

Alcoholism in the elderly: A study of elderly alcoholics compared with healthy elderly and young alcoholics

Homayun SHAHPESANDY, Jaroslava PRISTÁŠOVÁ, Zuzana JANÍKOVÁ,
Ružena MOJŽIŠOVÁ, Viera KASANICKÁ & Oľga ŠUPALOVÁ

Department of Psychiatry, General Hospital Liptovský Mikuláš, Slovak Republic.

Correspondence to: Shahpesandy Homayun
EMAIL: Homayun.Shahpesandy@HPT.nhs.uk

Submitted: July 13, 2006

Accepted: July 21, 2006

Key words: elderly alcoholics; young alcoholics; personality disorders; social status

Neuroendocrinol Lett 2006; 27(5):651–657 PMID: 17159815 NEL270506A12 ©Neuroendocrinology Letters www.nel.edu

Abstract

OBJECTIVES: To test the hypothesis that early-onset alcoholism can be differentiated from alcoholism in the elderly by more severe substance related problems, more frequent family history, higher mortality rate, and antisocial behaviour.

METHODS: 73 elderly (E) alcoholics (mean age 70.2 yrs) were compared with 90 young (Y) alcoholics (mean age 43.9 yrs) and 70 elderly non alcoholics (mean age 76 yrs). We focused on, family history (FH), co morbidity, mortality, biological markers (AST, GGT, MCV), and demographics. Geriatric Scale of Depression, Standardized Mini-Mental State Examination and Munich Alcoholism Test were also used. All results analysed by the SPSS. **RESULTS:** FH was significantly ($p < 0.001$) more often positive in Y (52%) than in E (15%) and C (10%). Significantly ($p < 0.001$) more E (57.5%) are married than Y (37.8%) and C (21.4%), significantly ($p < 0.001$) more E (72.6%) has elementary education compared with Y (44.4%). E alcoholics abstain significantly ($p < 0.001$) more (>27 months) than Y ones (~11 months). Significantly ($p < 0.001$) more Y (43%) had forensic history than E (8.2%). Significantly ($p < 0.01$) more death rate was found in E (19.2%) than in Y (5.6%) and C (1.4%). Significantly ($p < 0.01$) more E (61%) prefer spirits than Y (21%), but significantly more Y (>63%) combine spirits with beer and wine than E (>32%). Significantly ($p < 0.001$) more alcoholics (E and Y) had elevated levels of MCV (>70%), AST and GGT (>60%) than C. We have found significantly ($p < 0.001$) higher rate of comorbidity of CNS diseases, GIT, injuries, haematological and infectious diseases in the groups of elderly and young alcoholics than in C subjects. On the other hand, prevalence of cardiovascular, ORL, ophtalmological, endocrine and orthopedic diseases were significantly ($p < 0.01$) higher in C. To compare elderly patients with young ones, we found significantly ($p < 0.01$) higher rate of respiratory, endocrine, cardiovascular and CNS diseases, and dementia in E alcoholics ($p < 0.001$). Depression and abuse of prescribed medication was significantly ($p < 0.01$) more often in the C, but suicide attempts, neurotic spectrum disorders and personality disorders were significantly ($p < 0.01$) often in group of Y. **CONCLUSION:** Young alcoholics have significantly more often positive FH, drink significantly bigger amounts of alcohol, have more forensic history, and personality disorders in comparison to elderly ones. On the other hand elderly alcoholics tend to have more somatic complication due to alcohol abuse, but drink less alcohol, tend to abstain longer, and have less psychopathic traits. In contrast to literature, the majority of elderly alcoholics are married, have low education and do not belong to high social classes.

Introduction

The number of elderly people in the population is increasing rapidly throughout the world. Between 1950 and 1990, life expectancy for the world as a whole increased from 36.4 to 64.7 years [23]. Currently, 7% of the global population and 15% of population of industrial countries, are more than 65 years age [58].

