOFF	0.585 (0.454. 0.716)	8.779	0.000***
Gender (Ref: Male)			
Female	0.262 (-0.074. 0.598)	1.534	0.126
Marital Status (Ref: Married)			
Single	0.119 (-0.209. 0.447)	0.716	0.475
Chronic Disease Status (Ref: Yes)			
No	-0.422 (-0.706. -0.138)	-2.927	0.004**
Exercise Duration (Ref: No)			
Yes	0.270 (0.007. 0.533)	2.021	0.044*
Laxative Usage (Ref: Yes)			
No	0.109 (-0.172. 0.389)	0.763	0.446

t: Independent Samples T Test. *p<0.05; **p<0.01; ***p<0.001

4. DISCUSSION

This study was carried out with 249 participants to determine the risk of eating disorders in transit workers working in a private company in Istanbul. In the study, demographic characteristics, sleep, and duration status of individuals were questioned. As scales, SCOFF and EDE-Q-TR Eating Disorder Examination Questionnaire for the risk of eating disorders.

In the literature, there are no research about disordered eating or eating disorders risk of transit workers. There were some health-related researches about transit workers and drivers. A prospective study conducted in Norway involving 103 male transit workers (47-55) were followed for an average of 11 years of heart disease risk. It has been reported that the mortality rate of bus and tram drivers due to coronary heart disease is 18.4% higher than that of men in other occupational groups (Mond et al., 2004, pp. 551-567). In a cross-sectional study conducted in Denmark, bus drivers and locomotive drivers were evaluated for 5-year risk of death due to ischemic heart disease and acute myocardial infarction. During the a 5-year observation period, 25% of them retired from active duty due to illness, and cardiovascular disease was reported as the cause of early retirement in 10% of the participants. During the follow-up period, 31 of 75 deaths were reported to be due to ischemic heart disease. In the study, it was reported that deaths due to heart disease were found to be significantly higher in bus drivers than in locomotive drivers (Morris et al., 1953, pp. 1111-1120). In another study, serum cholesterol levels were examined in sedentary drivers, and the serum cholesterol values of the bus driver participants were higher than the other occupational group, which was considered a cardiovascular risk factor. It has been reported that these situations are related to work-related stress, daily calorie intake and restriction (Netterstrøm, Laursen, 1981, 75-79). Restriction behavior in the development of eating disorders may be a risk in the formation of chronic diseases. Besides, we found no information on laxative usage by drivers or transit workers in the literature.

Another interest about drivers is rest breaks associated with mild sleepiness reductions for tram drivers who worked the morning, noon, and evening shifts for three weeks. Sleep hours were reported to be 1 hour, 33 minutes, and 38 minutes less, respectively, compared to the

morning and afternoon shifts (Igamberdyeva, Abramova Voronina, 2020, pp. 54-55). Our study had no significant results, but sleep duration was nearly six hours. When the studies were compared, the shift work style affected sleep patterns negatively.

Eating disorders and exercise were found to be related in some studies. In a study to determine the body composition and physical fitness of participants diagnosed with bulimia nervosa and binge eating disorder; their physical activity levels were found to be higher than normal (>50%) (Mathisen et al., 2018, pp. 331-342). When Body Mass Index (BMI) values and physical activity levels were compared in the study, it was reported that obese participants exercise less than 60 minutes a week (Pollard, 2001, pp. 14-28). Being inactive (while working or for compulsory reasons) poses a risk for binge eating. In our study, contrary to the literature had more eating disorder risk compared to individuals who do not exercise. This may be related to the intensity of exercise, and most of the individuals in our study did not exercise enough. Considering the daily lives of transit workers as subway drivers, it is possible to be inactive. For this reason, it is important to ensure the energy balance of transit workers with encouraging them to have more mobility.

There are some limitations about this study. Due to the pandemic, all transit workers could not be reached and not accepted nutritional interventions. But further studies can use new designs by using the results of our study. However, this study is the first study of transit workers in Turkiye and also their risk of eating disorders as in the literature.

5. CONCLUSION

Studies on drivers/transit workers in literature are limited. Serious health problems such as diabetes, insomnia, cardiovascular diseases, cancer, and eating disorders are exacerbated by detrimental eating behaviors. While eating disorders affect the individual physically and mentally, it is necessary to take remedial measures in every sense in order to be healthy for drivers/transit workers.

Study Note: In the interviews, researchers added some notes about male drivers. Male participants added that they had little time to eat and sometimes had digestion problems because of eating quickly or getting too hungry. Females were more adapted to working strict hours.

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