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BEST PRACTICE TOOLS TO PREVENT CANCER ACROSS EUROPE

COULD HARM REDUCTION POLICIES PLAY A PIVOTAL ROLE?

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COULD HARM REDUCTION POLICIES PLAY A PIVOTAL ROLE?

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EXECUTIVE SUMMARY

Every nine seconds a new case of cancer is diagnosed in the European Union. The disease places a huge burden on our health and social systems, puts pressure on national budgets and negatively impacts the productivity and growth of the economy, including a healthy workforce.

Therefore, the European Commission launched the first public consultation on Europe's Beating Cancer Plan in February 2020 to allow citizens and stakeholders to express their opinion on the best ways to tackle the disease. A record number of 384 stakeholders submitted their opinions.

Our analysis has revealed an apparent overarching theme related to specific sectors (tobacco, alcohol, nutrition), as well as encouraging the uptake of preventative strategies such as harm reduction. Therefore, this study focuses on these three sectors to allow for a more in-depth research and exploration into possible solutions and strategies that can support consumers to change their behavior, to adopt better life styles, and to encourage policy change and actively support cancer prevention by also pushing forward important relevant national success stories.

aNational and European stakeholders have a pivotal role to play in the Cancer Plan and we should look at the **best practices** highlighted in this paper to leverage the success of the Member States at a European level.

As Health Commissioner, Stella Kyriakides, said "we must therefore ensure that regulatory frameworks remain up-to-date, fit-for-purpose and citizen centered. Open, transparent dialogue with stakeholders and citizens throughout the policy making process is essential to win their trust and support."

This study confirms a clear need for European policymaking to be based on evidence and science. **The Europe's Beating Cancer Plan can have a true impact on the public health of citizens in Europe but only by adopting an evidence-based approach and ensuring the consumer is correctly informed of their options.**

PART 1

INTRODUCTION AND CONTEXT

1. INTRODUCTION AND CONTEXT

Every nine seconds a new case of cancer is diagnosed in the European Union. Even though Europe makes up only 9% of the world's population, it registers a 25% share of the global cancer burden.[1] **More than one in every four deaths (26%) is due to cancer, making it the second leading cause of mortality in Europe after cardiovascular diseases.**

Cancer places a huge burden on our health and social systems, puts pressure on governmental budgets and negatively impacts the productivity and growth of the economy, including a healthy workforce. The most common cancers are breast cancer, followed by colorectal, lung and prostate cancer. In the EU-28, **the estimated number of new cases of cancer in 2018 was approximately 1.6 million in males and 1.4 million in females.[2]**

Cancer incidence increased by around 50% from 2.1 million to 3.1 million cases over the course of 13 years (1995-2018). Although the increase in new cases has been slowing and deaths have been decreasing in all age groups below 65 years, the total number of deaths (focused on mortality, regardless of age group) is still growing[3] and expected to double by 2035.

The latest evidence demonstrates that demographic development is strongly linked to the increase in cancer incidence. However, it would be wrong to assume that it is the most important influencing factor. Lifestyle factors, the introduction of screening programs and the epidemiological development in other diseases contribute to the increase in cancer mortality. If the effect of the competing factors, such as cardiovascular diseases, could be mitigated, then cancer mortality would decrease significantly.[4]

Given the afore-mentioned socio-economic importance in fighting cancer in Europe, the European Commission launched the first public consultation on Europe's Beating Cancer Plan in February 2020 to allow citizens and stakeholders to express their opinion on the best ways to tackle the disease. The submissions will feed into the Beating Cancer Plan which will propose actions at every stage of cancer - prevention, diagnosis, treatment and survivorship. The success of the plan will be vital in the fight against the disease.

Our research sets out to quantify the impact of preventable cancers across the EU, the role of lifestyles and behavior on the cancer mortality level and the potential of cancer prevention policy. This specifically involves policy focused on harm reduction policies, to save lives and reduce the impact of preventable cancers in Europe.

Our research, along with our detailed and comprehensive analysis of the submissions to the Beating Cancer Plan, shows the need for EU and national legislators to draw up comprehensive **cross-sectoral strategies that place the cancer patient at the center, involving both the public and private sectors**, while, at the same time, taking responsibility for the success of the plan.

Cancer prevention must remain a policy priority for the EU. The potential for easing the public health burden, the burden on governmental budgets and the impact on

Europe's workforce and economies is too important to ignore. An enormous amount of lives could be saved by combatting preventable forms of cancer effectively. **Our study highlights the need for the development and promotion of programs based on data collection and monitoring relating to preventable cancers, programs encouraging a shift to healthy lifestyle policies and the encouragement of open dialogues among stakeholders to embrace harm reduction strategies to beat cancer**.