It seems that memory disorders and depression are the most common mental disorders of old age, however there has been increasing evidence of alcohol problems in the elderly too. The problem of alcoholism in the elderly is contradictive. Many authors state that the rate of alcoholism has decreasing tendency, and the number of abstinent is greater among the elderly than in younger [1]. In contrast other researchers claim that alcoholism is common in the elderly [26, 4, 19], but it tends to be under-recognised [14]. It occurs in 10 to 15% of the population over age 65. 28–44% of older psychiatric inpatients are heavy users of alcohol. Despite the higher prevalence of alcohol use in elderly people, their risks and problems are often unrecognized [18]. The failure to diagnose alcoholism in this population is multifactorial, and include nonspecificity of alcohol – related presentations (many of the symptoms of alcoholism may be attributed to "old age"), patients denial (patient's and family members are more likely to hide the problem, shy, belief that alcohol is the last remaining comfort, therapeutic pessimism), and lower index of suspicion (it reflects the clinicians' unwillingness to recognise that patients can and do develop alcohol problems in later life [5]).

About two third of elderly alcoholic patients started drinking at a young age. Late-onset drinking accounts for the remaining one third of elderly persons who abuse alcohol, among whom a higher level of education and income is found [2]. Stressful life events, such as bereavement or retirement, may trigger late-onset drinking [31, 60].

Objective

The aim of this study was to test the hypothesis that early-onset alcoholism can be differentiated from the alcoholism in elderly by more severe substance related problems, more frequent family history, higher mortality rate, criminal and antisocial behaviour.

Patients and methods

73 elderly patients (17 female, and 56 male) mean age 70.2 years, (range 65–92 years) with the diagnosis of Harmful drinking (F10.1) and Alcohol Dependence (F10.2) according to ICD-10 [34], 90 young patients (16 female, and 74 male) with mean age of 43.9 years (range 22–55) with the diagnosis of F10.1 and F10.2, and 70 healthy elderly people (55 female, and 15 male), average age 76 years (range 65–92 years) of general population. Biological markers of alcoholism as aspartate aminotransferase (AST), gamma-glutamyl transferees (GGT), and mean corpuscular volume (MCV) were monitored in all subjects. The following screening instruments have used: Munich Alcoholism Test (MALT), number of items 24 for MALT-S (self-assessment) and 7 for MALT-M (medical assessment). The interpretation of results MALT S+M: 0–5 points: no alcoholism, 6–10 points: suspect alcoholism and 11 and more: alcoholism/alcohol dependence [30], Geriatric Scale of Depression [50] with 15 items, score 5 and more suggests depression and Standardized Mini-Mental State Examination (SMMSE), number of items 30 [35]. In all patients we also monitored, and compared the co morbid somatic and psychiatric diseases, mortality rate, forensic history, and also demographic descriptions of patients, e.g. age, gender, education, and family status. The results were evaluated by using methods of descriptive and inductive statistics. For quantification of strength of relation between numerical variable and word variable we have used Eta coefficient, and statistical significance has been measured by ANOVA. For quantification of strength between two word variables we used the Cramer's V contingental coefficient and correct test its variable as alternative to approximate Chi-square test. All calculations have been realised by statistical analysis SPSS 13 (Figure 1).

Inclusion criteria:

- Age 18 to 55 years (for the subgroup of young alcoholics); and 65 and more for elderly alcoholics and control subgroup.
- Diagnosis of Harmful drinking or dependence according to ICD-10 (for patients);
- Objective confirmation of not drinking (for control subgroup);
- Verbal consent.

