

# Personality Characteristics, Psychological Signs and Anxiety Levels of Drivers Who are in Charge of Inner City Transportation

## ŞEHİR İÇİ ULAŞIMDA GÖREV ALAN OTOBÜS ŞOFÖRLERİNDE KİŞİLİK ÖZELLİKLERİ, RUHSAL BELİRTİLER VE KAYGI DÜZEYLERİ

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### Summary

**Purpose:** The purpose of this research is to examine whether work conditions have bad influence on drivers' psychological health or not, as well as examining drivers' personal characteristics.

**Materials and methods :** In this study, personality characteristics, psychological signs and anxiety levels of drivers who were in charge of inner city transportation in İstanbul, were investigated. 208 regular bus drivers were selected for this study EPQ (Eysenck Personality Questionnaire), SCL90-R (Symptom Check List) and STAI (Spielberger's State and Trait Anxiety Inventory) were applied to these drivers.

**Result:** Average age of drivers was  $38.65 \pm 4.69$ , and the working period was  $7.44 \pm 4$  years. According to Eysenck Personality Questionnaire results; there were 55 drivers who had passed average standard extroversion scores, and 25 drivers who had passed average neuroticism scores. There were no drivers who had passed average standard psychoticism and lying. It was found that STAI score of whole group was  $41.94 \pm 8.93$ , STAI trait score was  $47.00 \pm 7.02$ . Average SCL90-R of whole group was  $1.09 \pm 0.57$ . All sub test scores of SCL90-R were higher for those who had back pain, were not satisfied with their jobs and drove for long-term. Sub tests (paranoid thoughts, somatization, anger-hostility) of SCL90-R and STAI trait scores were higher for those who have been working for 11-15 years.

**Conclusion:** It will be useful to have periodical examinations for those who work on demanding jobs, besides evaluating their psychological status if it is necessary. Creating healthier working conditions and increasing quality of life may require to change work environment.

**Key words:** State and trait anxiety, SCL90-R, Drivers, Personality characteristics

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### Özet

**Amaç:** Bu çalışmanın amacı, şehir içi ulaşımda görevli şoförlerde kişilik özelliklerini ve çalışma koşullarının ruhsal durum ve kaygı düzeyleri üzerinde olumsuz etkisinin olup olmadığını araştırmaktır.

**Materyal-metod:** Bu çalışmada sürekli olarak şehir içi ulaşımda görevli şoförlerde kişilik özellikleri, ruhsal belirtiler ve kaygı düzeyleri araştırılmaya çalışılmıştır. Çalışma kapsamına sürekli olarak İstanbul'da şehir içi ulaşımında otobüs şoförlüğü yapan 208 kişi alınmıştır. Kişilere Eysenck Kişilik Testi, SCL90-R (Symptom Check List) Ruhsal belirti indeksi ve Spielberger'in Durumluk -Sürekli Kaygı Envanteri bire-bir görüşme yöntemi ile uygulanmıştır.

**Bulgular :** Kişilerin yaş ortalaması  $38.65 \pm 4.69$ , çalışma yılı ortalaması ise  $7.55 \pm 4$  yıldır. Eysenck kişilik testi (EPQ) dışadönüklük ortalama standart puanını 55, nörotizm ortalama standart puanını ise 25 kişi aşmıştır. Psikotizm ve yalan ortalama standart puanlarını aşan kişi olmamıştır. Tüm grubun durumluk kaygı puanı  $41.94 \pm 8.93$ , sürekli kaygı puanı ise  $47.00 \pm 7.02$  bulunmuştur. Tüm grupta SCL90-R genel belirti ortalaması (GSI)  $1.09 \pm 0.57$  bulunmuştur. Bel - sırt ağrısı olanlarda, işinden memnun olmayanlarda, uzun yıllar şoförlük yapanlarda, SCL90-R tüm alt test puanları daha yüksek bulunmuştur. SCL90-R alt testlerinden, paranoid düşünceler, somatizasyon, öfke düşmanlık ve sürekli kaygı puanları 11-15 yıl çalışanlarda daha yüksek bulunmuştur. Bel sırt ağrısından şikayet edilen süre ile kişiler arası duyarlılık, psikotizm, somatizasyon, öfke - düşmanlık, GSI skorları arasında istatistiksel olarak zayıf ilişkiler bulunmuştur.

