

# THE INTERNATIONAL DIFFUSION OF EUROPEAN ALCOHOL RESEARCH

## MEDNARODNA RAZPRŠENOST EVROPSKIH RAZISKAV O ALKOHOLU

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### Abstract

**Background:** Europe presents the highest rates of alcohol consumption per inhabitant, with an impact exceeding 6% of the DALYs lost. However, European researchers claim that most of the research in the alcohol field is conducted outside Europe. In order to assess this claim, a review of international indexed publications on alcohol marketing and availability, two cornerstones of alcohol public health policy, was performed.

**Methods:** A systematic search on Medline (1990–2009) was conducted by two independent researchers in order to identify articles that studied the availability or marketing of alcoholic beverages. The publication year and country of affiliation of the first author were recorded. The type and number of publications were classified according to the geographic area where the research was conducted.

**Results:** Of the 990 retrieved articles on availability, 214 were found relevant; of the 828 articles obtained for marketing, 249 were classified as relevant. Most of the alcohol availability- and marketing-related articles were published in the USA (52.3% and 59.0%, respectively). A total of 22.5% of the availability studies and 15.7% of the marketing studies were published by a first author affiliated to a European country. The European alcohol-related references have been generated mostly in the UK, the Scandinavian countries and the Netherlands (73.4% of all European publications).

**Conclusion:** Despite the impact of alcohol in Europe, most of the research is conducted in other countries. Moreover, the volume of research is unequal among the European countries as well. European public health research in the alcohol field should be encouraged, involving countries with scant or non-existent research.

**Key words:** alcoholic beverages, research, Europe, alcohol availability, alcohol marketing, indexed publications

Izvirni znanstveni članek  
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### Izveleček

**Ozadje:** Evropa ima najvišjo stopnjo zaužitega alkohola na prebivalca, pri čemer gre za vpliv nad 6% izgubljenih DALY. Vendar pa evropski raziskovalci trdijo, da večina raziskav na področju alkohola poteka zunaj Evrope. Da bi lahko ocenili te trditve, smo opravili pregled literature o trženju alkohola in razpoložljivosti alkohola (dveh temeljnih alkoholne politike in javnega zdravja) v mednarodnih indeksiranih publikacijah.

**Metode:** Sistematično iskanje literature v bazi Medline (1990–2009) sta izvedla dva neodvisna raziskovalca. Poiskala sta objave, ki pokrivajo razpoložljivost ali trženje alkoholnih pijač. Prvemu avtorju vsake objave sta pripisala leto in državo objave. Objave sta nato razvrstila glede na zemljepisno območje raziskave.

**Rezultati:** Od 990 objav o dostopnosti alkohola je bilo ustreznih 214; od 828 objav o trženju alkohola pa je bilo ustreznih 249. Večina objav o razpoložljivosti in o trženju alkohola in sorodnih izdelkov je bila objavljenih v ZDA (52,3% in 59,0%). 22,5% študij o dostopnosti in 15,7% marketinških študij je bilo objavljenih po prvem avtorju, prijavljenem v evropski državi. Evropski predlogi alkoholne politike so bili večinoma ustvarjeni v Veliki Britaniji, skandinavskih držav in na Nizozemske (73,4% vseh evropskih publikacij).

**Zaključek:** Kljub velikemu pomenu alkohola v Evropi je večina raziskav o alkoholu v Evropi opravljenih v drugih državah. Obseg raziskav med evropskimi državami je tudi neenak. Spodbujati bi bilo potrebno evropske

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*javnozdravstvene raziskave o alkoholu in vanje vključiti še posebej države, v katerih je tovrstnih raziskav malo ali pa jih sploh ni.*

**Ključne besede:** alkohol, raziskave, Evropa, dostopnost, marketing, indeksirane publikacije

## 1 INTRODUCTION

The health challenges faced by Western societies are somewhat different to those encountered in other regions of the world, with alcohol-related harm as one of the most relevant problems. In fact, according to the most recent WHO report [1], alcohol is the second cause of the loss of disability-adjusted life years (DALYs) in high-income countries, accounting for 6.7% of the overall loss of DALYs. The European Union, with an average GDP per capita of 23,563€ [2], is one of the most developed regions of the world and stands as the first producer of alcoholic beverages and as the area with the highest per-capita consumption [3], with an estimated 11 litres of pure alcohol consumption per inhabitant per year.

The impact of alcohol on the health of European citizens and the long-standing European tradition of health and social care provision should strongly encourage the investment of resources into the prevention of the harm caused by alcohol. Accordingly, public health research in the alcohol field should be a cornerstone of the policy to prevent alcohol-related harm.