Table I Characteristics of patients and control subjects

Group	Female	Male	All	Mean age
Elderly	17	56	73	70.2 years (65–92)
Young	16	74	90	43.9 years (22–60)
Control	55	15	70	76 years (65–92)
All	88	145	233	

Table II Sample demographics

Characteristic	Elderly	Young	Control	
Family status	Single	13.7%	36.7% (p<0.001)	8.6%
	Married	57.5% (p<0.001)	37.8%	21.4%
	Divorced	6.8%	18.8% (p<0.001)	10%
	Widowed	22%	6.7%	60% (p<0.001)
Education	Elementary	72.6% (p<0.01)	44.4% (p<0.01)	70%
	Secondary	20.5%	43.4% (p<0.01)	25.7%
	Academic	6.9%	12.2% (p<0.01)	4.3%
Family history of	Mental Disorder	15%	52% (p<0.001)	10%
	Alcoholism	6.8%	32.2% (p<0.001)	5.7%
Forensic History		8.2%	43.3% (p<0.001)	0%
Mortality		19.2% (p<0.01)	5.6%	1.4%
Length of Abstinence		27.58 (p<0.001)	10.96	Not applicable

Table III Co morbidity of physical and mental disorders.

Illness	Elderly	Young	Control
Central Nervous System	73% (p<0.01)	47%	36%
Cardiovascular	60%	17% (p<0.01)	64%
Gastrointestinal	82% (p<0.01)	75%	43%
Respiratory	40% (p<0.01)	12%	20%
Injuries	63% (p<0.01)	54%	3%
Haematological	53% (p<0.01)	43%	10%
Dermatological	22%	22%	20%
Infectious	21% (p<0.01)	7%	6%
Otorhinolaryngological	11%	6%	16%
Ophthalmological	10%	2%	31% (p<0.01)
Endocrine	47%	14% (p<0.01)	43%
Tumors	4%	3%	11%
Orthopedic	29%	9% (p<0.01)	34%
Personality Disorders	47%	73% (p<0.01)	0%
Depression	29%	28%	53% (p<0.01)
Dementia	21% (p<0.01)	1%	3%
Abuse of Prescribed Drugs	14%	11%	33% (p<0.01)
Suicide Attempts	5%	13% (p<0.01)	0%
Psychotic Disorders	7%	9%	1%
"Neurotic" Disorders	6% (p<0.01)	0%	0%

Exclusion criteria:

Non consent;
Alcohol drinking problems in control subgroup.

Results

13.7% of E, 36.7% of Y and 8.6% of C are single. 57.5% of E, 37.8% of Y and 21.4% of C are married. 6.8% of E, 18.8% of Y and 10% of C are divorced, and finally 22% of E, 6.7% of Y and 60% of C are widowed.

Elementary education has 72.6% of E, 44.4% of Y, and 70% of C subjects. 20.5% of E, 43.4% of Y and 25.7% of C has secondary education, but 6.9% of E, 12.2% of Y and 4.3% of C has academic education.

Family history was positive in 15% of E, but 52% of Y and 10% of C group.

Significantly (p<0.001) more Y (43.3%) had the history of criminal or other forensic records compared to E ones (8.2%).

While E in the period of five years abstain 27.58 months, Y did so 10.96 months.

There is significantly ($p < 0.01$) more death rate in E alcoholics (19.2%) compared with Y ones (5.6%) and C (1.4%) (Table 2).

Somatic and psychiatric comorbidity

We have found significantly ($P < 0.001$) higher rate of comorbidity of Central Nervous System (CNS) diseases, gastrointestinal diseases (GIT), injuries, haematological and infectious diseases in the groups of E and Y alcoholics compared with C subjects. On the other hand, cardiovascular, otolaryngological diseases (ORL), ophthalmological, endocrine and orthopedic diseases were significantly ($p < 0.001$) higher in C group. To compare elderly patients with young ones, we found significantly higher rate of respiratory, endocrine, cardiovascular and CNS diseases in elderly alcoholics ($p < 0.001$).

We found personality disorders in 47% of E, 73% of Y and 0% of C group. Abuse of prescribed medication in 14% of E, 11% of Y but in 33% of C. Neurotic spectrum disorders only in 6% of Y patients. Dementia in 21% of E, 1% of Y and 3% of C. Psychotic disorders in 7% of E, 9% of Y and 1% of C. Suicidal attempts in 5% of E and 13% of Y. And finally depression was found in 29% of E, 28% of Y and 53% of C group (Table 3).

