

## ORIGINAL PAPER

Yıldız Akvardar · Yucel Demiral · Gul Ergor · Alp Ergor

## Substance use among medical students and physicians in a medical school in Turkey

Accepted: 12 December 2003

**Abstract** *Background* This study examined substance use and abuse, including nicotine and alcohol, in subjects who were at various stages of a medical career in Dokuz Eylül University Medical School in Turkey. Anxiety and depression levels were also assessed in order to determine the relationship of the substance use and anxiety and depression. *Method* Using an anonymous, self-administered questionnaire, we surveyed 121 junior, and 52 senior medical students, 73 residents and 80 practicing physicians who completed the questionnaire. *Results* Alcohol was the most frequently used substance in all groups. Two or more positive responses on the CAGE were obtained for 22.4% of the junior students, 20% of the senior students, 8.9% of the residents and 6.5% of the physicians. Lifetime smoking prevalence was as high as 50%. The age of onset for nicotine and alcohol use was earlier in first-year medical students than the other groups. Benzodiazepines (alprazolam, diazepam) were the most frequently used sedative-hypnotics. The use of illicit substances was rare in all four groups, with cannabis being the most commonly used illicit substance. The junior medical students (23.6%) had the highest level of anxiety, while the senior students (44%) had the highest level of depression, assessed by the Hospital Anxiety and Depression Scale. However, the levels of anxiety and depression did not correlate with the levels of cigarette and alcohol consumption. *Conclusions* Smoking and alcohol abuse amongst medical students and physicians should be taken more seriously because their own attitudes towards substances may influence their professional be-

havior. There is a need for better education about substances.

**Key words** substance use – medical students – residents – physicians – Turkey

### Introduction

There is growing concern in the medical community about physicians impaired by chemical dependency. While medical students and physicians may help patients resolve substance dependency, they are not immune to these temptations themselves. They have easy access to psychoactive substances, and many have high levels of work-related stress, frequent contact with illness and death, disrupted sleep and social life, as well as erosion of taboo against injecting and opiates (Bohigian and Croughan 1996; Strang et al. 1998; Bennett and O'Donovan 2001). Furthermore, the “acquired omnipotence” of most physicians and their knowledge of biochemistry and pharmacology of drugs cause them to be comfortable with the usage of the same (Millikan 1999). In addition to negative effects on the individual's physical and mental health, and on their families, substance abuse may threaten the ability to provide adequate patient care, and it may undermine the individual's role as a teacher and a role model for healthy lifestyles (Bohigian and Croughan 1996; Gray et al. 1998; Bennett and O'Donovan 2001).

Although published discussions of physician impairment are widespread, systematic data on the prevalence of substance-related problems among physicians are lacking (Brewster 1986; Hughes et al. 1992; Weir 2000). The majority of the studies are from the United States, many are from European countries, especially from the United Kingdom, but only a few are from developing countries. There are studies suggesting that addiction to drugs and alcohol in practicing physicians is no greater than in the general public or other professionals (McAuliffe et al. 1991; Welsh 2002; McGovern et al. 2000; Weir

Y. Akvardar, MD (✉) · Y. Demiral, MD, PhD · G. Ergor, MD, MPH · A. Ergor, MD, PhD  
Dokuz Eylül University Medical School  
Psychiatry Dept.  
Balçova 35340 İzmir, Turkey  
Tel.: +90-232/259-5959  
ext -4159  
or: +90-232/234-4331  
Fax: +90-232/259-9723  
E-Mail: yıldız.akvardar@deu.edu.tr

2000). However, physicians may be at increased risk for prescription drug abuse involving opiates and benzodiazepines. It is reported that 10–15% of physicians in the United States will develop a chemical dependence during their lifetimes (Welsh 2002). In the UK, it is estimated that one doctor in 15 could suffer from some form of dependence (Bennett and O'Donovan 2001; Knight et al. 1999). It was reported that there were 3000 doctors in Catalonia with a form of addiction (Bosch 1998). Trainees, including residents and interns, are also vulnerable to addictions owing to the relative isolation of medical school and the demanding hours. The health of an individual is due in part at least to his/her own lifestyle and behavior. In turn, lifestyles and behavior in the general public are influenced to some extent by medical advice. It is, therefore, of interest to examine the lifestyles of today's medical students, tomorrow's doctors, who will be involved in future health care (Webb et al. 1998).