**Sonuç:** Sürekli dikkat gerektiren ve stresli işlerde çalışanlara gerekli periyodik muayenelerin yapılmasının yanı sıra, ruhsal durumlarının da değerlendirilerek, kişilere rahat bir çalışma ortamı sağlanması faydalı olacaktır.

**Anahtar Kelimeler:** Durumluk ve sürekli kaygı,  
Ruhsal belirti tarama listesi,  
Şoförler, Kişilik özellikleri

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Aim of the occupational health is to increase worker's health capacity, to minimise possible harmful effects of work environment, to make work suitable to worker or vice versa. Health is not only free from disease and ailment but also physical, psychological and social well being. It is known that psycho-social factors are effective on many physical diseases.

Urban bus drivers are exposed to a variety of discomforts and physical hazards associated with their occupation. Occupational exposure to whole-body vibration and postural stress in a driving environment may contribute to an increased risk for low back pain disorders (1).

In most epidemiological studies of bus drivers and tractor drivers, low back pain disorders were found to be associated with age, back accidents, cumulative whole-body vibration dose, and postural overload. Psychophysiological changes during long - distance driving may be associated with driving fatigue and morbidity (2,3).

Many recent reports indicate that public transport employees constitute a group of workers at high risk of going through a traumatic event. Among the whole of traumatic events occurring during the course of their work, serious threats and assault constitute the majority of these events. Traumatic events are more frequent at work than in their private lives (4).

Research studies emphasise unsuitable posture as the cause of health disorders. The most common disorders are diseases of circulation (especially arterial hypertension), locomotor system diseases (back pain syndrome) and psychic disorders (5).

Many people, who work at various places, face with similar or different risks originated from their workplaces. Those physical or psychological risks influence individuals in bad ways. Psychophysiological changes during long-distance driving may be associated with driving fatigue and morbidity (2).

City bus operators suffer elevated health risks and striking levels of absenteeism and medical disability that may be related to occupational stress (6). Risky behaviour is common among bus drivers. Potentially dangerous bus driving and commuting practices increase the risk of road accidents (7). Adhering to the schedule, providing service to pas-

sengers, and driving safely are among the most important psychosocial demands of the bus driver's job (8). It is known that most of the physical disease, seen at work places are caused by psychosocial factors (9-11).

In the last several years, there is no balance between the number of vehicles and the quality of roads. Therefore, continuous traffic problems cause psychological stress for drivers.

Some occupational groups are known to be at high risk. Some of these high-risk groups, such as bus drivers, even have an increasing relative risk. Preventive measures against ischaemic heart disease should focus on occupational groups at high risk (12).

The purpose of this research is to examine whether work conditions have bad influence on drivers' psychological health or not, as well as examining drivers' personal characteristics.

### Materials and Methods

208 randomly chosen bus drivers were involved in this research. Data were collected through a 40 item questionnaire which examined workers' socio demographic characteristics and their health problems in general. Additionally, there were one to one interviews with the workers. The interviews took place at leisure time so that the stress that would be caused by their work place was eliminated. Bus drivers participated in this study were given EPQ (Eysenck Personality Questionnaire, SCL90-R (Symptom Check List) and STAI (Spielberger's state and Trait Anxiety Inventory) (13).

Data were evaluated with student-t test, Mann-Whitney U test, Kruskal-Wallis test, One way ANOVA test and correlation analyses.

### Results

All bus drivers participated in this research were male. Their average age and work experience were  $(39.65 \pm 4.39)$  and  $(7.5 \pm 5.4)$  respectively. They were at various education levels. 119 primary school (62.2%), 50 secondary school (24%), 38 high school (18.3%) 1 college (0.5%) graduate participated in this research. According to educational status there is no significant statistical difference among somatization ( $K-W=3.73$   $p>0.05$ ), obses-

sive-compulsive (K-W=2.28  $p>0.05$ ), interpersonal sensitivity (K-W=2.63  $p>0.05$ ), depression (K-W=3.87  $p>0.05$ ), anxiety (K-W=2.04  $p>0.05$ ), anghoust (K-W=2.09  $p>0.05$ ), phobic anxiety (K-W=2.28  $p>0.05$ ), paranoid ideation (K-W=3.32  $p>0.05$ ), psychotism (K-W=2.75  $p>0.05$ ), general symptom index (K-W=5.60  $p>0.05$ ), and STAI state scores ( $F=1.73$   $p>0.05$ ). There is significant statistical difference at STAI trait scores ( $F=4.76$   $p<0.01$ ).

