SMOKING, ALCOHOL CONSUMPTION AND DEMENTIA IN PERSONS OVER THE AGE OF 65 FROM THE CITY OF VARNA, BULGARIA

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SUMMARY

Findings about the possible relation between smoking and dementia are ambiguous. Earlier research is dominated by the statement that smoking is a protective factor for Alzheimer's disease while later reports affirm that it could increase the risk for AD, and cessation could lower it to a certain degree. Some studies fail to establish an association between smoking and dementia or AD. The role of alcohol consumption as a risk factor for these disorders is also subject to discussion. Smoking, alcohol consumption and their possible relationships with dementia in persons over the age of 65 were assessed in the framework of a dementia prevalence study in the city of Varna, Bulgaria. No statistically significant correlations were found between the diagnosis of dementia, Alzheimer's disease, vascular dementia, MCI, and the above-mentioned risk factors. This corresponds to the ambiguous data in the literature, where no clear statement exists whether smoking and alcohol consumption could be regarded as risk factors for dementing disorders or not.

Key words: Smoking, Alcohol consumption, Dementia, Risk factors

INTRODUCTION

Mechanisms of dementia initiation and development are not yet completely understood. Risk factor analysis is one of the methods used to clarify them. Advanced age, female sex, low education, genetic and other factors are among the most frequently discussed (1,5,7).

Findings about the possible relation between smoking and dementia are ambiguous. Earlier research is dominated by the statement that smoking is a protective factor for Alzheimer's disease (AD). This could be explained by the positive effect of nicotine on cholinergic neurotransmission, leading to better performance on some cognitive tests. Later reports however affirm that such results could be influenced by study design and sample selection issues (3). On the other hand, some authors admit that smoking could increase the risk for AD, while cessation could lower it to a certain degree (9). AD patients who smoke at the initial stages of the disease may be endangered by an atypical clinical progression with earlier death (12). Smoking could also accelerate cognitive decline in non-demented adults (10). Other studies fail to establish an association between smoking and dementia or AD (14).

While alcohol consumption is regarded by some investigators as a possible risk factor for cognitive impairment and dementia, others deny the relationship or discuss that it could depend on the quantity and type of alcohol consumed (6, 11). Some authors point out that small to moderate amounts of alcohol could have a protective effect (8, 13). ApoE e4 allele carriers could also be at increased risk for dementia if consuming alcohol (2).

PURPOSE

The purpose of the current work is to assess smoking, alcohol consumption, and their relationships with dementia in a random sample of urban population within the framework of the first study of dementia in Bulgaria.

SUBJECTS AND METHODS

A two-phase, cross-sectional study was performed in the city of Varna, Bulgaria. A community based random sample of 605 subjects over the age of 65 was selected for participation. Informed consent was signed by 540 subjects, who were then included in the study, while non-responders were 65 (Table 1).

Table 1. Study sample by age and sex.

Subjects	Count (Men/Women)	Age (mean ± SD)
Sample	605 (260/345)	73,15±5,69
Responders	540 (223/317)	72,95±5,50
Non-responders	65 (37/28)	74,75±6,88

All participants were administered a screening interview including questions on demographics, medical history, alcohol consumption, smoking, treatment. A screening neuropsychological battery was also carried out.

All responders who screened positive for cognitive impairment were subject to a detailed clinical, neuropsychological and imaging assessment. They were then classified as having dementia (and its subtypes), mild cognitive impairment (MCI) or no cognitive impairment, according to respective consensus criteria (4).

Relationships between risk factors and final diagnosis were assessed using non-parametric correlation analysis.

RESULTS

Dementia was diagnosed in 39 cases (7.2%) and MCI in 36 (6.7%) (4). AD was the most frequent type of dementia, accounting for 17 cases (3.1%), followed by VaD (11 cases, 2.0%), mixed dementia (7 cases, 1.3%), Lewy body dementia (2 cases, 0.4%) (Fig. 1).

Fig. 1. Distribution of MCI and dementia types in the population
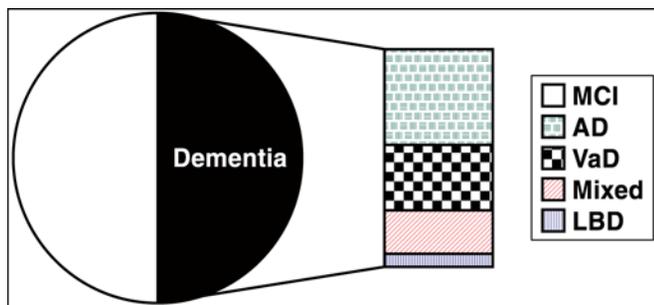
Three hundred and sixty-one persons (66.9%) answered that they have never smoked; 139 (25.7%), that they have smoked regularly, but have stopped more than 6 months ago; 39 (7.2%), that they smoked currently or have stopped less than 6 months ago. One person (0.2%) provided no answer. Non-smokers were generally women, while most current or ex-smokers were men (Fig. 2). Cigarettes were the only product reported, while no cigar or pipe smokers were identified.