In contrast, most European researchers claim that alcohol-related public health research in Europe is scarce and most of the research is being conducted in the USA, Canada and Australia, with the notable exception of the Nordic European countries [4]. Nevertheless, to our knowledge, this hypothesis has not yet been assessed by previous studies.

The Alcohol Measures for Public Health Research Alliance project (AMPHORA) is a research project co-financed by the European Commission, which aims to provide new scientific evidence for the most effective public health measures to reduce alcohol-related harm, promoting the translation of science into policy and disseminating new knowledge to policy makers. For this purpose, AMPHORA joined partner organizations from 13 European countries and counterparts from all the member states. The project covers a wide range of research topics such as the analysis of the interaction of socio-cultural, economic and demographic determinants of the effectiveness of alcohol policy; the effect of marketing on alcohol consumption; the impact of price and availability; the analysis of service provision for the early identification and management of alcohol

use disorders; analysis of the drinking environments and alcohol-related harm and reducing the harm from surrogate and illegally produced alcohol; and analysis of the infrastructures for alcohol policy [5].

The aim of the present study is to provide an overview of the international diffusion of alcohol research publications generated in Europe in comparison with other developed regions, focusing on two main areas: the availability and marketing of alcoholic beverages, two of the focal points of the AMPHORA project.

For this purpose, we searched the indexed scientific literature published in English during the two decades prior to the AMPHORA project implementation, focusing the search on alcohol marketing and the availability of alcoholic beverages.

## 2 METHODS OF THE REVIEW

### 2.1 Search strategy

The publication search was performed using the PubMed database from 1990 to September 2009. We considered articles that discussed the availability and marketing of alcohol in two separate searches. Both searches were limited to title and abstract.

Only articles entirely published in English were included in the analysis, thus publications in other languages were discarded.

The *availability* search strategy was established after testing various search strategies. For each strategy, the first 100 retrieved articles were checked for relevance. The set of key terms that retrieved the highest number of articles with the highest proportion of relevance among the first 100 articles included the following: (alcohol drinking (MeSH) OR alcohol\* OR drink\*) AND (price\* OR tax\* OR sale\* OR purchase\* OR income\*) AND (program\* OR polic\*).

The key terms for the *marketing* search strategy were selected based on the strategy used by Anderson et al. (2009): (alcohol drinking (MeSH) OR alcohol\* OR drink\*) AND (marketing (MeSH) OR advertising (MeSH) OR television\* OR radio\* OR internet\*) [6].

### 2.2 Classification process

The titles and abstracts of all the retrieved articles were assessed for relevance by two reviewers independently.

In the case of a discrepancy between the reviewers, a consensus was reached. Relevant articles were categorized into *major* or *minor topic* in order to indicate whether the availability or marketing of alcohol were the core topic of the article or if they were only tangentially discussed within the article, respectively.

Studies were categorized into *major topic* when (1) alcohol availability/marketing was directly related to alcohol consumption; (2) alcohol availability/marketing was assessed for policy recommendations; (3) the enforcement of alcohol availability/marketing policies was studied. The category *minor topic* was applied to those studies that (1) related alcohol availability/marketing to alcohol-related harm (cirrhosis, road accidents, gender violence, sexually transmitted diseases, etc.) or other illicit drug use or tobacco consumption; (2) discussed other relevant factors related to alcohol consumption (prevention, treatment, etc.) and alcohol availability or marketing issues were included as secondary topics.

The publication year and country of affiliation of the first author were also recorded.

### 2.3 Data analysis

Data was analysed using the Statistical Package for Social Science SPSS®v.16 (SPSS Inc., Chicago, USA). Publication years were grouped into four periods (1990-1994; 1995-1999; 2000-2004; 2005-2009). The percentage of relevant articles with respect to the total was calculated by country and country groups. The evolution of the number of publications over time was analysed using non-parametric bivariate correlation analysis (Spearman's rho).

## 3 RESULTS

A total of 1818 articles were retrieved by the two search strategies: 990 for alcohol availability and 828 for alcohol marketing. As a result of the classification process, articles considered non-relevant publications, articles with no abstract available and those containing insufficient information in the abstract for classification were excluded.

214 articles were found relevant for the availability topic: 103 were classified into the *major topic* category and 111 into the *minor topic*. Regarding marketing, 249 publications were classified as relevant: 143 were assigned to the *major topic* category and 106 to the *minor topic*. Table 1 summarizes the results of both availability and marketing searches.

Table 1. Results of the alcohol availability and marketing search strategies.

Tabela 1. Rezultati o dostopnosti in trženju alkohola po iskalnih strategijah.