Preferred alcoholic beverages

12.5% of E, and 8.8% of Y prefer drinking beer, 3.5% of E, and 6.6% of Y prefer wine. 61.5% of E, and 21.10% of Y prefer to drink only spirits. 12.5% of E but 42.2% of Y combines distillates with beer. And finally 10% of E but 21.10% of Y alcoholics combine spirits with beer and wine (Table 4).

Biological Markers

MCV was elevated in 73% of E, 60% of Y and 14% of C subjects. AST was elevated in 64% of E, 84% of Y and 0% of C subjects. The elevation of GGT was found in 64% of E and 8% of Y, no one from the C group had elevated levels of this enzyme (Table 5).

Munich Alcoholism Test (MALT)

After the summation of MALT –S (self assessment) and MALT-M (assessment by medical staff), only 1.4% of the control group was identified alcoholics, but 1.8% of E were identified as “probable alcoholics” and 98.2% of them as “alcoholics”. All young patients were classified as “alcoholics” according to MALT (Table 6).

Discussion

To compare elderly alcoholic with young ones we have found that more than 2/3 (72.6%) of elderly patients has only elementary education, which is in contrast to literature that elderly alcoholics often have higher education and have higher social status [9, 10].

We have also found that the majority (57.5%) of elderly alcoholics are married. This is also in contrast to previous findings that indicate that the majority of

elderly alcoholics are single or live alone [9, 10, 20, 48], but is similar to findings of domestic authors [41]. This result reflects the fact that the majority of elderly people in this particular region does not accept divorce, and are more religious. For younger people divorce does not mean a catastrophe and they accept it as a way to resolve their matrimonial problems.

The presence of family history in group of young alcoholics (52%) is significantly ($p < 0.001$) different in comparison to their elderly counterparts (15%) and control group (10%). This is in accordance with previous findings, which indicate that hereditary disposition of alcoholics is between 30–50% [7, 12, 13, 32, 45, 49].

When comparing the length of abstinence between young and elderly alcoholics, we have found that elderly (more than two years) ones did abstain significantly longer ($p < 0.001$) than younger alcoholics (about eleven months) in the period of five years. This is also in accordance with the literature, which indicates that alcoholism in the elderly has milder symptoms compared with alcoholism with, early-onset [3, 36, 40, 41].

The other significant ($p < 0.001$) difference between young and elderly alcoholics is that while only 6.9% of elderly alcoholics had been treated in the special clinic for treatment of alcoholism and drug abuse, 30% of young alcoholics had been treated in such a clinic.

Young alcoholics (43%) had significantly ($p < 0.001$) more often a history of criminality and antisocial behaviour compared with their elderly counterparts (8%). The other significant difference was the co morbidity of personality disorder amongst the young alcoholics (73%) compared with elderly alcoholics (47%). These results are also in accordance with previous findings, which suggest that young alcoholics tend to have more psychopathic traits and aggressive tendencies [7, 15, 24, 29, 37, 56]. Abuse of alcohol or other psychoactive substance is one of the manifestations of antisocial behaviour [28, 45, 57].

There is significantly ($p < 0.012$) higher death rate in group of elderly alcoholics (19, 2%) compared with young alcoholics (5.6%) and control group (1.4%). It is important to point out that while the majority of elderly alcoholics have died in consequence of physical illnesses, almost all deaths in the group of young alcoholics were caused by severe intoxication and its consequences.

There were significantly higher levels of biological markers in the groups of alcoholics compared with the control group. These results are in accordance with literature, which indicate the elevated levels of GGT in 80–90% of alcoholic hepatitis and elevated levels of AST in 45–70% of alcoholic [22, 59, 44, 43, 46, 27, 51, 11, 47, 16]. It is important to point out that the elevated levels of MCV do not correspond to severity of liver damage and occurs in about 1/5 of non-alcohol damage of liver but also in deficit of folic acid and vitamin B12 and in hypothyroidism [59, 43, 46, 27, 51, 11, 47]. Deficiency or low level of vitamin B12 occurs in elderly people with concomitant anaemia and it seems that 32% of elderly peoples do not receive sufficient vitamin B12 [46]. We suggest that elevated

Table IV Preferred Alcoholic Beverages of Patients.