No data are available on substance abuse among physicians in Turkey, except on smoking. The Turkish medical society should be aware of the magnitude of the problem, so that appropriate prevention and early intervention programs can be instituted. The objective of this study was to assess the prevalence of substance use and abuse, including nicotine, alcohol, prescription drugs and illicit drugs, at various stages of a medical career. The study group consisted of the junior and senior medical students, physicians in training, and practicing physicians of Dokuz Eylül University Medical School in Izmir, the third largest city of Turkey. Reasons for substance use, whether the prevalence rates change over the course of medical school, residency and entry into practice were investigated, and these rates were compared to the rates in the general population.

## Subjects and methods

The study was designed to include all first-year ( $n = 144$ ; 55 female and 89 male) and sixth-year ( $n = 149$ ; 58 female and 91 male) medical students. First-year medical students attending the problem-based learning session on the day the survey was conducted ( $n = 131$ ) were asked to complete the anonymous questionnaire, of which 121 were returned following completion (response rate 87%). Of the 100 students graduating from medical school, 52 returned the completed questionnaires during the rehearsal of their graduation ceremony (response rate 52%). The physician sample consisted of 300 physicians who were selected systematically from the academic staff list ( $N = 874$ ), categorized according to the specialty groups in the university hospital. The questionnaires were distributed to them by the secretaries of the relevant departments, and 153 physicians (73 residents and 80 practicing physicians in different career stages) returned the completed questionnaires in closed envelopes (response rate 51%).

A self-report, anonymous questionnaire was developed, pre-tested and revised. A similar questionnaire for students and physicians was designed to elicit information on the use of cigarettes, alcohol, prescription drugs, including sedative-hypnotics, minor and major opiates, and illicit drugs, such as cannabis, cocaine, heroine, ecstasy, and LSD, as well as reasons for use and non-use, and age at first use. The subjects were asked whether they had used the substances during their lifetime, the past year, and the past month. The subjects

also had to provide information on how often they drank (frequency), and how many drinks they typically consumed on each occasion (quantity). The quantity was then coded based on the standard drink being defined as 10–15 g of alcohol. The students were asked to choose the reasons for substance use from a list including to obtain pleasure, increase self-confidence, cope with anxiety/stress, and peer pressure and 'other' (Webb et al. 1998). The reasons for substance use in physicians, in addition to the above-mentioned choices, included self-medication, recreation, and experiencing withdrawal symptoms. Reasons for not using any of the above substances for both physicians and students were inclination towards a healthy life, religious affiliation, economic reasons, and 'other', in which multiple reasons could be specified. The Fagerström Test for Nicotine Dependence was used to determine the severity of nicotine dependence (Hughes 1996), and the CAGE (an acronym for cut down, annoyed, guilty, eye-opener) questionnaire was conducted to determine the severity of the alcohol use (Ewing 1984). The Hospital Anxiety and Depression (HAD) Scale (Zigmond and Snaith 1983) was used to assess the subjective anxiety and depression. Scores of greater than seven on the Fagerström Test for Nicotine Dependence indicated dependence. Two or more positive responses to the CAGE questionnaire was the criterion used to identify those at risk for alcohol abuse. HAD scores on relevant items of anxiety and depression equal to or greater than 10 and 7, respectively, have previously been shown to indicate clinical levels of anxiety and depression in the Turkish population (Aydemir et al. 1987). Additionally, heavy alcohol use was defined as five or more drinks per occasion, and smoking half a pack or more per day indicated heavy nicotine use (Hughes et al. 1992).

The results were analyzed using the Statistical Package for the Social Sciences 11.0. Categorical responses were analyzed using the  $\chi^2$  statistics. The  $\chi^2$  test for trends was used to evaluate trends in substance use of different career stage groups. Logistic regression models were conducted, smoking and drinking status were taken as dependent variables separately, and independent variables (such as gender, academic status, anxiety, depression, etc.) were fit in the model simultaneously.

