Alert out on tobacco and alcohol consumption in young European women

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Abstract

Europe is the heaviest drinking and smoking region in the world. Tobacco and alcohol use are gradually increasing in women with a close prevalence of tobacco and heavy alcohol use in girls and boys. Pharmacokinetics and pharmacodynamics differences, reward process specificities and female hormones play a major role in gender differences in addictive behaviors. Therefore, health consequences differ according to gender. Further research is needed on gender differences in addiction. Information, education on the impact of hazardous alcohol consumption and related harm as well as on the consequences of tobacco use is urgently required in girls and childbearing age women.

Keywords Women · Addiction · Alcohol · Tobacco · Gender · Pregnancy

Historically, women were used to consume less often and in lower amounts alcohol and tobacco as compared to men. However, the societal role of women has gradually evolved; over time women have adopted more masculine roles; moreover, for some women, equality means mimicking male gender stereotypes such as smoking or drinking heavy amounts of alcohol. One in five of the Europeans of 15 and over binge drink at least once a week. Europe is the heaviest drinking and smoking region in the world (for both men and women). About 50% of 15–16-year-old female students have used any alcoholic beverage during the past month and 35% of these girls reported having had least five drinks on one occasion during the past month which was quite similar to their male counterparts (average of 14 European countries) (European School Survey Project of Alcohol and Other Drugs: <http://www.espad.org/sites/espad.org/files/TD0116475ENN.pdf>). Similarly, in women, the highest prevalence of tobacco smoking was reported in Europe (19.3%) as compared to a worldwide mean of 6.8% (<http://www.who.int/gho/tobacco/use/en/>); the mean prevalence of tobacco use was quite similar in 15-year-old boys (12%) and girls (11%) (Health

behaviour in school-aged children study, 2013–2014 survey: <http://www.euro.who.int/en/health-topics/disease-prevention/tobacco/data-and-statistics>).

For alcohol and tobacco companies, selling their products to women was a tremendous opportunity, which has been incredibly successful in industrialized countries. To reach this goal, the companies have used a variety of techniques such as: TV program sponsorship, fashion blogs, social media, special events (girls' night out, offering free drinks for women, giving fashion advice), famous actresses used as spokes-women to portray alcoholic drinks as glamorous and sophisticated, sponsoring of Arts, Sports, as well as of Women's associations or research programs. The companies have benefited from years of marketing experience in industrialized countries, which is helpful to subjugate developing countries. Body image or weight control as well as gender equality are recurrent themes used by the industry to promote their products in women (European Institute of Women's Health: <https://www.eurohealth.ie/>). Many women use smoking as a means of weight control to better fit the western societal norm of thinness (A report of the Surgeon General Rockville, USA, <https://www.cdc.gov/mmwr/previww/mmwrhtml/rr5112a4.htm>). In industrialized countries, smoking is also a powerful mechanism for self-enhancement and improvement of social image. In addition, the industry developed specific tastes for women (fruit-flavored beer, menthol in cigarettes); they targeted women with "light" and "healthy" alcohol products as well as with Alco pops

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or spirits with a high alcohol content. Advertisements promoted increased sexual attractiveness in women who used alcoholic drinks (European Alcohol Policy Alliance 2009. Alcohol trends-markets and innovations. <http://eurocare.org>; European Centre for Monitoring Alcohol Marketing 2008. Women-the new market. Trends in alcohol marketing. http://www.eucam.info/content/.../women_the_new_market_final.pdf). Interestingly, restrictions as well as the availability of a drug on the legal market or the price may reduce tobacco smoking or alcohol use more efficiently in women as compared to men.

In many industrialized countries, women were used to live longer than men, outliving men by an average of 5 years. However, women's increased tobacco and alcohol consumption will probably narrow this gender gap in illness and death over time. Moreover, alcohol-related health issues start sooner in women. In fact, males and females differ in terms of pharmacokinetics and pharmacodynamics. Nicotine metabolism is faster among women (especially with concurrent use of oral contraceptives), which means that they may smoke more tobacco [1]. In women, first pass metabolism of ethanol is lower, the volume of distribution is smaller and finally, the level of alcohol dehydrogenase is lower. Altogether, these data suggest the potential for higher alcohol blood concentrations in women as compared to men. Therefore, women are more at risk even while drinking less alcohol than men.

Alcohol is the third leading risk factor for disease and death and tobacco the second one after high blood pressure (<https://eurohealth.ie/women-and-alcohol-in-the-eu/>). According to the World Health Organization (WHO 2010: http://www.who.int/substance_abuse/facts/alcohol/en/), the distribution of all alcohol-attributable deaths were the following: 4% of all female deaths compared to 7.6% in males; among disease categories, females were overrepresented in the category cardiovascular diseases and diabetes (58.2% of all these deaths were attributable to alcohol vs. 22.1% in men). Overall, women are more susceptible to alcohol dependency, liver cirrhosis and Various tissue damage than men. The risk of breast cancer increases with the amount of alcohol used: 10 g/day of pure alcohol increases the risk by 9% while 30–60 g/day increases it by 41%. In addition, heavy drinking puts women at risk of injuries and death from accidents, as well as of unsafe sex or sexual assaults and violence (International Center for Alcohol Policies 2013; <http://www.icap.org>). For tobacco smoking, 6% of all female deaths were attributable to tobacco vs. 11% in males; moreover, the relative risk of lung cancer was 21 in smoking women (http://www.who.int/tobacco/publications/surveillance/rep_mortality_attributable/en/).