Preferred alcoholic beverages	Elderly	Young
Beer	12.5%	8.8%
Wine	3.5%	6.6%
Spirits	61.5% (p<0.001)	21.10%
Combination	22.5%	63.3% (p<0.001)

Table V Biological markers

Biological Markers	Elderly	Young	Control
Gamma-glut amyl transferase	64% (p<0.01)	68%	0%
Aspartate aminotransferase	64% (p<0.01)	84% (p<0.01)	0%
Mean Corpuscular Volume	73% (p<0.01)	60%	14%

Table VI Munich Alcoholism Test

Munich Alcoholism Test (MALT)	Elderly	Young	Control
Non-Alcoholism	0%	0%	98.6%
Probable Alcoholism	1.8%	0%	0%
Definite Alcoholism	98.2%	100%	1.4%
MALT-M	Elderly	Young	Control
Family seeks for help	100%	80%	2%
Foetor Alcoholicus	49%	44%	0%
Consume of 300/240ml (women) of pure alcohol once or more monthly.	18%	72% (p<0.01)	0%
Consume of 150/120ml (women) of pure alcohol a day within several months.	82% (p<0.01)	28%	1%
Delirium Tremens	51%	33%	1%
Polyneuropathy	40%	18%	0%
Hepathopathy	90%	92%	11%

MCV in the control group (14%) might be the result of above-mentioned factors.

By the MALT we have found that polyneuropathy is significantly (p<0.01) more often present in elderly alcoholics (40%) compared with young alcoholics (18%). We also found that young alcoholics tend to drink significantly higher amounts of alcohol (300/240 ml (female) of pure alcohol once or more a month) than their elderly counterparts who drink often 150/120 ml (female) of pure alcohol a day during several months. Our results have shown the sensitivity of MALT for 99.4% and its specificity 98.6%. On the other hand MALT was false positive in 1.43% (1/70), and false negative in 0.61% of subjects (1/163) which is in accordance with literature [42].

The presence of injuries is very common in alcoholics (in 63% of elderly and 54% of young alcoholics but only in 3% of non-alcoholic). These findings are in accordance with literature [53, 54, 38, 39].

Significantly (p<0.001) more elderly alcoholics suffered from dementia than young alcoholics and control subjects. About 30% of elderly and young alcoholics suffer from depression, which is comparable with previous findings of Novotny et al., 1989 [41], who found depression in 1/3 of their patients.

When comparing elderly alcoholics with the control group of non-alcoholics we have found that significantly more elderly alcoholics had increased biological markers of alcoholism, but also higher rate of CNS, GIT, respiratory, haematological, infectious diseases and also injuries which is in accordance with the literature [18, 6, 21, 52, 17], but we failed to confirm higher presence of cancers, and stroke in elderly alcoholics in comparison to control group. Stroke was found in 10% of elderly but in 14% of control group, 11% of elderly alcoholics suffer from epilepsy, but only 1% of control group suffers from this condition which is also in concordance with the previous findings which state that epilepsy occurs in 8 to 10% of alcoholics [25, 55]. The presence of head injuries

including subdural and epidural haematoma is alarming because we found them in 40% of elderly alcoholics.

The high presence of depression (53%) and abuse of drugs (33%) in the control group was very surprising, but it may reflect that these people consume benzodiazepines because of their depression and anxiety. It is important to point out that these medications were prescribed by GPs the majority of whom have difficulties in diagnosing depression and also their tendency to over prescribe benzodiazepines [8].