184 of the bus drivers (88.5%) were working 8 hours a day, 24 of them (11.5%) were working 10 hours a day. There were no time to rest during working periods.

The participants' marital status were 97,1% of them married, 1% single, 1,9% divorced. Their average number of children was  $2,39 \pm 1,03$ . Drivers' average weight was  $77,93 \pm 12,38$  kg; their average height was  $170,98 \pm 5,58$  cm. The mean value of the drivers' Body Mass Index was  $26,63 \pm 3,81$ .

## Discussion

According to the most accepted definition of health, health implies being physically, psychologically and socially well. None of these components have more priority than others. As psychological health is an abstract concept, it always falls behind physical health as a concrete concept. Therefore, problems related to psychological health in our society are generally ignored (14-18).

Individuals' personal characteristics are shaped by interaction among natural, economic and cultural conditions (9). This is also influenced with family's general attitudes, parents' attitudes, gender, religious beliefs and traditions. Psychological health means to live a balanced and peaceful life.

This definition brings some questions into mind. Were bus drivers normal people before they started this job? or are they changing personalities when they adapt themselves to this work environment? Adaptation between individuals and their environment is very important.

Lifetime exposure to traumatic events was assessed retrospectively among a representative sample of city bus drivers from Montreal, Canada. Among them, 68.1% reported at least one exposure to a traumatic event of any type. Among the 68%

**Table 1.** Personal characteristics of bus drivers participated in this research.

Personality Characteristics	SCORES		n
	Normal	High	
Extroversion (E)	0 - 13	14+	208
Frequency (Percent)	153 (%73.5)	55 (%26.5)	
Neuroticism (N)	0 - 10	11+	208
Frequency (Percent)	183 (%87.9)	25 (%12.1)	
Psychoticism (P)	0 - 4	5+	208
Frequency (Percent)	208 (%100)	-	
Lie (L)	0 - 9	10+	208
Frequency (Percent)	208 (%100)	-	

**Table 2.** Average SCL90-R and STAI scores of all bus drivers participated in this research.

SCL90 -R	Mean $\pm$ S.D	Min - Max	n
Somatization	1.41 $\pm$ 0.75	0 - 3.67	208
Obsessive - compulsive.	1.30 $\pm$ 0.70	0 - 3.30	208
Interpersonal sensitivity	1.09 $\pm$ 0.67	0 - 3.22	208
Depression.	1.07 $\pm$ 0.63	0 - 2.85	208
Anxiety	0.95 $\pm$ 0.63	0 - 3.30	208
Anghoust	1.10 $\pm$ 0.82	0 - 3.83	208
Phobic anxiety.	0.68 $\pm$ 0.58	0 - 2.71	208
Paranoid ideation	1.23 $\pm$ 0.78	0 - 3.83	208
Psychotism	0.77 $\pm$ 0.58	0 - 2.60	208
GSI	1.09 $\pm$ 0.57	0.04 - 3.06	208
Spielberger's STAI			
State	41.94 $\pm$ 8.93	0 - 67	208
Trait	47.00 $\pm$ 7.02	0 - 73	208

exposed, 70.4% of them reported multiple traumatic exposures, with ratings ranging from 0 to 12. Epidemiological research should devote more effort to assess fully the lifetime prevalence of traumatic events and not only cases of post traumatic stress disorders (19).

