

Estimated cancer burden attributable to the alcohol consumption in Poland in 2016

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Introduction. Alcohol exposure is a highly preventable cancer risk factor. European Code Against Cancer recommends to reduce alcohol intake of any type in order to decrease cancer risk. Poles have drunk more and more alcohol, reaching the average level of consumption at 9.55 liters of pure alcohol per capita in 2018. This phenomenon shows that alcohol consumption is constantly a great public health challenge in Poland.

Material and methods. Material in our study was an epidemiological data on cancer incidence in Poland sourced from the National Cancer Registry in Poland. Data on alcohol consumption comes from the State Agency for Prevention of Alcohol Related Problems survey conducted in Poland in 2002. Relative risks (RR) for alcohol consumption and cancer were sourced from the published studies. The alcohol attributable fraction (AAF) has been calculated with use of the formula provided in this work.

Results. Results of our study show that in Poland in 2016, about 4.6% (7252) of all cancer cases were related to the alcohol consumption: women – 3.4% (2599), men – 5.8% (4653).

Conclusions. In the face of epidemiological prognosis on increasing number of new cancer cases in Poland, there is a need to implement an immediate public health actions on reducing strong cancer risk factors such as alcohol consumption.

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Key words: cancer, alcohol, attributable fraction, primary cancer prevention

Introduction

In 1988 the International Agency for Research on Cancer (IARC) identified alcohol consumption as one of the strongest cancer risk factors [1]. Many scientific studies proved connection between alcohol consumption and occurrence of certain types of cancer. Currently, such connection is indicated most often for the following malignancies: lip, oral cavity and pharynx cancer, oesophagus, colon, rectum, liver, larynx and female breast cancer [2, 3]. There is also some limited evidence suggesting that alcohol exposure is linked to cancers of gallbladder, prostate, lung, stomach and melanoma [4, 5].

Alcohol exposure is a highly preventable cancer risk factor. European Code Against Cancer recommends to reduce alcohol intake of any type in order to decrease cancer risk [3]. On the other hand, in accordance to the latest data from the State Agency for Prevention of Alcohol-Related Problems in Poland, during the last decades, Poles have drunk more and more alcohol, reaching the average level of consumption at 9.55 liters of pure alcohol *per capita* in 2018 [6]. This phenomenon shows that alcohol consumption is constantly a great public health challenge in Poland.

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Objectives

The aim of the study was to estimate the number of cancer cases attributable to alcohol consumption in Poland in 2016.

Material and methods

Material in our study was an epidemiological data on cancer incidence in Poland in 2016 sourced from the National Cancer Registry in Poland (www.onkologia.org.pl). Data on alcohol consumption comes from the survey conducted by the State Agency for Prevention of Alcohol Related Problems in Poland in 2002 (data provided by J. Moskalewicz) [7]. We decided to use the data from 2002 in order to receive 15 years' latency period between the time of exposure and cancer occurrence, which is sufficient amount of time for developing alcohol attributable cancers. In the literature, chosen latency period varies, depending on many factors. Scientifically justified latency period ranges from 10 to 40 years [2, 8]. Analyzed age group is 35+ years, which is connected with exposure among people aged 20+.

We set consumption categories as follows: 0 to <0.25 g/day (abstainers); 0.25 to <20 g/day; 20 to <40 g/day; 40 to <60 g/day and ≥60 g/day of pure alcohol. Relative risks (RR) for each category of alcohol consumption were sourced from Corrao 2004 et al. [9] for subsequent locations of cancers: lip, oral cavity and pharynx, oesophagus, colon, rectum, liver, larynx. In this publication authors presented RR for consumption of 25 g/day (used in our study for category 20 to <40 g/day),

50 g/day (applied for 40 to <60 g/day) and 100 g/day (for category 60+ g/day). For drinking category 0.25 to <20 g/day we used risk as the half of that estimated for the 25 g/day. For female breast cancer we used RR from Hamajima et al. 2002 [10]. In this study authors showed that in comparison with women who were abstainers, drinking women had increased breast cancer risk by 7% for each additional 10 g of alcohol/day intake (Tab. I).