## Results

Alcohol was the most frequently used substance (between 62.3% and 82.5%) in all groups (Table 1). Thirty-five percent of the physicians and 14.9% of the junior

**Table 1** Alcohol, nicotine, sedative-hypnotics, and illicit drug use among medical students and physicians

	Junior students % N = 114	Senior students % N = 52	Residents % N = 73	Physicians % N = 80
Alcohol				
Ever used	62.3	71.2	79.5	82.5
Past year	57.0	59.6	79.5	82.5
Past month	41.2	44.2	50.7	45.0
Nicotine				
Ever used	39.8	55.8	47.9	54.4
Current	34.5	44.2	41.1	35.4
Sedative-hypnotics				
Ever used	0	3.8	NA*	NA*
Past year	0	3.8	8.2	11.3
Past month	0	3.8	2.7	2.5
Illicit drug				
Ever used	2.6	5.7	5.5	2.5
Past year	0.9	3.8	0	1.3
Past month	0	1.9	0	0

\* NA: data not available

students reported consuming alcohol at least once a week. Four percent of the physicians, 16.5% of the residents, 11.5% of the senior students, and 10.5% of the junior students reported having five or more drinks at each occasion. Fifteen percent of the junior students, 35.5% of the senior students, 27.6% of the residents, and 34.8% of the physicians reported drinking at least once a week. Two or more positive responses on the CAGE were obtained for 22.4% of the junior students, 20% of the senior students, 8.9% of the residents and 6.5% of the physicians. Forty-two percent of drinkers ( $n = 103$ ) admitted that they had felt guilty because of drinking and 24.3% reported that they had thought about cutting down drinking. Amongst the junior and senior medical students, the most common reason reported for drinking alcohol was pleasure (35.1% and 50%, respectively), followed by social pressure (10.5% and 5.8%, respectively). Among the residents and the physicians, to relax after a tiring day (31.5% and 23.8%, respectively) and lessen social distress (17.8% and 22.5%, respectively) were the most common reasons for drinking. As the reasons for not using alcohol, the students had most commonly reported health-related reasons (37.3%), religious affiliations (22.3%), and not being interested (16.9%).

Although approximately half of the respondents, except the junior medical students (39.8%), had tried tobacco at least once in their lifetime (Table 1), nicotine dependence was low (between 1.3% and 14%) according to the Fagerström Test. However, the proportion of subjects smoking half a pack or more of cigarettes per day was high (between 12.4% and 38.5%). The mean numbers of cigarettes smoked per day were  $10.9 \pm 8.5$ ,  $16.6 \pm 7.3$ ,  $11.1 \pm 8.2$  and  $12.9 \pm 10.0$  among junior and senior medical students, residents and physicians, respectively.

Benzodiazepines (alprazolam, diazepam) were the most frequently used sedative-hypnotics. While none of the junior medical students reported using sedative-hypnotics, 3.8% of the senior medical students, 8.2% of the residents and 11.3% of the physicians reported usage of sedative-hypnotics during the previous year. The use of illicit substances was rare in all four groups (Table 1), with cannabis being the most commonly used illicit substance.

The age of onset for nicotine and alcohol use was earlier in the first-year medical students ( $16.6 \pm 2.7$  and  $15.9 \pm 2.4$ , respectively) than in the other groups (Kruskal Wallis Test,  $P < 0.001$  and  $P < 0.001$ , respectively) (Table 2).

A considerable number of students, residents and physicians had clinically important anxiety and depression levels according to the HAD. Junior medical students had the highest level of anxiety (23.6%), followed by the residents (19.2%), physicians (16.3%), and senior students (11.6%). The senior students had the highest level of depression (44%), and nearly 40% of the residents, 28.6% of the junior students, and 13.8% of the physicians had clinically important depression levels. The levels of

**Table 2** Age at first use of cigarette and alcohol

	Age at first use of cigarette* Mean (SD)	Age at first use of alcohol* Mean (SD)
Junior medical students	16.6 (2.7)	15.9 (2.4)
Senior medical students	18.2 (3.1)	16.7 (3.2)
Residents	20.8 (3.1)	18.2 (3.1)
Physicians	20.1 (4.7)	18.1 (4.4)

\* Kruskal Wallis Test  $P < 0.001$

anxiety and depression did not associate with the high levels of cigarette and alcohol consumption.

Logistic regression was used to explain the effects of the factors (academic status, age and gender) on alcohol use. Age was the significant predictor when controlling for others OR = 1.16 (1.05–1.28). The regression model for current smoking with the same independent variables as mentioned above showed that none of these were significant.