Hara et al. analysed 130 male bus drivers and age-matched 130 male clerks. The questionnaire included eleven questions about lifestyle and mental health, three questions about awareness of health, and questions on personal concern about specific parts of the body or diseases, and health information they needed. Over 80 percent of subjects of both groups had good awareness of health, but bus drivers had significantly worse lifestyle with regard to nutritional intake, daily walking, sports, and sleeping hours. Bus drivers had significantly

**Table 3.** Average SCL90-R and STAI scores based on bus drivers' job dissatisfaction and low back-pain.

SCL90-R	Job dissatisfaction (Yes / No)		Two tailed significance	Low back-pain (Yes-No)		Two tailed significance
	Mean±S.D	U, z, t		Mean±S.D	U, z, t	
Somatization	1.50±0.79	z=1.96	*	1.64±0.70	z=6.01	***
	1.25±0.63	U=4247		1.04±0.66	U=2601	
Obsessive- compulsive	1.39±0.72	z=2.47	*	1.41±0.69	z=3.28	**
	1.13±0.63	U=4006		1.10±0.67	U=3754	
Interpersonal sensitivity	1.16±0.66	z=2.09	*	1.15±0.65	z=2.00	*
	0.96±0.66	U=4166		0.98±0.67	U=4295	
Depression	1.15±0.63	z=2.58	**	1.16±0.63	z=3.07	**
	0.92±0.58	U=3962		0.91±0.59	U=3843	
Anxiety	1.03±0.69	z=2.27	*	1.07±0.64	z=4.07	***
	0.79±0.49	U=4090		0.73±0.56	U=3423	
Anghoust	1.23±0.85	z=3.00	**	1.18±0.84	z=2.07	*
	0.87±0.70	U=3789		0.96±0.76	U=4268	
Phobic anxiety	0.73±0.62	z=1.59	NS	0.72±0.58	z=1.73	NS
	0.57±0.48	U=4381		0.60±0.56	U=4413	
Paranoid ideation	1.31±0.77	z=2.38	*	1.33±0.77	z=2.89	**
	1.07±0.76	U=4047		1.04±0.76	U=3919	
Psychotism	0.82±0.61	z=1.61	NS	0.85±0.56	z=2.87	*
	0.67±0.49	U=4003		0.64±0.57	U=3927	
GSI	1.16±0.59	z=2.48	**	1.20±0.56	z=3.81	***
	0.95±0.50			0.90±0.53	U=3530	
Spielberger's STAI						
State	42.67±9.46	t=1.57	NS	41.61±8.49	t=0.41	NS
	40.67±7.83			42.14±9.22		
Trait	47.83±7.51	t=2.24	*	46.00±5.34	t=1.66	NS
	45.59±5.88			47.64±7.86		

\* p<0.05      \*\* 0.001<p<0.01      \*\*\* p<0.001      NS: Non Significant

greater prevalence of concern about their cardiovascular system, oesophagus and gastrointestinal system, and joints and bones than clerks. Bus drivers had a significantly greater need for information about nutritional intake, and methods for prevention of diseases. The discrepancy between awareness of health and lifestyle was determined in this study, especially in food intake, walking time, sports participation, and sleep, may have resulted from the bus driver's characteristics of job, for example, long and irregular working hours. Therefore, effective guidance on health and lifestyle is needed to restore balance and improve their lifestyle (20).

Recent cross-sectional studies of transit drivers showed that both physical and psychosocial factors

are independently associated with back and neck pain. Physical workload and psychosocial job factors both independently predict spinal injury in transit vehicle operators (21).

Arronson's results showed that both genders had significantly higher adrenaline, noradrenaline, and cortisol excretion levels during work than during the comparison session; during work and inactivity, there were no significant gender differences in hormone excretion for either hormone; the percentage increase during work compared with control levels for all hormones was equally high in the female group as in the male group; and there were no significant gender differences in self-reported mood (distress, well-being, control) during bus driving (22).

**Table 4.** Average SCL90-R and STAI scores of those who thought that the cause of their low back pain they had was their work and how their work experience was related to their scores.