	AVAILABILITY	MARKETING
Relevant	214	249
Major topic	103	143
Minor topic	111	106
Non relevant	759	533
Possibly relevant but abstract not available	2	23
Abstract not available	9	14
Insufficient information in abstract	6	9
TOTAL	990	828

### 3.1 Research on alcohol availability

The USA is heading the list of relevant articles on alcohol availability with a total percentage of 52.3% of publications during the whole analysed period, followed by the European Union (22.5%) and Australia (10.3%). Focusing on the European Union, 11 of the current EU Member States, Switzerland and Iceland have published on alcohol availability over the last two decades (Table 2). Breaking down the data Sweden and the UK drew as the countries with the highest percentage of publications on this topic: each one represents 6.1% of the total publications, and 27.1% of the European publications. There has been an increase in the publication of articles devoted to alcohol availability since 2000, which was tripled during the 2005-2009 period.

Considering the major/minor criteria, when analysing the total numbers there are no differences in the number of publications classified as major topic (103) and minor topic (111), but breaking down by periods of publication, there was an increase of publications classified as major during 2005-2009, not only in total numbers even in specific countries such as USA, Australia and the European Union.

Figure 1 shows the total number of publications on alcohol availability during the studied period for the most productive regions countries/regions.

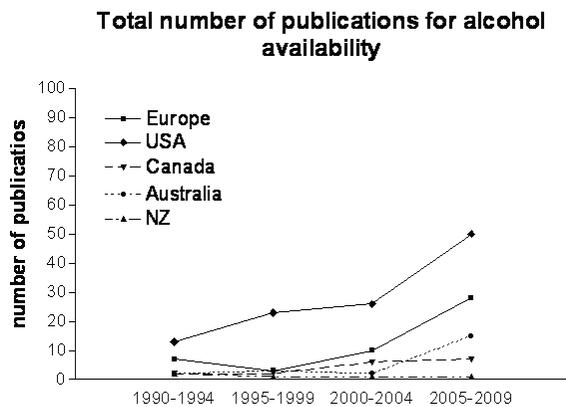
Table 2. Relevant articles on alcohol availability according to the country of affiliation of the first author and the major (M) and minor (m) topic criteria over 5-year publication periods. The % in brackets represents only European data.

Tabela 2. Članki o dostopnosti alkohola glede na geografsko poreklo prvega avtorja in velik (M) ter majhen (m) vsebinski kriterij v zadnjih petih letih. Odstotki v oklepajih predstavljajo podatke za Evropo.

TOPIC	1990-1994			1995-1999			2000-2004			2005-2009			All periods			% TOTAL ALL REGIONS
	M	m	all	M	m	all										
EUROPE																
Sweden	0	1	1	0	0	0	2	2	4	5	3	8	7	6	13	6.1% (27.1%)
UK	1	2	3	0	0	0	2	2	4	3	3	6	6	7	13	6.1% (27.1%)
Netherlands	0	0	0	0	0	0	0	0	0	4	0	4	4	0	4	1.9% (8.3%)
Denmark	0	1	1	0	1	1	0	0	0	0	1	1	0	3	3	1.4% (6.3%)
Finland	1	0	1	0	0	0	0	0	0	2	0	2	3	0	3	1.4% (6.3%)
Germany	0	0	0	0	1	1	0	0	0	0	1	1	0	2	2	0.9% (4.2%)
Iceland	0	0	0	0	1	1	0	0	0	0	1	1	0	2	2	0.9% (4.2%)
Spain	0	1	1	0	0	0	0	0	0	1	0	1	1	1	2	0.9% (4.2%)
Switzerland	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2	0.9% (4.2%)
Estonia	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0.5% (2.1%)
France	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0.5% (2.1%)
Poland	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0.5% (2.1%)
Slovenia	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0.5% (2.1%)
<b>TOTAL EUROPE</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>10</b>	<b>17</b>	<b>11</b>	<b>28</b>	<b>25</b>	<b>23</b>	<b>48</b>	<b>22.5%</b>
US	5	8	13	8	15	23	9	17	26	32	18	50	54	58	112	52.3%
Australia	1	1	2	2	1	3	2	0	2	10	5	15	15	7	22	10.3%
Canada	0	2	2	1	1	2	3	3	6	1	6	7	5	12	17	7.9%
New Zealand	1	1	2	0	1	1	1	0	1	0	1	1	2	3	5	2.3%
Brazil	0	0	0	0	0	0	1	0	1	0	1	1	1	1	2	0.9%
Japan	0	0	0	0	0	0	0	0	0	1	1	2	1	1	2	0.9%
Israel	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0.5%
Thailand	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0.5%
Trinidad and Tobago	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0.5%
Not identified	0	0	0	0	0	0	0	3	3	0	0	0	0	3	3	1.4%
<b>TOTAL ALL REGIONS</b>	<b>9</b>	<b>17</b>	<b>26</b>	<b>11</b>	<b>22</b>	<b>33</b>	<b>22</b>	<b>29</b>	<b>51</b>	<b>61</b>	<b>43</b>	<b>104</b>	<b>103</b>	<b>111</b>	<b>214</b>	

Figure 1. The number of publications on alcohol availability from 1990 to September 2009: Europe, US, Canada, Australia/New Zealand.