Finally, women's alcohol and tobacco consumption during pregnancy may be associated to birth defects and serious developmental consequences in children. Despite

the international consensus recommending total alcohol abstinence during pregnancy, prenatal alcohol exposure remains the major cause of avoidable neurodevelopmental disorder. Fetal Alcohol Syndrome (FAS) is characterized by growth deficiencies, craniofacial dysmorphologies and CNS damage [3]. Popova et al. [7] reported the highest prevalence of FAS in Europe (37.4 per 10,000) (vs. 14.6 worldwide); these authors estimated that one in every 67 mothers who consumed alcohol during pregnancy delivered a child with FAS. Fetal exposure to tobacco is also strongly associated with birth consequences such as preterm birth, placental hematoma, low birth weight and birth defects [5]. A recent meta-analysis reported an international prevalence of consuming any amount of alcohol during pregnancy at 9.8%, with the highest percentage in Europe (25.2%) [7]. Twenty to thirty percent of pregnant women used tobacco during pregnancy worldwide [6]. These data emphasize the urgent need for community education and implementation of prevention strategies focused on risks associated to tobacco and alcohol use during pregnancy.

Compared to men, women begin using psychoactive drugs younger; develop addiction more quickly with a stronger motivation; they experience shorter periods of drug abstinence [4]. Indeed, men and women have different propensities to relapse and are differentially affected by triggers for relapse; women are less sensitive to the reinforcing effects of tobacco or alcohol, but more sensitive to social cues (e.g. stress). When considering the modulatory role of estradiol in decision-making and its interplay with dopamine in modulating reward and cognitive processes, the paucity of studies on gender differences in addictions is rather surprising. Paradoxically, enhanced vulnerability of women to develop addiction has been widely recognized, whereas, the prevalence of dependence remained generally higher in men compared to women [2]. Interestingly, recent epidemiological studies indicated a narrowing in this gender gap especially in adolescents, which may reflect changing sociocultural patterns, rather than biology (Substance Abuse and Mental Health Services Administration 2014: <https://www.samhsa.gov/samhsa-data-outcomes-quality/major-data-collections/reports-detailed-tables-NSDUH>).

In general, psychoactive drug-dependent women express greater negative emotional states such as stress, anxiety and depression which are more likely to trigger craving and relapse as compared to men [8]. Women are also more likely to have past histories of depressive disorders or physical and/or sexual abuse, partners who are drug users or who are violent, lower status in the society, more inequality to face; which may increase the risk of addictive disorders (Department of Health and human services 2001: A report of the Surgeon General https://www.cdc.gov/tobacco/data_statistics/sgr/2001/complete_report/index.htm).

For tobacco use, there is no safe level of use. In contrast, the WHO has defined several levels of risk for occasional and chronic alcohol use (in grams per day), which are significantly lower in females. Risks are defined as follows in women: low risk (≤ 20 g/day); moderate risk (> 20 – 40 g/day); high risk (> 40 g/day) (http://apps.who.int/iris/bitstream/handle/10665/66529/WHO_MSD_MSB_00.4.pdf?sequence=1&isAllowed=y). Tobacco and alcohol use should be evaluated at least every year in every woman and especially when a pregnancy is planned. Screening can be conducted by anyone, using validated questionnaires (such as the AUDIT-C) or, simply by asking open-ended standardized questions “In the past year, how many times have you drunk > 4 alcoholic drinks per day? Used tobacco?” (<https://www.drugabuse.gov/publications/resource-guide-screening-druguse-in-general-medical-settings/nida-quick-screen>). If women drink more than the recommended limit defined above, they are considered at risk and motivational or brief interventions should be recommended.

Women have lower expectations about treatment and they often do not perceive the need for it. The stigma associated to addiction in women can make accessibility to treatment even more difficult (http://www.who.int/mental_health/prevention/genderwomen/en/). In addition, pharmacodynamic and pharmacokinetic differences may contribute to differential responses to treatments. Pregnant women who use alcohol or tobacco require special care. Guidelines for the management of alcohol use in pregnancy [11] as well as guidelines for the management of substance use in pregnancy (http://www.who.int/substance_abuse/activities/pregnancy_substance_use/en/) have been recently published and can help caregivers.

Further research is needed on gender differences in addiction [9, 10]. Information, education on the impact of hazardous alcohol consumption and related harm as well as on the consequences of tobacco use is urgently required in girls and young women of childbearing age.

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