SCL90 -R	The cause of their low back pain they had was their work (Yes/no)		Two tailed significance	Duration of Employment (years)		Two tailed significance
	Mean ±S.D	U,z,t		10 >, 10<	U,z,t	
Somatization	1.46±0.72	z=2.96	**	1.65±0.78	z=2.41	*
	1.02±0.81	U=1514		1.35±0.72	U=2535	
Obsessive compulsive	1.34±0.71	z=2.46	*	1.47±0.63	z=1.92	NS
	0.97±0.53	U=1659		1.25±0.71	U=2703	
Interpersonal sensitivity	1.10± 0.67	z=1.18	NS	1.22±0.60	z=1.76	NS
	0.95 ±0.65	U=2926		1.05±0.68	U=2756	
Depression	1.10 ±0.63	z=1.91	NS	1.15±0.63	z=1.02	NS
	0.83 ±0.52	U=1817		1.04±0.60	U=3011	
Anxiety	0.97 ±0.64	z=1.78	NS	1.13±0.65	z=2.14	*
	0.73±0.55	U=1874		0.90±0.62	U=2628	
Anghoust	1.13±0.81	z=2.01	*	1.39±0.89	z=2.43	*
	0.84±0.82	U=1789		1.03±0.78	U=2530	
Phobic anxiety	0.71±0.59	z=2.38	*	0.83±0.66	z=1.70	NS
	0.43±0.42	U=1684		0.63±0.55	U=2780	
Paranoid ideation	1.25±0.75	z=1.88	NS	1.55±0.81	z=2.90	**
	1.00±0.91	U=1825		1.14±0.75	U=2368	
Psychotism	0.78±0.57	z=0.66	NS	0.92±0.61	z=1.76	NS
	0.70±0.57	U=2176		0.73±0.56	U=2549	
GSI	1.12±0.57	z=2.09	*	1.26±0.55	z=2.36	*
	0.85±0.49	U=1764		1.04±0.56	U=2549	
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Spielberger's STAI	42.08±8.74	t=0.62	NS	41.61±8.76	t=1.07	NS
State	40.92±10.24			43.30±9.58		
	47.29±7.02	t=1.56	NS	49.47±6.88	t=2.25	*
Trait	45.60±6.78			46.41±6.94		

\* p<0.05    \*\* 0.001<p<0.01    \*\*\* p<0.001    NS: Non Significant

Bus drivers and mechanics demonstrated a significantly higher prevalence of most chronic respiratory symptoms when compared to control workers. In particular, lower airway symptoms of chest tightness and dyspnea and upper airway symptoms of nasal catarrh were significantly more prevalent among drivers and mechanics than among controls. Long-term employment in the transport industry of bus drivers and mechanics, particularly in combination with smoking, may be associated with the development of chronic respiratory symptoms and lung function impairment (23). Several studies have shown that bus driving is a high risk occupa-

tion for ischaemic heart disease . Bus drivers who reported job strain and job dissatisfaction would have an excess risk of subsequent death due to ischaemic heart disease (24). Drivers were most distinctive for movement-related pain in the cervical spine. They were also more subject in any part of the spine to postural pain. Drivers more than non-drivers struggled against their pain by doing exercise, seeking professional treatment, and taking medications, indicating that spinal disorders constitute a prominent health concern for workers in this occupation (25). The aftermath of psychological trauma, long since studied in the context of war can also oc-

cur as a result of trauma in civilian life. Bus drivers in large urban area are frequently aggressed (26).

Different types of drivers are at different risk of myocardial infarction. Bus drivers in urban areas seem to be at an increased risk, which is unlikely to be explained by uncontrolled confounding from tobacco smoking or overweight. Psychosocial work conditions may play a part in the increased incidence of myocardial infarction among urban bus drivers and should be investigated further (27).

Several studies have shown that bus driving is a high-risk occupation for ischaemic heart disease (28).

The highest prevalence of disc protrusion was found among the bus drivers with more severe whole-body vibration exposure. Frequent awkward postures at work were also related to some types of low back symptoms. It is concluded that bus driving is associated with an increased risk for low back troubles. This excess risk may be due to both whole-body vibration exposure and prolonged sitting in a constrained posture the findings of this study also indicated that among the bus drivers low back symptoms occurred at whole-body vibration exposure levels (29).

According to Eysenck scores, for those whose work experience is more than 10 years, there is significant statistical difference among somatization, anxiety, paranoid ideas, general symptom index and STAI trait scores.

When SCL90-R scores were evaluated with low back - pain. Weak correlations among interpersonal sensitivity ( $r=0.19$   $p<0.001$ ), general symptom index ( $r=0.19$   $p<0.001$ ), somatization ( $r=0.24$   $p<0.001$ ), psychotism ( $r=0.22$   $p<0.001$ ), anxiety ( $r=0.21$   $p<0.001$ ) were observed. It was found that there were not significant correlation among other symptoms.