PART 2

QUANTIFYING CANCER'S HEALTH BURDEN IN EUROPE

2. QUANTIFYING CANCER'S HEALTH BURDEN IN EUROPE

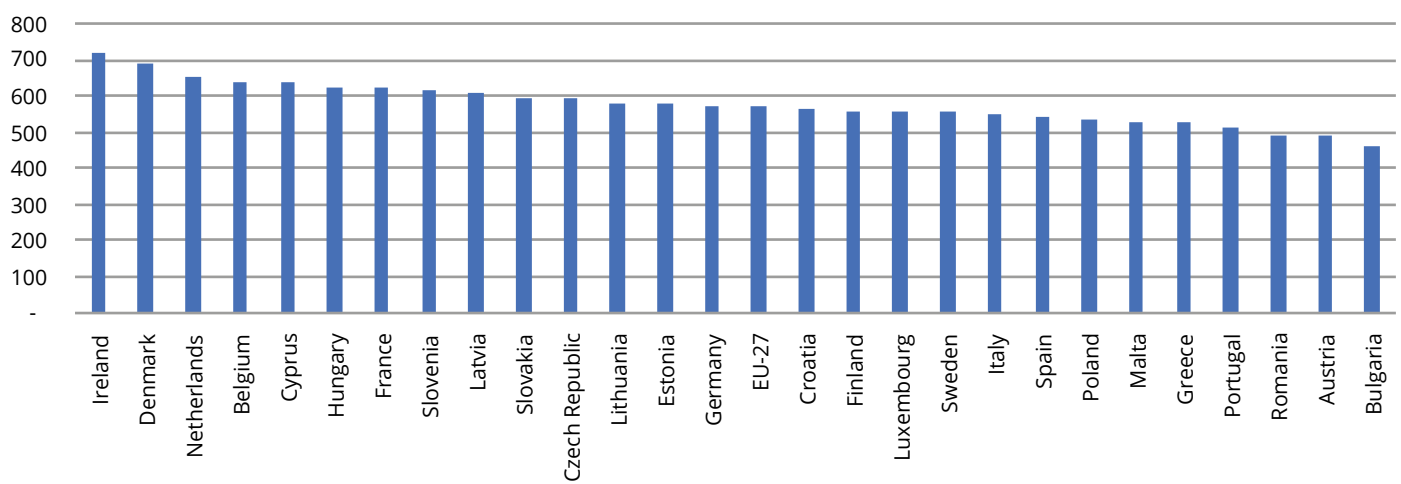
There are large variations in cancer incidence across EU countries (see Figure 2.1). Ireland, Denmark, the Netherlands, Belgium and Cyprus are expected to have the highest age-standardized incidence rates (all cancers combined), with rates **more than 10% higher than the EU average**[5].

These differences among countries reflect not only variations in the real number of new cancers occurring each year, but also differences in national policies regarding cancer screening to detect different types of cancer as early as possible, as well as differences in the quality of cancer surveillance and reporting.

A comprehensive measure to assess the health burden caused by cancer can be obtained by using DALYs (disability-adjusted life years). DALYs show the morbidity aspect (the impact of a disease on people's daily lives) and the mortality aspect (premature death due to the disease). One DALY represents one year of a healthy life lost and the sum of all DALYs across a country's population represents the burden of disease in that country. DALYs can be viewed as a measure of the gap between the current health state of a population and the ideal situation in which the entire population lives to an advanced age, free of disease and disability.[6]

Fig. 2.1 Estimated incidence rate for all cancers, EU 27, 2020 (age standardised rate per 100,000 population)

Source: ECIS (European Cancer Information System)



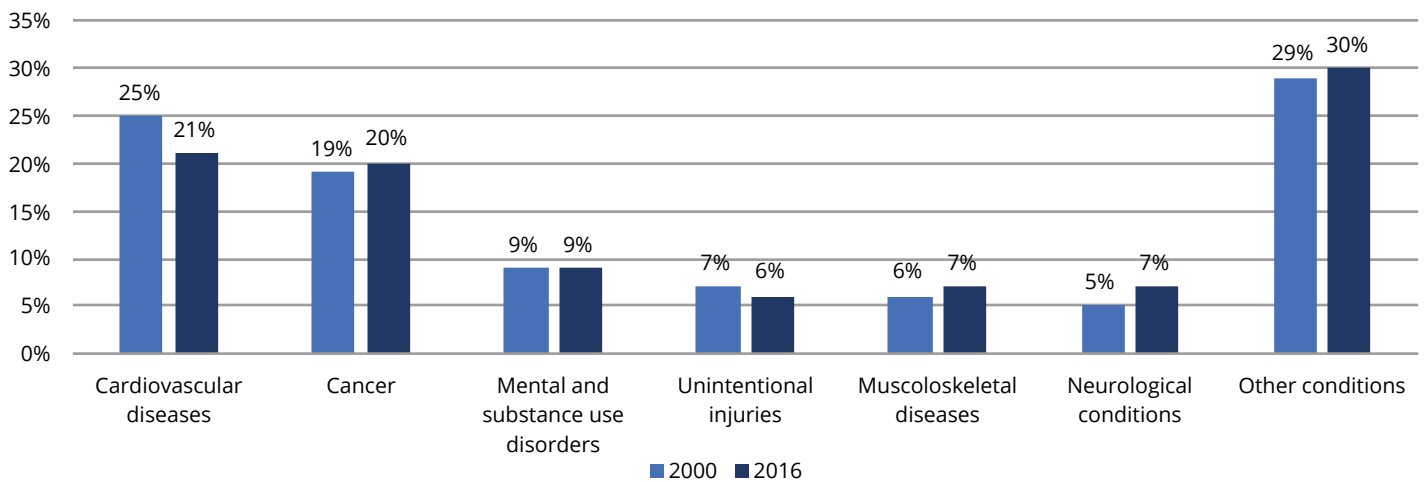
In comparison with the disease burden between disease groups, this measure reveals many diseases that, while not fatal, still result in a significant health and economic burden.