Eighty-nine subjects (16.5%) answered that they lived or had lived with smokers and 63 (11.7%) that they worked or had worked with smokers.

**Fig. 2.** Distribution of subjects according to smoking status and sex
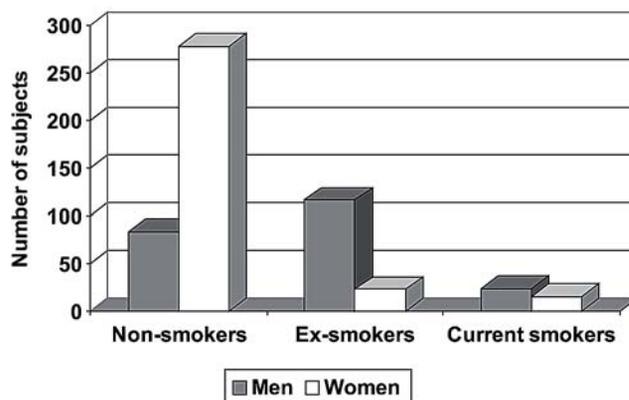
Regarding alcohol consumption, 300 subjects (55.6%) answered that they sometimes used alcohol (Fig. 3).

Fig. 3. Distribution of subjects according to alcohol consumption and sex
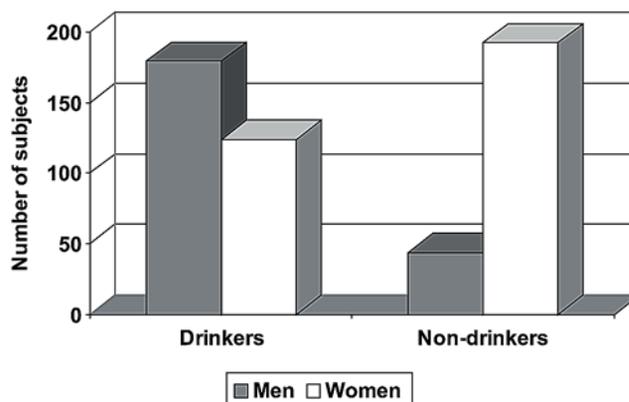
Additional questions specifying type of beverage and drinking frequency were asked. Seventy-five subjects (13.9%) reported everyday use of spirits, 25 (4.6%) of beer, 39 (7.2%) of wine (Fig. 4). Reported quantities are shown in Table 2.

**Fig. 4.** Everyday consumption of alcohol (by types)

Everyday alcohol consumption
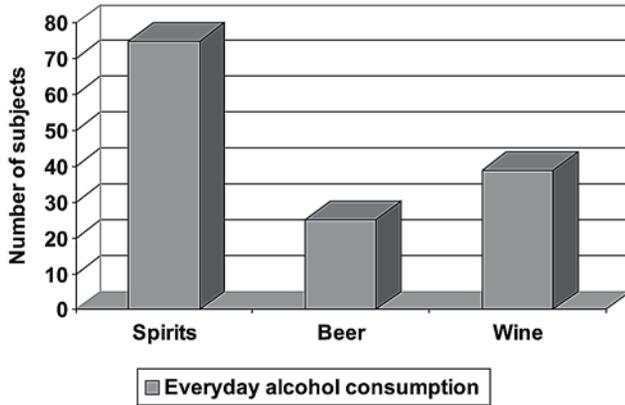
Table 2. Alcohol consumption: reported quantities.

Spirits	**< 50 ml/day**	**50-100ml/ day**	**>100 ml/day**
	49 (9,1%)	18 (3,3%)	8 (1,5%)
Wine	**1 glass/day**	**2 glasses/day**	**3 glasses/day**
	22 (4,1%)	13 (2,4%)	4 (0,7%)
Beer	**1 bottle/day**		**2 bottles/day**
	13 (2,4%)		12 (2,2%)

Two hundred and nine subjects reported no recent change in drinking habits, 86 answered that they had reduced alcohol consumption, 10 had increased it, while 26 had stopped drinking (Fig. 5). Health problems were the main reason for stopping in 21 of the cases.

Fig. 5. **Change in alcohol consumption**

Change in alcohol consumption
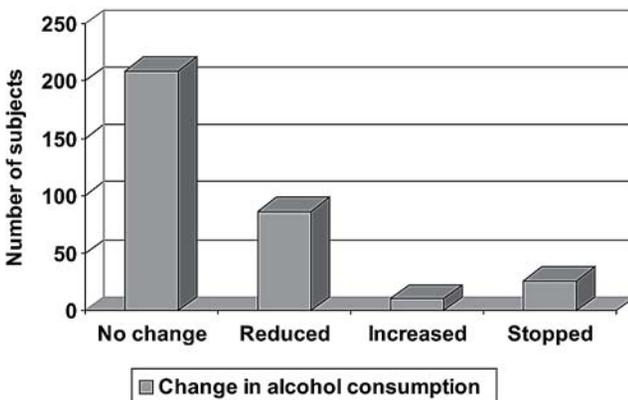
Kendall's analysis showed no statistically significant correlations between the diagnosis of dementia, AD, vascular dementia (VaD), or MCI, and the assessed risk factors, smoking and alcohol consumption (Tables 3, 4).