During inner-city operation bus drivers are exposed to a particular workload situation, especially due to the high density of traffic and bus stops. Their job is characterised by highly frequent and often simultaneous task execution, performed with a compulsory body posture and under exposure to vibration and noise. To reduce the workload related to the equipment and tasks of bus driving, projects should be investigated further (30).

Urban bus drivers are exposed to a variety of discomforts and physical hazards associated with their occupation (31).

Among the research participants, 131 bus drivers were not satisfied with their jobs. They have higher somatization, obsessive - compulsive, interpersonal sensitivity, depression, anxiety, paranoid ideas, psychotism and general symptom index STAI scores than those who were satisfied with their jobs.

Those who had low back pain got higher average scores on somatization, obsessive- compulsive, interpersonal sensitivity, depression anxiety, paranoid ideas, psychotism and general symptom index than those who did not have low back-pain.

Doing the same job continuous driving and continuous interaction with passengers negatively influence bus drivers' psychological health. Therefore, there needs to be a shift in their working periods. The increase in psychosocial stress at work place causes an increase in accident and occupational diseases.

Interviews with bus drivers brought the following points:

- There is no time to rest eat or drink.
- Drivers try to create a resting time with continuous driving and some other illegal ways. This is a cause for stress.
- There is no lunch time. Therefore, the only thing they can do is to eat a sandwich which will be cause of an unbalances diet.
- There is no restroom on the way they drive. Therefore, most drivers face with urethra problems.
- There is no adjustable seat in old busses and this causes to have low back pain.
- Unnecessary questions raised by passengers and the need to follow whether passengers used the right kind of ticket or not bother bus drivers.

It will be useful to have periodical examinations for those who work on demanding jobs, besides evaluating their psychological status if it is necessary. Creating healthier working conditions and increasing quality of life may require to change work environment.