## Discussion

The findings represent the first data on the prevalence of substance use other than nicotine among Turkish physicians at various stages of their medical career. Patterns indicate that alcohol was the most commonly used drug, followed by nicotine and benzodiazepines which is consistent with other studies (Hughes et al. 1992; Baldwin et al. 1991; Avery et al. 2000). Benzodiazepines were the most commonly used drug among physicians. Cannabis was the most frequently used illicit drug. However, the prevalence of the use of illegal substances was negligible compared to that in the developed countries.

Alcohol use was low both in students and physicians compared to other countries where lifetime prevalence of alcohol use varies from 91.8% to 97.3% (Croen et al. 1997; Maddux et al. 1986; Birch et al. 1998; Hughes et al. 1991; Hughes et al. 1992). The prevalence of alcohol abuse had been reported between 3.5% and 51.5% for medical students (Croen et al. 1997; Mangus et al. 1998; Thyssen et al. 1998; Ashton and Kamali 1995; Pickard et al. 2000; Webb et al. 1998) and between 5% and 11.9% for physicians (Birch et al. 1998; Hughes et al. 1991; Hughes et al. 1992). Although prevalence of alcohol use was lower than in other countries, the prevalence of alcohol abuse was comparable. Analysis of our data on the findings of alcohol abuse indicates that there is a high rate of feeling guilty about alcohol drinking, on the CAGE, especially among the students. Attention must be paid to such a feeling of guilt associated with drinking, for it may be related to heavy drinking, or be due to the influence of Islamic traditions of the Turkish population. In our sample, nearly one in five students, but only a few physicians (3.9%), declared religious affiliation as the reason for not using alcohol.

The prevalence of nicotine use was very high compared to the developed countries in which only 2%–15.8% of the medical students (Mangus et al. 1998; Webb et al. 1998), and 5.3%–6.3% of the physicians (Hughes et al. 1991; Hughes et al. 1992) were currently reported to be smokers. Our findings on the prevalence of smoking were consistent with the rates of 30%–60% given for the general population in Turkey (Bilir et al. 1997; Aytaçlar et al. 1997). It was stated that the low prevalence of smoking was indicative of a continued acknowledgement by medical professionals of the dangers of tobacco use (Mangus et al. 1998). High smoking prevalence observed amongst the Turkish medical students and physicians can be attributed to the lack of anti-tobacco campaigns and addiction education, as well as to the fact that tobacco company advertisements are not banned as is common in the developed countries. Since smoking is one of the major public health problems in our country, doctors should play an important part in promoting smoking cessation and act as role models in the society.

There are few epidemiological data on substance abuse in Turkey to compare with our findings. The prevalence of alcohol consumption observed in our study is higher than that in other studies previously performed, both among students from different faculties (10% in the last month) (Yüksel et al. 1994), as well as in the general population (lifetime prevalence 33.5% and current drinking 25.6%) (Akvardar et al. 2000). The substance most abused by physicians was alcohol, just as it was in society at large. The authors considered that the high rate of alcohol consumption and earlier onset of drinking in the students might reflect an increase in consumption by the medical profession and in the population in general. The ages of onset of smoking and alcohol use have been shown to be decreasing. It is, therefore, obvious that there is an increasing need for earlier interventions, especially before entering medical school, with respect to implementing measures necessary to prevent the use of these substances.

Medical students drank more as they advanced into senior clinical years. File et al. (1994) found that third-year and fifth-year medical students drank more alcohol than those in the first and second years. A study of newly qualified doctors showed that, for many, consumption had increased between the second and the final years (Birch et al. 1998), but it was reported that alcohol-related problems were decreasing in doctors (Clare 1990). No significant difference was found between female and male students and physicians in drinking alcohol and smoking. There is growing evidence that women doctors' alcohol problems are equaling or surpassing those of men as they progress through medical training (Flaherty and Richman 1993; Akvardar et al. 2001).

Although the present study found that substance abuse by medical students and physicians is not widespread, this might be the case in the future due to the early onset of use in younger generations. In our country, there is little restriction on alcohol and tobacco ad-

vertising and there is no requirement for alcoholic beverages to carry a health warning. However, fortunately, medical schools and teaching hospitals do not provide students and doctors with access to alcohol during working hours. Therefore, this workplace alcohol policy may play a role in low prevalence of drinking among our sample.