Conclusion

Aging of population consequently leads to increased prevalence of physical and mental disease in this group. The most prevalent disorders of elderly people are memory disorders and depression; however the number of elderly people suffering from alcoholism has been increasing too. Despite the frequent prevalence of alcohol use disorders in the elderly people, its risks and consequences have been underestimated and under treated. It seems that 2/3 of alcoholics in the elderly consist of people who have been suffering from this disorder since their youth or adolescence. About 30% of elderly people (our sample) have been drinking since their middle age and even since their elderly. According to our results, but in accordance with the literature the determinant factors of alcoholism in elderly people are: history of alcohol abuse in the past, male gender, personality disorder, but also psychosocial reason associated with aging. The consequences of alcoholism as in every age are: somatic and mental complications, increased number of hospitalisations, and increased time of admission and increased price of treatment.

REFERENCES

- Adams WL, Barry KL, and Fleming MF: Screening for problem drinking in older primary care patients. *JAMA* 1996; **276**: 1964–1967.
- American Medical Association. Alcoholism in the elderly. Council on Scientific Affairs. *JAMA* 1996; **275**:797–801.
- André I, Čaplová T, Vojtašáková L, Matejčíková T: Problematika zneužívania psychoaktívnych látok u osôb vyššieho veku. *Psychiatria* 8/3, 2001; 117–122.
- Atkinson RM: Aging and alcohol use disorders: diagnostic issues in the elderly. *Int Psychoger* 1990; **2**: 55–72.
- Atkinson RM: Substance abuse. In: *Textbook of geriatric neuropsychiatry* (2nd edn) (ed. CE Coffey and JL Cummings) 2000, pp. 367–400. American Psychiatric Press, Washington, DC.
- Atkinson RM: Substance abuse in the elderly. In: *Psychiatry in the elderly* (Eds. R Jacoby and C Oppenheimer), Third edition, 2002, Oxford University Press. 799–834.
- Babor TF, Hoffmann M, DelBoca FK, Hesselbrock V: Types of Alcoholics, I. Evidence for an Empirically Derived Typology Based on Indicators of Vulnerability and Severity. *Arch Gen Psychiatry* 1992; **49**: 599–608.
- Baldwin R: Depressive disorders. In: *Psychiatry in the Elderly* (Eds. Jacoby R & Oppenheimer C) Third edition. Oxford University Press 2002; 627–677.
- Bercsi SJ, Brickner PW, Saha DC: Alcohol use and abuse in the frail, homebound elderly: a clinical analysis of 103 persons. *Drug Alcohol Depend*. 1993; **33**: 139–149.
- Bristow MF, Clare AW: Prevalence and characteristics of at-risk drinkers among elderly acute medical inpatients. *Br J Addict* 1992; **87**: 291–294.
- Carney MWP, Chary TKN, Laundry and M: Red cell folate concentrations in psychiatric patients. *J Affect Disord* 1990; **19**: 202–213.
- Cotton NS: The familial incidence of alcoholism. *J Stud Alcohol* 1979; **40**: 89–116.