Figure 2.2 below shows a comparison between the disease burden measured in DALYs in Europe in 2000 and 2016.[7] While the good news is that the total number of DALYs has decreased from 157.5 to 154.3 million, despite the population growth during that time, **cancer (defined as malignant neoplasms) caused the second-greatest share of DALYs, increasing from 19% to 20% of the total**. **Cancer could soon surpass cardiovascular diseases as the disease group causing the greatest societal burden and it has already done so in many wealthy countries** (Belgium, Denmark, France, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Slovenia, Spain, Switzerland, and the UK).

As previously mentioned, this development is driven by a variety of factors that can be addressed by implementing **long-term policy measures.**

Fig. 2.2 Disease burden of the largest groups of disease groups in Europe (%, 2000 vs 2016)

Source: Latest update WHO data



PART 3

THE IMPACT OF LIFESTYLES ON CANCER MORBIDITY AND MORTALITY: THE IMPORTANCE OF INTERVENING ON PRIMARY PREVENTION POLICIES

3. THE IMPACT OF LIFESTYLES ON CANCER MORBIDITY AND MORTALITY: THE IMPORTANCE OF INTERVENING ON PRIMARY PREVENTION POLICIES

More than half of the cancers occurring today could be prevented if we applied the knowledge we already have and promoted primary prevention policies.[8] The growing field of implementation science[9] has clearly demonstrated that the cancer burden could be reduced by introducing changes in individual and population behaviors, and by increasing **public health efforts based on robust scientific knowledge** and a **social commitment to change**. The main known risk factors related to cancer are[10]:

- tobacco use
- being overweight or obese
- unhealthy diet with low fruit and vegetable intake
- lack of physical activity
- alcohol use
- sexually transmitted HPV-infection
- hepatitis infection or other carcinogenic infections
- ionizing and ultraviolet radiation
- urban air pollution
- indoor smoke from household use of solid fuels

According to the Organization for Economic Co-operation and Development (OECD), **tobacco consumption** is the **largest avoidable health risk** in the EU, causing over 300,000 premature deaths per year.[11] It is a major risk factor for at least two of the leading causes of mortality, circulatory diseases and cancer, and an important risk factor for many serious respiratory diseases. The proportion of adults who smoke daily varies more than two-fold across EU countries but, on average, the numbers have decreased from 24% in 2006 to 20% in 2016.

Alcohol-related harm is another **major public health concern in the EU, both in terms of morbidity and mortality**.[12] **High alcohol consumption** is associated with increased risk of heart diseases and strokes, as well as liver cirrhosis and certain cancers. Moreover, it contributes to the increase in cancer mortality due to coexisting causes (cardiovascular diseases and cancer, for example). According to sales data, overall alcohol consumption was, on average, 9.8 liters of pure alcohol per adult across EU Member States in 2016, down from 11 liters in 2006. Although overall alcohol consumption per capita is a useful measure to assess long-term trends, it does not identify sub-populations at risk from harmful drinking patterns. Heavy episodic drinking is more common among young men aged 20-29.[13]

Obesity is a **well-known risk factor leading to numerous health problems**, including hypertension, high cholesterol, diabetes, cardiovascular diseases and some forms of cancer. Moreover, it **contributes to the overall cancer mortality as it is linked to worse clinical outcomes**. On average, across EU countries, 16% of adults were obese in 2014 (latest OECD available data for the EU), and obesity has increased in almost all European countries since 2000, according to self-reported data. A number of behavioral and environmental factors have

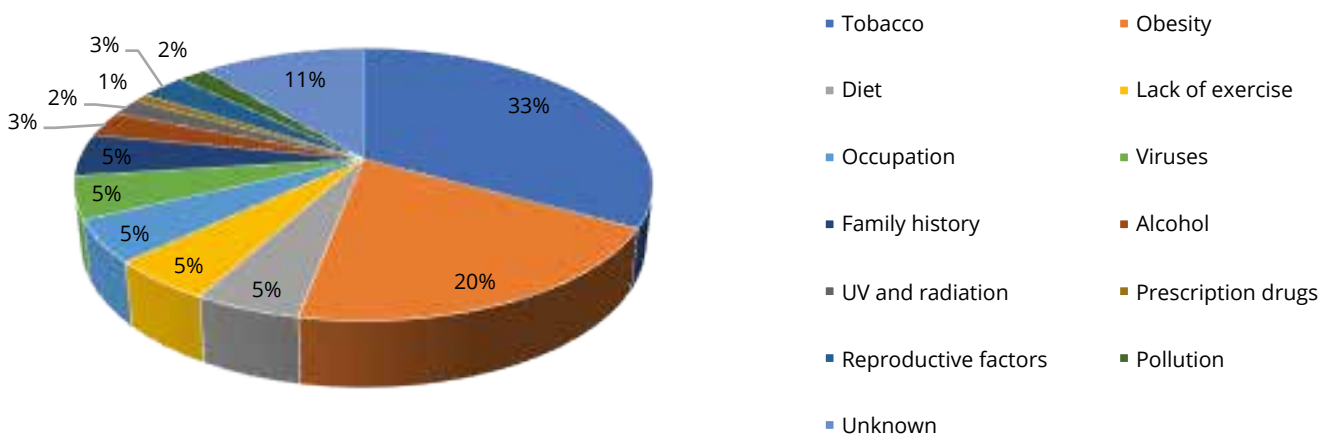
contributed to the long-term rise in obesity rates across EU countries, including the widespread availability of energy-dense foods and an increasingly sedentary lifestyle. These factors have created obesogenic environments, putting people, especially those in socially disadvantaged groups, more at risk.