Slika 1. Število objav o dostopnosti alkohola od leta 1990 do septembra 2009: Evropa, ZDA, Kanada, Avstralija/Nova Zelandija.



### 3.2 Research on alcohol marketing

More than 50% of all the relevant articles on alcohol marketing were published by a USA first author (59.0%), followed by the European Union (15.7%), Australia (8.5%) and New Zealand (8.0%). Regarding the European Union, eight of the current EU Member States and Switzerland appear in the list of European countries with publications on this topic (Table 3). Breaking down the data for European publications, 48.7% of the articles about alcohol marketing were published in the UK. The second country in the ranking was the Netherlands with 18.9% of European publications.

Regarding the major/minor categorization, articles classified as major (143) exceed those classified as minor (106). Breaking down the periods of publication, there was an increase of publications classified as major during 2005-2009, not only globally but also in specific countries such as the USA, Australia, New Zealand and the European Union.

Figure 2 shows the total number of publications on alcohol marketing during the studied period for the most productive regions and countries.

Figure 2. The number of publications on alcohol marketing from 1990 to September 2009: Europe, US, Canada, Australia/New Zealand.

Slika 2. Število objav o trženju alkohola od leta 1990 do septembra 2009: Evropa, ZDA, Kanada, Avstralija/Nova Zelandija.



Finally, a statistically significant increase over time in the number of publications has been found in the USA ( $r=1.00$ ;  $p=0.01$ ) for both the availability and marketing topics, but not in the other countries.

Table 3. Relevant articles on alcohol marketing according to the country of affiliation of the first author and the major (M) and minor (m) topic criteria over 5-year publication periods. The % in brackets represent only European data.

Tabela 3. Članki o trženju alkohola glede na geografsko poreklo prvega avtorja in velik (M) ter majhen (m) vsebinski kriterij v zadnjih petih letih. Odstotki v oklepajih predstavljajo podatke za Evropo.

	1990-1994			1995-1999			2000-2004			2005-2009			All periods			% TOTAL ALL
TOPIC	M	m	all	M	m	all	REGIONS									
EUROPE																
UK	0	5	5	2	1	3	2	0	2	6	3	9	10	9	19	7.7% (48.7%)
Netherlands	0	0	0	0	0	0	0	0	0	5	2	7	5	2	7	2.8% (17.9%)
Switzerland	0	0	0	0	0	0	0	3	3	0	0	0	0	3	3	1.2% (7.7%)
Belgium	0	0	0	0	0	0	0	0	0	2	0	2	2	0	2	0.8% (5.1%)
Denmark	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2	0.8% (5.1%)
Estonia	0	0	0	0	0	0	0	0	0	0	2	2	0	2	2	0.8% (5.1%)
Spain	0	0	0	0	1	1	0	0	0	0	1	1	0	2	2	0.8% (5.1%)
Germany	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0.4% (2.6%)
Poland	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0.4% (2.6%)
<b>TOTAL EUROPE</b>	<b>0</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>14</b>	<b>8</b>	<b>22</b>	<b>18</b>	<b>21</b>	<b>39</b>	<b>15.7%</b>
US	15	5	20	13	8	21	15	19	34	46	26	72	89	58	147	59.0%
Australia	5	1	6	0	2	2	3	2	5	7	1	8	15	6	21	8.5%
New Zealand	1	2	3	4	2	6	0	2	2	7	2	9	12	8	20	8.0%
Canada	3	2	5	0	1	1	0	1	1	1	0	1	4	4	8	3.2%
Ghana	0	0	0	0	0	0	0	1	1	0	1	1	0	2	2	0.8%
Israel	1	0	1	0	1	1	0	0	0	0	0	0	1	1	2	0.8%
South Africa	1	1	2	0	0	0	0	0	0	0	0	0	1	1	2	0.8%
Brazil	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0.4%
Japan	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0.4%
Thailand	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0.4%
Not identified	0	1	1	1	0	1	0	2	2	1	0	1	2	3	5	2.0%
<b>TOTAL ALL REGIONS</b>	<b>26</b>	<b>19</b>	<b>45</b>	<b>21</b>	<b>17</b>	<b>38</b>	<b>20</b>	<b>30</b>	<b>50</b>	<b>76</b>	<b>40</b>	<b>116</b>	<b>143</b>	<b>106</b>	<b>249</b>	