The alcohol attributable fraction (AAF) has been calculated according to the formula:

$$AAF = \frac{\sum_{i=1}^k P_i(RR_i - 1)}{\sum_{i=0}^k P_i(RR_i - 1) + 1}$$

i, k : category of drinking (with $i = 0$ for abstainers)

RR_i : relative risk at the exposure level, i compared with abstainer category

P_i : prevalence of alcohol, i -th category of exposure

Results

In accordance with the latest data from the National Cancer Registry in Poland, in 2016 over 164 000 new cancer cases have been reported. In our study, we estimated that in this year 7252 cancer cases were related to the alcohol consumption: women – 3.4% (2599), men – 5.8% (4653) (Tab. II). The highest burden, in accordance to the location of the cancer, was connected with lip, oral cavity and pharynx cancers – 2493 cases. Moreover,

Table I. Relative risks for alcohol-attributable cancers by drinking categories

Cancer site	$i = 1$		$i = 2$		$i = 3$		$i = 4$		Source
	0.25–<20 g/day		20–<40 g/day		40–<60 g/day		60+ g/day		
	M	F	M	F	M	F	M	F	
oral cavity, pharynx	1.43	1.43	1.86	1.86	3.11	3.11	6.45	6.45	Corrao 2004
esophagus	1.19	1.19	1.39	1.39	1.93	1.93	3.59	3.59	Corrao 2004
colon	1.03	1.03	1.05	1.05	1.10	1.10	1.21	1.21	Corrao 2004
rectum	1.05	1.05	1.09	1.09	1.19	1.19	1.42	1.42	Corrao 2004
liver	1.09	1.09	1.19	1.19	1.40	1.40	1.81	1.81	Corrao 2004
larynx	1.22	1.22	1.43	1.43	2.02	2.02	3.86	3.86	Corrao 2004
breast (female)	–	1.09	–	1.18	–	1.35	–	1.70	Hamajima et al., 2002

Table II. Number of alcohol attributable cancer – cases by age groups

Cancer site	Age at outcome: 35–59 Age at exposure: 20–44		Age at outcome: 60–79 Age at exposure: 45–64		Age at outcome: 80+ Age at exposure: 65+		Overall		
	M	F	M	F	M	F	M	F	Total
	oral cavity, pharynx	840	164	1153	221	93	23	2086	408
esophagus	187	22	337	35	25	5	549	62	611
colon	88	35	280	81	43	12	412	128	540
rectum	118	31	313	67	36	8	467	106	573
liver	52	13	135	33	15	4	201	51	253
larynx	294	27	603	44	41	2	938	73	1011
breast (female)	–	925	–	785	–	63	–	1772	1772
total	1580	1218	2821	1266	252	116	4653	2599	7252

a large number of all alcohol attributable cancer cases were identified as breast cancer cases – 1772 (Tab. II). Additionally, a significant number of alcohol-related cancer cases in our study were larynx cancer cases – 1011 – the vast majority cases occurred among men (938) than among women (73).

In relation to the age groups, the highest burden was observed among people aged 60–79 – 2821 cases in men and 1266 in women. Due to high alcohol consumption among young women (age at exposure 20–44 years old), number of alcohol-related cancer cases in middle-aged women (35–59 years old) is the highest.

Discussion and conclusions

Obtained results are similar to other studies in relation to the population of women and lower in men. For comparison, Scoccianti et al. [3] showed estimated alcohol attributable cancer burden in the Europe at the level of 3% of all cancer cases for women and 10% in men. In our study it was respectively 3.4% and 5.8%. One of the possible reasons in the differences in alcohol-related cancer burden among men could be the applied latency period. Moreover, alcohol consumption in Poland in 2002 was much lower than those observed currently [6].

The results obtained confirmed also a great impact of alcohol consumption on breast cancer occurrence. Considering solely women's population, about 10% (1772) of all breast cancer cases (18 615) were attributable to alcohol consumption. Although Schutze et al. [11] in own studies indicated that alcohol-related breast cancer cases in 8 investigated European countries (France, Italy, Spain, United Kingdom, the Netherlands, Greece, Germany, Denmark) constituted about 2–8%, what may suggest differences in alcohol consumption burden in the Polish women's population and in mentioned European countries.

Despite the fact that we conducted our study using simplified assumptions, the estimated cancer burden attributable to the alcohol consumption in Poland in 2016 is, without a doubt, significant for health of the Polish population. In the face of constantly growing alcohol intake in the Polish society [6], there is a need to implement public health actions on reducing strong cancer risk factors such as alcohol consumption.

Limitations of the study

Availability of the detailed data on alcohol consumption and drinking patterns in Poland is very limited. Data on alcohol

drinking that we have used are based on 2443 questioners. Additionally, considered alcohol attributable cancers are also caused by different cofactors (for example joint smoking and drinking or HPV infection). Moreover, the reported data on the number of cancer cases in Poland are still burdened with some inadequacy.

Conflict of interest: none declared

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