Pollution of air, water and soil with carcinogenic chemicals contributes to the cancer burden to differing degrees depending on the geographical setting, but it has been estimated that outdoor air pollution has contributed to 3.2 million premature deaths worldwide. Over the past 40 to 50 years, the **International Agency for Research on Cancer (IARC) has classified over 1,000 agents, with the majority being occupational chemicals and some complex mixtures**. The evaluations have shown that 50% are definitely, probably or possibly carcinogenic to humans, while the remaining 50% are not classifiable because of insufficient data.[14] Several key studies[15] suggest a higher breast cancer risk due to exposure to dichlorodiphenyltrichloroethane (DDT), dioxins, perfluorooctanesulfonamide (PFOSA), air pollutants and, for occupational exposure, to solvents and other carcinogens such as gasoline.

Preventable cancer risks, including unhealthy lifestyle choices and consequent health outcomes, are prevalent particularly among people of lower socio-economic groups, lower education and limited access to information and health services.[16] Amongst these factors, **physical inactivity and tobacco use alone** are **linked to more than 50% of preventable cancers.[17]**

Fig. 3.1 Distribution of preventable cancer-related factors

Source: Comparator report on cancer in Europe, IHE 2019



Thus, reducing cancer morbidity and mortality strongly depends on the cooperation of a variety of stakeholders, including citizens. The way to beat cancer requires a **"health in all policies approach"** and would involve acknowledging that health must play a key role in policymaking across many sectors.

A "health in all policies approach" would involve:

- **Public authorities and national governments intervening to define cross-sectoral strategies and implementing active policies that provide citizens with incentives to choose healthier lifestyles.**

All stakeholders should recognize methods for prevention, such as harm reduction, within health strategies, to address health inequalities and champion social justice. Healthy lifestyles are not only a matter of willingness, but also of **opportunity**. Thus, legislation can deeply impact a population's behavior, widening the range of opportunities to apply to as many citizens as possible. Though legislation on product prices and labelling might have animpact consumption choices and habits, induced behavioral changes, particularly in the most at-risk population groups, can have a deeper long-term impact. They result in a permanent effort of the population in adopting sustainable lifestyle choices, and monitored consumption patterns. **These choices can be fostered by incentives supporting less risky alternatives for consumption and lifestyle habits** which, on the one hand, are effective since they help to avoid excessive exposure to cancer-related risk factors and, on the other, allow for greater access to sustainable behavior opportunity for lower socio-economic groups (i.e. green spaces and areas for physical activity, sustainable mobility intervention, walking paths, school based awareness campaigns, community based programs);

Emphasis on the importance of education and information to influence the population's general behavior and consumption patterns to lower cancer morbidity, and to help patients living with cancer.

Health professionals should be involved in recommending, monitoring and leading specific lifestyle choices for patients in order to obtain better clinical outcomes and/or lower the occurrence of critical conditions. The objective should be to reach a better quality of life for cancer patients. Education and information campaigns should involve different stakeholders, socio-health professionals and institutions. Their actions should be coherent and within a comprehensive plan to achieve the same final objectives. **The lack of information tends to create confusion on the best choices to follow and risks reducing the effective efforts made by different actors.**

- **Early detection of cancer greatly increases the chances for successful treatment**

There are two major elements of early cancer detection: **education to promote screening participation and early diagnosis.** Health professionals should participate in training and education programs that encourage research, strengthening their contribution to prevention and early diagnosis and spreading awareness among health workers of cancer warning signs. Health professionals should feel responsible for providing the most up-to-date information to patients on diagnostic procedures and on therapeutic paths to follow. Some

Member States have already demonstrated significant reductions in cancer-related mortality through well-organized population-based screening programs[18]. As reported in the second report on the implementation of the Council Recommendation on cancer screening (2017), most Member States follow the European guidelines to ensure high participation (systematic written invitation of the eligible women with prefixed appointment, functioning screening registries etc.) and appropriate quality assurance (a team responsible for quality assurance, linkage between the screening and cancer registries, etc.), but there is still room for improvement in many programs to close the gap between and within Member States.

PART 4

HARM REDUCTION TOOLS FOR HEALTH PREVENTION

4. HARM REDUCTION TOOLS FOR HEALTH PREVENTION

Harm reduction can be described as a strategy directed at individuals or groups that aims to reduce the harm associated with certain behavior.[19] When applied to extreme cases such as substance abuse, harm reduction accepts that a continuing level of substance use is inevitable and defines objectives as reducing adverse consequences. It emphasizes the measurement of health, social and economic outcomes, as opposed to the measurement of substance consumption. **Strategies to reduce harm and incidence is pragmatic and seeks to maximize the health benefits, minimize the costs to public health and lower health inequalities**. **Harm reduction strategies should be personalized, patient-centered and included in prevention, assistance and monitoring programs**.