Table 3. Smoking and dementia: correlations

		Demen-tia	AD	VaD	MCI
Current	Kendall's τ_b	-0,076	-0,049	-0,039	-0,014
Smokers	p	0,079	0,256	0,364	0,750
Ex-smokers	Kendall's τ_b	0,030	-0,035	0,034	-0,041
	p	0,492	0,420	0,435	0,346
All smokers	Kendall's τ_b	-0,013	-0,059	0,010	-0,045
	p	0,762	0,173	0,809	0,293

Table 4. Alcohol consumption and dementia: correlations.

		Demen-tia	AD	VaD	MCI
Alcohol (all)	Kendall's τ_b	0,049	0,055	-0,048	-0,011
	p	0,255	0,205	0,265	0,791
Beer	Kendall's τ_b	0,002	-0,004	0,020	-0,033
	p	0,972	0,949	0,731	0,570
Spirits	Kendall's τ_b	-0,048	-0,070	-0,030	0,029
	p	0,403	0,223	0,609	0,615
Wine	Kendall's τ_b	0,053	0,046	0,075	0,024
	p	0,359	0,427	0,194	0,677

DISCUSSION

Though the present study does not fully comply with the classical design for assessment of risk factors and acquisition of representative data for their influence on the whole population, the gathered information permits the implementation of analyses concerning the specific sample. In this regard, our results are not unexpected for an aged urban Bulgarian population. Most subjects are currently non-smokers, and stratifying the data by sex underlines the high relative share of non-smoking women and smoking men. A small part of all subjects use alcohol on an everyday basis and the share of those consuming larger quantities is minimal. The most frequent use of spirits is not surprising, nor is the trend towards more evident reduction than increase of consumption. It is worth mentioning that in some cases alcohol consumption is ceased because of health issues.

CONCLUSION

Smoking and alcohol use which are discussed in a number of papers as factors increasing the risk for degenerative and vascular brain pathology, did not show statistically significant correlations with dementia and its subtypes or with MCI in our study. This corresponds to the ambiguous data in the literature, where no clear statement exists whether smoking and alcohol consumption could be regarded as risk factors for dementing disorders or not. It could also probably be due to the subjective nature of the information we used.

REFERENCES

1. Abate, G., Ferrari-Ramondo, V., Di Iorio, A. Risk factors for cognitive disorders in the elderly: a review. Archives of Gerontology and Geriatrics 1998, 26, 7-15.

2. Anttila, T., Helkala, E.L., Viitanen, M., et al. Alcohol drinking in middle age and subsequent risk of mild cognitive impairment and dementia in old age: a prospective population based study. BMJ 2004, 329, 539-542.

3. Cervilla, J.A., Prince, M., Mann, A. Smoking, drinking, and incident cognitive impairment: a cohort community based study included in the Gospel Oak project. J Neurol Neurosurg Psychiatry 2000, 68, 622-626.

4. Dimitrov, I., Traykov, L., Deleva, N. Cognitive impairment in a community-based urban sample: preliminary results of a study in Varna, Bulgaria. Eur J Neurol 2008, 15, 227-228.

5. Gorelick, P.B. Risk factors for vascular dementia and Alzheimer disease. Stroke 2004, 35, 2620-2622.

6. Huang, W., Qiu, C., Winblad, B., Fratiglioni, L. Alcohol consumption and incidence of dementia in a community sample aged 75 years and older. J Clin Epidemiol 2002, 55, 959-964.

7. Kivipelto, M., Ngandu, T., Fratiglioni, L., et al. Obesity and vascular risk factors at midlife and the risk of dementia and Alzheimer disease. Arch Neurol 2005, 62, 1556-1560.

8. Luchsinger, J.A., Mayeux, R. Dietary factors and Alzheimer's disease. Lancet Neurol 2004, 3, 579-587.

9. Merchant, C., Tang, M.X., Albert, S., et al. The influence of smoking on the risk of Alzheimer's disease. Neurology 1999, 52, 1408-1412.

10. Ott, A., Andersen, K., Dewey, M.E., et al. Effect of smoking on global cognitive function in nondemented elderly. Neurology 2004, 62, 920-924.

11. Ruitenberg, A., van Swieten, J.C., Witteman, J.C., et al. Alcohol consumption and risk of dementia: the Rotterdam Study. Lancet 2002, 359, 281-286.

12. Sabbagh, M.N., Tyas, S.L., Emery, S.C., et al. Smoking affects the phenotype of Alzheimer disease. Neurology 2005, 64, 1301-1303.

13. Stampfer, M.J., Kang, J.H., Chen, J., et al. Effects of moderate alcohol consumption on cognitive function in women. N Engl J Med 2005, 352, 245-253.

14. Tyas, S.L., Pederson, L.L., Koval, J.J. Is smoking associated with the risk of developing Alzheimer's disease? Results from three Canadian data sets. Ann Epidemiol 2000, 10, 409- 416.

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