## 4 DISCUSSION

The aim of the present study was to provide an overview of the volume of indexed scientific publications on alcohol research over the last two decades published

in English, comparing European scientific production with other regions of the world. In the framework of the AMPHORA project, we focused our efforts on two main topics, the availability and marketing of alcoholic beverages, as relevant indicators of scientific concern

about alcohol policy and public health strategies that influence alcohol consumption.

This study is a preliminary approach to the state of these topics and some considerations should be kept in mind. First, although the availability and marketing of alcoholic beverages are relevant topics in the alcohol research field, our conclusions regarding alcohol research might only apply to these two areas. Second, the search was conducted using PubMed for the advantages that this tool offers (a broad range of research topics, daily updates, no restriction of permitted keywords), although it may introduce a bias against non-medical research. Third, keeping in mind that we focus our interest on the international diffusion of these topics, the search was restricted to indexed journals published in English and thus articles published in other languages were not included. This decision implies that some other relevant European documents concerning alcohol availability and marketing have been excluded, mainly both scientific and/or indexed non-English publications and grey literature (i.e.: local studies, Ministry's reports and doctoral thesis). Finally, only the country of affiliation of the first author was considered for classification and consequently the contribution of European researchers and research centres might have been ignored in some cases.

Considering these facts, the results indicate that, although there have been an increasing number of publications during the last decade, the overall internationally published indexed scientific production on alcohol availability and marketing in the European region is far behind the USA (22.5% vs 52.3% for the availability of alcohol, and 15.7% vs 59.0% for alcohol marketing). This difference could be ascribed to several reasons that will be discussed below, always keeping in mind that the search was restricted to indexed scientific publications in English, which potentially have a more international diffusion.

One of the main reasons for these differences might be the language barrier faced by most European researchers, since different languages coexist in the European Union and writing in a non-native language may be a disadvantage for non-English researchers. This argument is supported by the fact that within European countries, the UK ranks first in both research areas.

Another relevant fact that could be linked to these differences might be the lower rates of investment in Research & Development of the European Union compared to the USA (1.83% vs 2.67% of GDP, respectively) [7]. The lower figures of European publication on these topics may reflect the smaller

budget devoted to research in the European Union.

It also is important to consider that the European region is the top world producer of alcohol [3], with a long-lasting tradition of drinking alcoholic beverages. The alcohol industry has a strong economic relevance in Europe: 70% of the world's alcohol exports and almost half of the imports involve the European Union [3]. In addition, many producers have long claimed, though with no evidence, that alcohol marketing is not linked to an increase in sales and consumption. Thus, economic and cultural factors should be taken into account when facing the fact that restrictions on the availability and marketing of alcoholic beverages are less stringent in Europe than in other regions [4]. Moreover, these topics have hardly been taken into account in the alcohol policy agenda. This might have resulted in a decreased scientific interest in these two topics in Europe.

Finally, even though European drinking patterns tend to homogenize [8, 9], the volume of research on alcohol disseminated at an international level is distinctly unequal among European countries. In fact, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) highlights the fact that each country develops its own preferential research lines. For example, UK researchers focus on epidemiology and social sciences studies and also in the psychiatry field; the Netherlands specialises in epidemiology and the Scandinavian countries in alcohol policies and sociological studies. On the other hand, Germany and France are more interested in clinical research and Spain in biomedical approaches [10]. Our results confirm the EMCDDA observations. Out of 87 articles published on alcohol availability or marketing in Europe, 73.4% were generated in a few countries: UK (36.8%), the Netherlands (12.6%) and the Scandinavian countries (Sweden 14.9%; Denmark 5.7%; and Finland 3.4%). Southern and eastern European countries have a much lower volume of research on these topics.

## 5 CONCLUSIONS

In conclusion, our data indicates that public health research into alcohol in Europe faces two challenges. On the one hand, there is a need to catch up with those developed regions where alcohol produces less harm than in Europe, while investment in research is higher. On the other hand, the volume of alcohol-related research seems to be distinctly unequal among European countries. Therefore, at the level of research, alcohol should be placed higher on the agenda of European public health research, and at the

level of researchers, Western and Nordic European researchers should be encouraged to include in their teams scientists from countries where alcohol research is scant or almost non-existent. Further studies using a more comprehensive methodology should confirm our results.

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