- Crowe RR: Genetic studies of antisocial personality and related disorders. In: Spitzer RL, Klein DF (eds): *Clinical issues in psychiatric diagnosis*. Raven Press 1978.
- Curtis JR, Geller G, Stokes and EJ: Characteristics, diagnosis, and treatment of alcoholism in elderly patients. *J Am Geriatr Soc* 1989; **37**: 310–316.
- Dóci I, Pavlov P: Zneužívanie psychotropných látok a násilie v rodine v USA. *Alkohol Drog Záv* 39, 2004; **1**: 37–45.
- Fábryová V: Poruchy erytropoézy pri chronickom alkoholickom poškodení pečene. *Protialkohol Obz* 22, 1987; **6**: 331–338.
- Felson DT, Kiel DP, Anderson JJ, Kennel WB: Alcohol consumption and hip fractures: The Framingham Study. *Am J Epidemiol* 1998; **128**: 1102–1110.
- Fink A, Hays RD, Moore AA: Alcohol-Related Problems in Older Persons. Determinants, Consequences, and Screening. *Arch Intern Med* 1996; **156**:1150–1156.
- Fleming MF, Barry KL, Adams WL, and Stauffacher EA.: Brief physician advice for alcohol problems in older adults: a randomized community-based trial. *Am J Fam Prac* 1999; **48**:378–384.
- Forster LE, Pollow R, Stoller EP: Alcohol use and potential risk for alcohol-related adverse drug reactions among community-based elderly. *J Commun Health* 1993; **18**:225–239.
- Gambert SR and Katsoyannis KK: Alcohol-related medical disorders of older heavy drinkers. In *Alcohol and aging 1995* (ed. TP Beresford and ESL Gomberg), 70–81. Oxford University Press, New York.
- Golombok S, Moodley PJ and Lader M: Cognitive impairment in long-term benzodiazepines users. *Psychol Medicine*, 1988; **18**:365–374.
- Gottfries CG, Karlson I: Depression in Later Life. 1997 Lundbeck p. 141.
- Graham K, West P: Alcohol and Crime: Examining the Link. In: *International Handbook of Alcohol Dependence and Problems* (Heather N, Peters TJ and Stockwell T, eds) Wiley, 2001. pp. 439–470.
- Hampl K: Vliv alkoholu na kardiovaskulární choroby. *Protialkohol Obz* 23, 1988; **3**: 159–163.
- Hartford JT a Samorajski T: Alcoholism in the geriatric population. *J Am Ger Soc* 1982; **30**: 18–24.
- Herbert V: Experimental nutritional folate deficiency in man. *Trans Assoc Am Physicians* 1962; **75**: 307–320.
- Kafka J: Násilie. Otázka samovraždy a vraždy. *Slov lek* 10, 2000; 9–10, 340–344.
- Kolibáš E, Novotný V: Súčasná drogová scéna a forenzná psychiatrická prax. *Alkohol Drog Záv* 30, 1995; **1**: 11–19.
- Kollárik T, Poliaková E, Ritomský A: Mníchovský test alkoholizmu –MALT. Mníchner Alkoholizmtest – MALT. Psychodiagnostické a didaktické testy, n.p. Bratislava, 1988. Autori pôvodnej verzie: Feuerlein W, Kúfner H, Antos K, Ringer Ch.1979 Beltz Test Gesellschaft mbh, Weinheim.
- LaGreca AJ, Akers RL, Dwyer JW. Life events and alcohol behaviour among older adults. *Gerontologist* 1988; **28**:552–558.
- Matěječek Z et al: Děti v rodinách alkoholiků. *Zprávy VÚPs* č. 42, Praha, 1982.
- McCusker J, Cherubin CE, Zimmer S: Prevalence of alcoholism in municipal hospital population. *N Y State J Med* 1971; **71**:751–754.