The findings of depression scores increased significantly in Turkish medical students between the first and final years. This increase indicates a decrease in their psychological health status due to the increased qualifying exam pressure they may experience at the time, as well as concerns they have with regard to their future professional lives. Dönmez et al. (1996) indicated that concern about the future and educational constraints were major problems and these correlated with the anxiety scores. However, in our study, the high scores on either the anxiety or depression scales did not associate with the high levels of alcohol intake by the students. This suggests that alcohol or drugs are not being used as a method to relieve anxiety, which can be viewed as a positive sign.

Being able to collect data anonymously on a sensitive issue such as substance abuse in the medical profession is the strength of this study. On the other hand, low response rate in senior students and physicians is the major limitation. Unfortunately, in this country even the highest educated individuals do not feel the responsibility of returning postal questionnaires. In an anonymous survey, it is even more difficult to increase the response rate. Thus, it is hard to predict the non-response bias effect on our results. In addition, the measurement used in this study was a screening test and not a diagnostic assessment. Nationwide studies are needed not only for the prevalence of substance use and abuse at various stages of the medical career, but also for related personality factors and environmental conditions specific to our country.

---

## Conclusion

We must be willing to teach and talk openly about the disease of addiction. There are addicted physicians whom we could quite easily reach; however, we do sometimes have the tendency to keep our eyes shut (Akvardar et al. 2002). It is known that medical practitioners are at risk of substance abuse problems, and stigma and colleagues' uncertainty about how to address these problems may contribute to the secrecy surrounding the problem and its possible under-detection (Bennett 2001). As Vergese (2002) has stated "the measure of the health of our profession is not only how well we care for our patients, but also how well we care for ourselves".

Obviously, medical schools have dual responsibilities towards their students. First, they have to provide an environment in which medical students are encouraged to adapt responsible attitudes to the use of drugs and alcohol. Secondly, they must ensure that they provide prop-

erly structured educational programs on tobacco, alcohol and drug misuse (Wallace 2000). Throughout their period in training, medical students should be given clear messages about school policy on drugs and alcohol, and should be provided with appropriate educational materials. Medical schools should promote a healthy lifestyle. The influence of clinical teachers is the key factor; it is important that clinical teachers provide a consistent role model both in their attitudes towards alcohol and in their approach to patients who have alcohol-related problems (Ritson 2001).

The physicians should be alerted to the risks of substance abuse from early on in their training. Early identification and treatment are important for the safety of the public and the well-being of the individual.