## REFERENCES

1. Guidotti T. Mortality of urban transit workers: indications of an excess of deaths by suicide using gas. *occup med (lond)* 1992;42:125-8.
2. Raggatt PT, Morrissey SA. A Field Study Of Stress And Fatigue In Long-Distance Bus Drivers. *Behav. Med* 1997;23:122-9.
3. Bovenzi M. Low Back Pain Disorders And Exposure To Whole-Body Vibration In The Workplace. *Semin Perinatol* 1996;20:38-53.
4. Boyer R, Brunet A. Prevalence of Post-Traumatic Stress Disorder In Bus Drivers. *Sante Ment Que* 1996;21:189-208
5. Jelcic I. Improper Body Posture Of Bus Drivers. *Arh Hig Rada Toksikol* 1995;46:89-93.
6. Evans GW. Working on the Hot Seat: Urban Bus Operators. *Accid Anal Prev* 1994;26:181-93.
7. Mirza S, Mirza M, Chotani H, Luby S. Risky Behavior Of Bus Commuters And Bus Drivers In Karachi, Pakistan. *Accid Anal Prev* 1999;31:329-33.
8. Meijman TF, Kompier MA. Bussy Business: How Urban Bus Drivers Cope With Time Pressure, Passengers, And Traffic Safety. *J Occup Health Psychol* 1998;3:109-21.
9. Yörükoğlu A.,:Ruh Hastalıkları Epidemiyolojisi. Ruh Sağlığı ve Hastalıkları, METEKSAN Ltd. Ankara 1983.
10. İşsever H, Dokuztuğ F, Sabuncu HH, Doğru Önen L. Demir çelik İşleminde çalışanlarda ruh sağlığı. III. Ulusal İşçi Sağlığı Kongresi Ankara. 1988 20-23 Nisan.
11. Doğan O, Özbek H, Gülmez H, Coşkunerden C. Kadınlarda Ruhsal Belirtilerin Yaygınlığı. XXV. Ulusal Psikiyatri ve Nörolojik Bilimler Kongresi. Mersin. 1989 15-21 Ekim.
12. Tuchsén F, Endahl LA. Increasing Inequality In Ischaemic Heart Disease Morbidity Among Employed Men In Denmark 1981-1993: The Need For A New Preventive Policy. *Int J Epidemiol* 1999;28:640-4.
13. Le Compte WA., Öner N., Development of the Turkish Edition of The -State Trait Anxiety Inventory .Spielberger CD.Guerrero D(eds) .Cross Cultural Anxiety Washington CD. Hemisphere Publishing Corporation 1976:51-68.
14. Çuhadaroğlu Ç. Üniversite öğrencilerinde psikiyatrik semptom dağılımı. XXI Ulusal Psikiyatri ve Nörolojik Bilimler Kongresi 1985.
15. Doğan O, Göğüş AK. Yetiştirme Yurtlarında Symptom Check- List (SCL90-R) ile yapılan Bir Çalışma .Nöroloji - Nöroşirurji Nöropsikiyatri Dergisi 1987;7:198-200.
16. Evci E., Öztaş D.: Birinci basamak Sağlık Hizmetlerinde Ruh Sağlığı Hizmetlerinde Ruh Sağlığı Hizmetlerinin Yeri. Hacettepe Toplum Hekimliği Bülteni. Ankara. 1997;2:25-9.
17. Fidaner, C ve H. SCL90-R Ruh Sağlığı Testinin Uygulanması ve Metodolojik sorunlar. XXI Ulusal Psikiyatri ve Nörolojik Bilimler Kongresi 1985.
18. Temel Sağlık Hizmetlerinde Ruh Sağlığı. Türkiye Cumhuriyeti Sağlık Bakanlığı Sağlık Projesi Genel Koordinatörlüğü. 1. baskı.1995.
19. Brunet A, Boyer R, Brillon P, Ehrensaft E, Stephenson R. Lifetime Exposure To Traumatic Events Among A Sample Of City Bus Drivers. *Psychol Rep* 1998;83:1155-60.
20. Hara S, Yanagi H, Okuno J, Azuma K, Yuzawa T, Hirano C, Tomura S, Tsuchiya S. Lifestyle, Mental Health, And Awareness Of Health Among Japanese Bus Drivers. *Nippon Koshu Eisei Zasshi* 1998 ;45:1162-70.
21. Krause N, Ragland DR, Fisher Jm, Syme Sl. Psychosocial Job Factors, Physical Workload, And Incidence of Work-Related Spinal Injury: A 5-Year Prospective Study of Urban Transit Operators. *Spine* 1998;23:2507-16.
22. Aronsson G, Rissler A. Psychophysiological Stress Reactions In Female And Male Urban Bus Drivers. *J Occup Health Psychol* 1998;3:122-9.
23. Zuskin E, Mustajbegovic J, Schachter EN. Respiratory Symptoms And Lung Function In Bus Drivers and Mechanics. *Am J Ind Med* 1994;6:771-83.
24. Netterstrom B, Suadicanı P. Self-Evaluated Job Satisfaction And Ischemic Heart Disease. A 10-Year Follow-Up Study Of Bus Drivers In A Big City. *Ugeskr Laeger* 1994; 156:5110-4.
25. Anderson R. The back pain of bus drivers. prevalence in an urban area of california. *Spine* 1992 ;17:1481-8.
26. Andre C, Lelord F, Legeron P, Reignier A, Delattre A. Controlled study of outcome after 6 months to early intervention of bus driver victims of aggression. *Encephale* 1997; 23:65-71.
27. Gustavsson P, Alfredsson L, Brunnberg H, Hammar N, Jakobsson R, Reuterwall C, Ostlin P. Myocardial infarction among male bus, taxi, and lorry drivers in middle sweden. *Occup Environ Med* 1996;53:235-40.
28. Netterstrom B, Suadicanı P. Self-assessed job satisfaction and ischaemic heart disease mortality: a 10-year follow-up of urban bus drivers. *Int J Epidemiol* 1993 ;22:51-6.
29. Bovenzi M, Zadini A. Self-reported low back symptoms in urban bus drivers exposed to whole-body vibration. *Spine* 1992;17:1048-59.
30. Gobel M, Springer J, Scherff J. Stress And Strain Of Short Haul Bus Drivers: Psychophysiology As A Design Oriented Method For Analysis. *Ergonomics* 1998 ;41:563-80.
31. Brunet A, Boyer R, Brillon P, Ehrensaft E, Stephenson R. Lifetime Exposure To Traumatic Events Among A Sample Of City Bus Drivers. *Psychol Rep* 1998;83:1155-60.