Harm reduction **is more of an attitude than a fixed set of rules or regulations**. It has given rise to a set of compassionate and pragmatic approaches that span various fields, including public health policy, prevention, intervention, education, peer support and advocacy. These approaches aim to reduce harm stemming from health-related behaviors that are considered to put the affected individuals and/or their communities at risk. The application of pragmatic and compassionate approaches to achieve harm reduction and quality of life enhancement grew out of a recognition that some people will continue to engage in risky behavior even as they experience associated harm. For these individuals, these approaches provide a middle ground between total abstinence, which may be difficult to achieve, and continued harmful use/behavior and, thereby, open up other pathways for change, while reducing negative consequences for both the affected individual and their communities.

Broadly speaking, harm reduction is a complementary strategy that is intended to complement demand reduction and supply control interventions. Moreover, a distinction is usually made between harm reduction initiatives, which aim to minimize harm once it has actually been caused, and risk reduction initiatives, which aim to prevent harm being caused.

4.1. ALCOHOL CONSUMPTION – HARM REDUCTION POLICIES AND BEST PRACTICES

Studies have shown that harm reduction approaches to excessive alcohol consumption are at least as effective as abstinence-oriented approaches in reducing alcohol consumption and alcohol-related consequences.[20]

In 1979, the World Health Assembly called upon its member states to develop and adopt appropriate legislation and measures to tackle alcohol misuse.[21] This culminated in the endorsement of the global strategy on the harmful use of alcohol in 2010 that supports ten target areas for national actions including:

- health sector response
- community actions
- drink-driving policies

- reducing the negative consequences of intoxication
- reducing the public health effect of illegally and informally produced alcohol
- monitoring and surveillance of the above policies' impacts.

In 2011, 53 member states of the WHO Regional Committee for Europe approved a new action plan to reduce the harmful use of alcohol. The plan is closely linked to the Action Plan for implementation of the European Strategy for the Prevention and Control of Non-Communicable Diseases (latest update 2016-2025[22]) and is based on the following five objectives to:

- raise awareness of the magnitude and nature of the health, social and economic burdens of the harmful use of alcohol;
- strengthen and disseminate the knowledge base;
- enhance the capacity to manage and treat alcohol use disorders;
- increase the mobilization of resources required for concerted action to reduce the harmful use of alcohol;
- improve systems for monitoring and surveillance.

What works?

- **Reducing the availability of alcohol:** Evidence suggests that reducing the availability of alcohol through restricting the density of alcohol outlets can be effective in reducing alcohol-related harm[23]. With the most deprived neighborhoods often having the highest density of alcohol outlets[24], regulating these, may help to reduce socio-economic inequalities in alcohol-related harm.
- **Screening and brief intervention:** Screening and brief intervention is often based in health care settings. It aims to identify at-risk drinkers and provide them with a short feedback and motivational session to challenge and reduce harmful drinking practices. Screening and brief intervention is generally regarded as being an effective way to reduce alcohol consumption and harm among heavy drinkers.[11] Universal screening and brief intervention has the potential to reduce inequalities in alcohol-related morbidity and mortality by preventing alcohol-related health problems before their onset. Targeted screening and brief intervention in lower socio-economic groups, disproportionately affected by alcohol-related health problems may also be effective in addressing inequalities. Their effectiveness has been, for example, shown in Sweden[25], Finland[26] and Spain[27], however, the programs' effectiveness was seen to be greater for people with higher levels of education, thus highlighting the need to tailor treatment strategies to the education level of the target population. Research on screening uptake in other fields suggests that rates are lower among low socio-economic groups, and that barriers such as lower health literacy among these groups need to be addressed[28].
- **Education and awareness campaigns**: Different university and/or student and medical associations around Europe have set up partnerships with alcohol producers to educate and raise awareness among young people to build a long-term moderate, risk-consciousness and, thus, healthy drinking patterns. For example, in 2018/2019, a partnership

between alcohol producers and the Latvian Medical Association and Latvia Student Union was set up to show the social impact of binge drinking and to educate young people on the dangers associated with the over-consumption of alcohol.[29] In 2019, the social media campaign reached 90,000 young adults in the target group. A pre-campaign questionnaire showed that around 47% of young people drank alcohol 2-3 times a month. A post-campaign questionnaire demonstrated a decrease in this rate to 39%.[30] Between 2010 and 2019, an interesting program was conducted by Pernod Ricard in cooperation with the ESN student association (Erasmus Student Union).[31] It was coordinated at the European level by Pernod Ricard's CSR department and the International Board of ESN[32]. The program's aim was to support responsible partying through the implementation of a peer-to-peer approach. In almost ten years (2010-2019), 500 "Responsible Parties" have reach more than 400,000 students in 32 countries, raising awareness of responsible alcohol consumption and reducing alcohol related harm during student parties.

4.2. TOBACCO CONSUMPTION – HARM REDUCTION POLICIES AND BEST PRACTICES

Countries around the world have been considering policies to improve negative tobacco-related health outcomes by regulating the alternative tobacco product market in order to reduce harm and addiction. Efforts to diminish the public health burden of smoking by changing the composition of cigarettes involves trade-offs between making smoking habits less hazardous and making smoking less attractive. Tobacco harm reduction means encouraging and enabling smokers to reduce their risk of tobacco-related illness and death by switching to less hazardous tobacco products. However, at present, scientific studies have revealed controversial results, with some indicating evidence of the potential harm of alternative nicotine products[33],while others revealing less harm, especially for electronic cigarettes[34]. When reviewing the evidence from hundreds of published studies, the uncertainty seems to concern the degree of harm rather than the presence of harm related to these products, but we have no evidence on the long-term health effects of e-cigarette consumption. It will take many years of research to develop definitive data on reduced risk nicotine products, but it is clear that maximizing the collection and analysis of data will ensure that consumers as well as policy-makers are accurately informed and guided in their decision-making related to public health issues. With an already established market for these products, indeed, the risk is that individual choices taken without a coherent harm reduction approach could further exacerbate the problems posed by tobacco, alcohol and other products, while the aggregate effect of individual informed choices could make an important contribution to public health.