- 34 Mezinárodní klasifikace nemocí. 10. revize. Duševní poruchy a poruchy chování. Popis klinických příznaků a diagnostická vodítka. (Přel. z angl. orig.) Praha, Psychiatrické centrum 1992. "Zprávy" č. 54.
- 35 Molloy DW, Carnette R: Standardized Mini-Mental Examination (SMMSE). A User's Guide. New Grange Press, Troy, Ontario, Canada, 1999.
- 36 Moos RH, Finney JW, Cronkite RC: Alcoholism Treatment: Context, Process and Outcome. New York, NY, Oxford University Press, 1990.
- 37 Moss HB, Salloum IM, Fisher B: Psychoactive substance abuse. In: Hersen M, Ammerman RT et al (eds) Handbook of Aggressive and Destructive Behaviour in Psychiatric Patients. Plenum Press: New York 1994. pp 175–201.
- 38 Nešpor K, Csémy L, Prokeš B, Matanelli O, Mráčková E: Alkohol, drogy, hazardní hra a život ohrožující události. České pracovní lékařství 4, 2003, 3: 140–143.
- 39 Nešpor K, Knor J: Alkohol, neúmyslně způsobená poranění a násilí vůči záchranářům. Alkohol Drogy Záv 39, 2004, 2: 95–98.
- 40 Nešpor K, Dragomirecká E, Csémy L: Alkohol u seniorů. Psychologie dnes 3, 2005, 7.
- 41 Novotný V, Kolibáš E a Heretík A: Nepsychotická symptomatologie u hospitalizovaných alkoholiků. Protialkohol Obz 24, 1989, 3:143–146.
- 42 Novotný V, Kolibáš E, Heretík A: Možnosti detekce alkoholizmu VII. Skrátený inventář markerů alkoholizmu SIMA. Protialkohol Obz 1991, 26, č. 62, 5:257–269.
- 43 Ordonez LA: Control of the availability to the brain of the folic acid, vitamin B12 and choline. In: Wurtman RJ, Wurtman JJ (eds). Nutrition and the brain, Volume 1. New York: Raven Press, 1977, 205–248.
- 44 Oslin D, Atkinson RM, Smith DM, and Hendrie H: Alcohol related dementia: proposed clinical criteria. Int J Ger Psychiatry 1998, 13:203–212.
- 45 Rada RT: Sociopathy and alcohol abuse. In: Reid WH (ed): The Psychopath. A Comprehensive Study of Antisocial Disorders and Behaviours. Brunner/Mazel, New York, 1978.
- 46 Regland B, Abrahamson L, Blenow K: Vitamin B12 in CSF: reduced CSF/serum B12 ratio in demented men. Acta Neurol Scand 1992; 85:276–281.
- 47 Reynolds EH, Preece JM, Bailey J: Folate deficiency in depressive illness. Br J Psychiatry 1970; 117:287–292.
- 48 Sadock BJ, Sadock VA: Kaplan and Sadock's Pocket Handbook of Clinical Psychiatry, Third Edition, 2001, Lippincott Williams and Wilkins, 67–68.
- 49 Selzer ML: Alcoholism and alcoholic psychoses. In: Freedman AM, Kaplan HI, Sadock BJ (eds): Comprehensive textbook of psychiatry – III. Vol. 2, Williams and Wilkins Co, 1980.
- 50 Sheikh JA a Yesavage, JA: Geriatric Depression Scale (GDS): recent findings and development of a shorter version. In: Clinical Gerontology: a Guide to Assessment and Intervention (ed. TL Brink), 1986, 165–173. New York: Howarth Press.
- 51 Shorvan SD, Carney MWP, Chanarin I: The neuropsychiatry of megaloblastic anaemia. MBJ 1980; 281:1036–1038.
- 52 Smith DM, and Atkinson RM: Alcoholism and dementia in the elderly. Int J Addict 1995; 30:1843–1869.
- 53 Sorensen TIA, Orholm M, Bentsen KD, Hoybye G, Eghje K, Christoffersen P: Prospective evaluation of alcohol abuse and alcoholic liver injury in men as predictors of development of cirrhosis. Lancet 2, 1984; 8397: 241–244.
- 54 Sovinová H, Csémy L, Hampl K, Pacovský V: Alkohol a úrazy. Státní zdravotní ústav, Praha 2002. p. 82.
- 55 Uhlíř F: EEG záznamy delirujících alkoholiků s údaji o epileptickém záchvatu při onemocnění. Protialkohol Obz 21, 1986; 5:281–283.
- 56 Vítek K: Alkoholizmus, kriminalita, prevence. Protialkohol Obz 21, 1986; 6:355–360.
- 57 Winokur G, Crowe RR: Personality disorders. In: Freedman AM, Kaplan HI, Williams and Wilkins Co, 1975.
- 58 World Population Data Sheet of the Population Reference Bureau, 2005.
- 59 Zima T, Mareček Z, Špičák J, Lukáš M: Poškození jater, pankreatu a trávicího traktu alkoholem. Medprint Praha, 1996; 354.
- 60 Zimberg S: Alcoholism in the elderly. Postgrad Med 1983; 74: 165–172.