## References

- Akvardar Y, Türkcan A, Yazman U, Aytaçlar S, Ergör G, Cakmak D (2003) Prevalence of alcohol use in Istanbul. *Psychol Rep* 92: 1081–1088
- Akvardar Y, Aslan B, Ekici B, Ogun E, Simsek T (2001) Prevalence of cigarette smoking, alcohol and drug use in second year medical students in Dokuz Eylül University. *J Dependence* 2:49–52
- Akvardar Y, Türkcan A, Cakmak D (2002) Is substance abuse a problem among doctors? *J Turkish Psychiatry* 13:238–244
- Ashton CH, Kamali F (1995) Personality, lifestyles, alcohol and drug consumption in a sample of British medical students. *Med Education* 29:187–192
- Avery DM, Daniel WD, McCormick B (2000) The impaired physician. *Prim Care Update Ob/Gyns* 7:154–160
- Aydemir Ö, Güvenir T, Küey L, Kültür S (1997) The validity and reliability of Turkish version of Hospital Anxiety and Depression Scale. *J Turkish Psychiatry* 8:280–287
- Aytaçlar S, Türkcan A, Yazman Ü, Akvardar Y (1997) The extent and characteristics of cigarettes use in Istanbul. 33<sup>rd</sup> National Psychiatry Congress, Antalya, Turkey. Congress Book, p 124
- Baldwin DC, Hughes PH, Conrad SE, Storr CL, Sheehan DV (1991) Substance use among senior medical students: a survey of 23 medical schools. *JAMA* 265:2074–2078
- Bennett J, O'Donovan D (2001) Substance misuse by doctors, nurses and other healthcare workers. *Curr Opin Psychiatry* 14: 195–199
- Birch D, Ashton H, Kamali F (1998) Alcohol, drinking, illicit drug use and stress in junior house officers in north-east England. *Lancet* 352:785–786
- Bilir N, Doğan BG, Yıldız AN (1997) Behaviours and attitudes towards cigarette smoking. Hacettepe Public Health Foundation, Ankara
- Bohigian GM, Croughan JL (1996) Substance abuse and dependence in physicians: The Missouri Physician's Health Program. *Southern Med J* 89:1078–1080
- Bosch X (1998) Catalonia makes plans to help addicted doctors. *Lancet* 352:1045
- Clare AW (1990) The alcohol problem in universities and the professions. *Alcohol and Alcoholism* 25:277–285
- Croen LG, Woesner M, Herman Merrill, Reichgott M (1997) A longitudinal study of substance use and abuse in a single class of medical students. *Acad Med* 72:376–381
- Dönmez L, Aktekin M, Erengin H, Dinc G, Karaman T (1996) State and trait anxiety among physicians and medical students. *3P Dergisi* 4:268–275
- Ewing JA (1984) Detecting alcoholism. The CAGE Questionnaire. *JAMA* 252:1905–1907
- Flaherty JA, Richman JA (1993) Substance use and addiction among medical students, residents and physicians. *Psychiatr Clin North Am* 16:189–197
- File SE, Mabbutt PS, Shaffer J (1994). Alcohol consumption and lifestyle in medical students. *J Psychopharmacol* 8:22–26
- Gray JD, Bhopal RS, Wite M (1998) Developing a medical alcohol policy. *Med Educ* 32:138–142
- Hughes PH, Conard SE, Baldwin DC, Storr CL, Sheehan DV (1991) Resident physician substance use in the United States. *JAMA* 265:2069–2073
- Hughes PH, Brandenburg N, Baldwin DC, Storr CL, Williams KM, Antony JC, Sheehan DV (1992) Prevalence of substance use among US physicians. *JAMA* 267:2333–2339
- Hughes JR (ed) (1996) American Psychiatric Association Practice Guideline for the treatment of patients with nicotine dependence. *Am J Psychiatry Supplement* 153(10)
- Knight JR, Palacios J, Shannon M (1999) Prevalence of alcohol problems among pediatric residents. *Arch Pediatr Adolesc Med* 153:1181–1183
- Maddux JF, Hoppe SK, Costello RM (1986) Psychoactive substance use among medical students. *Am J Psychiatry* 143: 187–191
- Mangus RS, Hawkins CE, Miller MJ (1998) Tobacco and alcohol use among 1996 medical school graduates. *JAMA* 280:1192–1193
- McAuliffe WE, Rohman M, Breer P, Wyshak G, Santangelo S, Magnuson E (1991) Alcohol use and abuse in random samples of physicians and medical students. *Am J Publ Health* 81:177–182
- McGovern MP, Angres DH, Leon S (2000) Characteristics of physicians presenting for assessment at a behavioral health center. *J Addictive Dis* 19:59–73
- Millikan LE (1999) Alcoholism among health professionals: prevalence and special problems. *Clin Dermatol* 17:361–3633
- Pickard M, Bates L, Dorian M, Greig H, Saint D (2000) Alcohol and drug use in second year medical students at the University of Leeds. *Med Educ* 34:148–150
- Ritson B (2001) Alcohol and medical students. *Med Educ* 35: 622–623
- Strang J, Wilks M, Wells B, Marshall J (1998) Missed problems and missed opportunities for addicted doctors. *BMJ* 316:405–406
- Tyssen R, Vaglum P, Aasland OG, Gronvold NT, Ekeberg O (1998) Use of alcohol to cope with tension, and its relation to gender, years in medical school and hazardous drinking: a study of two nation-wide Norwegian samples of medical students. *Addiction* 93:1341–1349
- Wallace P (2000) Medical students, drugs and alcohol: time for medical schools to take the issue seriously. *Med Educ* 34:86–87
- Webb E, Ashton CH, Kelly P, Kamali F (1996) Alcohol and drug use in UK university students. *Lancet* 348:922–925
- Webb E, Ashton CH, Kelly P, Kamali F (1998) An update on British medical students' lifestyles. *Med Educ* 32:325–331
- Weir E (2000) Substance abuse among physicians. *CMAJ* 162:1730
- Welsh CJ (2002) Substance use disorders in physicians. <http://www.alcoholmedicalscholars.org>
- Vergese A (2002) Physicians and addiction. *New Engl J Med* 346:1510–1511
- Yüksel N, Dereboy Ç, Cifter Y (1994) Substance use among university students. *J Turkish Psychiatry* 5:283–286
- Zigmond S, Snaith RP (1983) The hospital anxiety and depression scale. *Acta Psychiatr Scand* 67:361–370