What works?

- **Smokeless tobacco products, e.g., Swedish snus:** The long-standing Swedish policy of accepting moist

snuff (Snus) to compete with burnt tobacco has provided evidence of significant health benefits, with male smoking and tobacco-related mortality in Sweden being among the lowest in Europe for many years[35]. WHO data from 2018 confirms this information.[36] There is additional evidence suggesting that the uptake of Snus can result in moving from high to low-risk tobacco use or quitting altogether[37]. Sweden is the only country in Europe to have reached the WHO goal of reducing the prevalence of cigarette smoking to less than 20% of the adult population by embracing Snus. Despite Sweden having an overall daily consumption of tobacco (including snus) close to the EU level (25%[38]), Sweden had the lowest level of lung cancer out of 10 comparable countries in 2016[39]. 54% of Snus consumers are ex-smokers. The evidence available shows that Snus is significantly less harmful to health[40] than previously assumed when it was banned by the EU in 1991, and that the product can play a constructive role in a tobacco related harm reduction strategy. On 22 October 2019, the FDA granted the first-ever modified risk orders to Swedish Match USA, Inc. for eight snus smokeless tobacco products.[41] The FDA determined, supported by scientific evidence, these products will reduce harm and the risk of tobacco-related disease for individual tobacco users and benefit the health of the population as a whole [42].

- **Promotion of e-cigarettes by public authorities:** E-cigarettes are recognized as effective smoking cessation tools by public authorities in the UK, with the National Health Service providing information on how using e-cigarettes can help people quit smoking[43]. Other public health bodies and regulators encouraging smokers to switch to e-cigarettes include the Royal College of Physicians[44], the German Federal Institute for Risk Assessment[45] and the French Economic, Social and Environmental Council (CESE)[46]. The recently updated public health strategy in the UK recognizes that many smokers may not want, or be able, to quit smoking, but would like a safer alternative to cigarettes (HM Government, 2011). Guidelines published in June 2013 by The National Institute for Health and Care Excellence (NICE) in the UK recommended medicinal nicotine use on a long-term basis when needed to help people stop, cut down prior to quitting, reduce their level of, or temporarily abstain from, smoking. These guidelines were updated in 2018 and cover the use of licensed nicotine-containing products, and those that might be licensed by the Medicines and Healthcare Products Regulatory Agency (MHRA) in the future, such as e-cigarettes demonstrating the necessary quality and safety standards (NICE, 2013). Following the harm reduction indication for nicotine replacement therapies (NRTs) in the UK, the tobacco industry has started to invest in products that can meet medicine legislation quality standards. These corporations are committed to meeting the needs of smokers, which of course includes finding safer but equally satisfying alternatives to cigarettes. They will not want their products to be over-medicalized as smokers do not see themselves as ill, and so do not seek a medicine. However, some companies are demonstrating that they are prepared

to work within a regulatory framework focusing on medicine standard quality and safety, allowing appropriate oversight of communication through advertising to smokers.

- **E-cigarettes have been proven to be more effective smoking cessation tools than Nicotine Replace Therapies.** A randomized controlled trial (2019) showed that e-cigarettes are more effective than approved nicotine replacement therapies. This study examined smoking cessation at 1 year, and identified that twice more smokers managed to quit when using electronic cigarettes than when using pharmaceutical nicotine products.[47] Analyses of the data from the UK and the US have shown that vapor products are associated with increased success in cessation rates and in quit attempts [4849]. E-cigarette users were significantly more likely to report abstinence than either those who used NRT or no aid, respectively, 1.63 and 1.61 times more likely.[50] In addition, Canada's new tobacco control strategy acknowledges that the traditional cessation approaches are not the only tools available to help smokers' transition from smoking.[51]
- **Policy-making based on evidence:** According to a paper published by "Santé Publique France"[52], around 700,000 ex-daily smokers quit thanks to the use of e-cigarettes. An opinion published by Haut Conseil de la Santé Publique (HSCP) shows that vaping can be considered a smoking cessation aid for smokers who would like to completely break their habit. They also recommend informing, without resorting to advertising, healthcare professionals and smokers that e-cigarettes are a smoking cessation aid for smokers who wish to quit, and appear to be a means of reducing the risks of tobacco when used exclusively.[53] The French National Academy of Medicine recalled the proven advantages and unduly alleged disadvantages of the electronic cigarette. According to the institution, e-cigarettes are less dangerous than cigarettes and, therefore, it is preferable for a smoker to vape.[54]

4.3. OBESITY – HARM REDUCTION POLICIES AND BEST PRACTICES

Obesity is a risk factor for several major illnesses, including cardiovascular diseases, diabetes and cancer, affecting both one's risk of developing a disease and potential death, and is the result of a complex interplay of biological, genetic, environmental, cultural and psychosocial factors that influence appetite, satiety and food storage in the form of body fat. In addition, socio-economic factors and lower educational levels that generally promote the consumption of less expensive, high-caloric foods with low nutritional value and disparities in access to healthy food sources may account for the link between unhealthy nutritional habits and obesity. The crucial role of physical activity as a part of nutrition and health was also acknowledged. Physical activity is a key determinant of energy expenditure and, thus, fundamental to energy balance and weight control. The beneficial effects of physical activity on our metabolism are mediated by mechanisms that go beyond controlling excess body weight.

What works?

- **Establish policy, systems and/or environmental change:** In 2009, the World Cancer Research Fund (WCRF) and the American Institute for Cancer Research (AICR) drew up a report called "Policy and Action for Cancer Prevention"[55] addressing the external influences on people's eating and physical activity habits over a lifetime, and evaluated possible actions to change behavior. Estimates of cancer preventability were calculated for the USA, the UK, Brazil and China. The estimates suggest that about 11-20% of obesity-related cancers could be prevented if everyone had a healthy weight. This early paper proposed recommendations to nine groups of decision/policy-makers at all levels with a responsibility to give priority to public health, including prevention of obesity and cancer (multi-national bodies, civil society organizations, government, industry, media, schools, workplaces and institutions, health and other professionals, and citizens). Since the early 2000s, a growing number of public health agencies and organizations have developed initiatives and strategic plans that incorporate obesity prevention programs focused on policy, systems and/or environmental (PSE) change. The ultimate goal of PSE has been to increase opportunities to make healthy living easier, far-reaching and sustainable, recognizing that it cannot be done through individual level programs alone[56].
- **Advertising campaigns promoting healthier lifestyles:** There is strong evidence that mass media campaigns on physical activity can increase the awareness and attitudes of beneficiaries, while being cost-effective. The impact on improving physical activity and healthy eating behavior is more moderate but still positive. Change4Life, a social marketing component of a much broader response by the UK government to address obesity in England (Department of Health 2010), is one example. There is evidence that the campaign helped parents recognize the link between the behavior causing excess weight gain and negative health outcomes. Furthermore, according to the tracking study for the program, over one million mothers say they have made changes to their children's activity levels and/or diet as a result of the Change4Life advertising. By the second year, 180,000 more mothers claimed that their families adopted all eight of the Change4Life behaviors, and analysis of sales data from commercial partners suggested that Change4Life has had a positive impact on the types of food being purchased by families.
- **Infrastructure promoting physical activity:** There is strong evidence that neighborhood design policies and intervention can influence physical activity levels. In particular, changing urban environments to ensure a safe environment for exercise is associated with increased physical activity levels. There is evidence that investment in cycling infrastructures can increase the percentage of individuals cycling. As well, environmental projects may increase pedestrian activity, however, this review found no

evidence of by how much.

- **Holistic education programs:** Organized participatory programs, such as walking programs, were also identified as an effective strategy for increasing physical activity levels.[57] Portugal's Program Obesity Zero (POZ) was a multi-component, community-, family- and school-based intervention to reduce childhood obesity in low-income families in Portugal which showed good results. A total of 266 over-weight children aged 6–10 years from low income families across five municipalities in Portugal were included in the program. Parents and children attended four individual nutritional and physical activity counselling sessions, a one-day healthy cooking workshop and two extra-curricular sessions in school, providing nutrition education.

PART 5

EUROPE'S BEATING CANCER PLAN: RECOMMENDATIONS FROM THE PUBLIC CONSULTATION

5. EUROPE'S BEATING CANCER PLAN: RECOMMENDATIONS FROM THE PUBLIC CONSULTATION

On February 4, the European Commission launched the first public consultation on Europe's Beating Cancer Plan to allow EU citizens and stakeholders to express their opinions on the best ways to tackle cancer in Europe.[58] Citizens, patients, healthcare workers, researchers, employees in the pharmaceutical sector and policy-makers all contributed to the consultation on the Cancer Plan Roadmap, with a record number of **384 submissions**. Our analysis of the submissions revealed an overarching theme related to specific sectors with a large number of the submissions encouraging the uptake of strategies such as harm reduction.

Nearly 20% of all contributions supported the definition of harm reduction plans for alcohol or tobacco. One in every six submissions recommended policies which encourage the use of reduced risk nicotine products by smokers, such as e-cigarettes. At the same time, **approximately 15% called for guidelines and provisions on consumption for alcohol products**. **Just under 5% (25 submissions) highlighted the impact of pollution and chemicals and, similarly, 23 submissions focused on nutrition**. Nearly all submissions reflected the argument that **lifestyle and environment are fundamental to preventing and combatting cancer**[59].

The submissions including harm reduction suggestions often include more than one risk factor. **It is widely recognized that modifiable risk factors are best addressed through cross-sectoral, population-based policies and legislation creating health-enabling living environments, and not by measures placing the burden on individuals.** The generation of data on the link between environmental and lifestyle factors and cancer is needed and requires the allocation of sufficient resources to relevant EU Agencies in order to take the appropriate risk reduction measures, relative to the direct exposure and exposure due to environmental pollution. This **cross-sectoral strategy requires taking into account public health and social costs as benefice for regulatory action (as avoided costs) during the socio-economic analysis performed.**

5.1. SUBMISSIONS TO THE CANCER PLAN ON ALCOHOL INCLUDED THE FOLLOWING SUGGESTIONS

- **Promote a balanced diet and responsible drinking:** Promote a healthy lifestyle and a balanced diet, which can include a moderate consumption of wine, through educational initiatives on responsible drinking patterns; introduce communication and information campaigns at local, national and multi-national levels on the importance of a healthy lifestyle and a balanced diet; set up science-based information campaigns for consumers, also by means of digital tools; adopt specific measures to target fragile and more at risk population subgroups. However, reducing per capita alcohol consumption

should not be seen as an end in itself.[60]

- **Gather information on citizens' knowledge about excessive alcohol consumption:** To gather information that can drive evidence – based policy action requires updating the Eurobarometer question on EU citizen knowledge regarding the link between alcohol consumption and cancer;
- **Introduction of cross – border marketing and commercial communication measures:** These proposals include introducing health-related labelling messages on containers, while offering information to consumers and educating bartenders and shop owners;
- **Regulating on-sale and off-sale hours** and implementing effective controls on sales to minors;
- **Education programs:** Broad community-based actions to prevent harm and risky behavior, involving teachers, parents, stakeholders and young people, and supported by media messages and life-skills training programs. Recognize the important role that the alcohol beverage industry and retailers can play to ensure responsible consumption;[61]
- **Screening and brief interventions,** together with monitoring and surveillance.

5.2. SUBMISSIONS TO THE CANCER PLAN ON TOBACCO INCLUDED THE FOLLOWING SUGGESTIONS

- **Support population-subgroups to promote smoking cessation:** Commit to a substantial reduction in smoking and smoke-realted exposure. Smoking is more common among lower socio-economic groups where uptake is higher and attempts to quit are less likely to be successful. This may be due to factors such as lower success in completing smoking cessation programs, a lower level of social support for smoking cessation, or lower motivation to quit. Target these population-subgroups in order to promote smoking cessation;
- **Include alternative products in national smoking cessation programs:** Support an evidence- based health view of harm reduction in the light of the successes in Sweden with Snus and the UK with e-cigarettes, in a comprehensive national strategy to reduce the smoking rate and related deaths. Intervene in order to spread correct information by supporting data collection and monitoring and avoiding misleading communication.[62] Wider submissions suggest to include e-cigarettes in a comprehensive plan to reduce the cancer burden in the European Union[63].
- **Educate practitioners about potential of alternative products:** Include oncologists and other clinicians in reducing / stopping – smoking paths, educating them to follow patients in switching to selected alternative products such as e-cigarettes.[64]
- **Harm reduction as a tool to support consumers' health:** Harm reduction strategies should take advantage of the regulatory framework for e-cigarettes implemented by the European Union in 2016 which guarantees consumer protection and safety.

5.3. SUBMISSIONS TO THE CANCER PLAN ON FOOD, NUTRITION AND PHYSICAL ACTIVITY INCLUDED THE FOLLOWING SUGGESTIONS

- **Promote healthy food:** Create health-enabling food environments where the healthy option is the easy, default and most affordable option. The World Health Organization (WHO) has produced a document with proposals for the prevention and control of NCDs, based on evidence and endorsed by EU Member States which include, for example, policies to implement nutrition education and counselling in different settings (for example, in healthcare facilities) to increase the intake of fruits and vegetables;
- **Ban advertisements targeting children:** Establish strong measures in order to reduce the overall impact on children of all forms of marketing of foods high in energy, saturated fat, trans-fats, sugar or salt. Generalize schemes to promote healthy diets, particularly in schools and public institutions. Adopt comprehensive programs and community-based initiatives to improve nutrition and prevent overweightness and obesity among pre-school and school-aged children, in addition to including nutrition and cooking skills in school curricula;
- **Prevent malnutrition:** Guarantee healthy ageing and maximize healthy life years by preventing all forms of malnutrition and frailty among older people, taking into account the importance of healthy nutrition throughout life, including among the active adult population;
- **Implement dietary guidelines in public canteens:** Take the opportunities that lie in public canteens, where millions of meals are distributed each day. Obligatory application of dietary guidelines should be a requirement for menu plans, which would necessarily result in cutting back on meat and offering more plant-based dishes. People should be provided with sufficient information and the option to choose healthier and more climate-friendly meals;
- **Deliver holistic framework for harmonized National Obesity Plans:** As part of the Prevention Pillar, deliver a holistic framework for harmonized National Obesity Plans, guiding the setting up of cross-sectoral National Plans for the prevention, treatment and long-term management of obesity, as is the case for other serious chronic diseases. At the same time, to include actions to support active lifestyles which can help to improve patient quality of life and illness management.

PART 6

CALL TO ACTION

6. CALL TO ACTION

Europe's Beating Cancer Plan provides an unprecedented opportunity for the EU to formulate an effective strategy for drastically reducing cancer's extreme health impact across Member States. We believe that our research and analysis effectively show that the way to fight cancer is to, at all stages, be guided by harm reduction policies and work across both private and public sectors in cooperation with all stakeholders. Legislators must work keeping to the fore of their mind's patients and Europe's most vulnerable, at-risk citizens.

National stakeholders have taken steps towards ensuring the best possible measure to prevent cancer with groups adopting risky behavior by embracing an evidence-based approach based on data and expertise from sectors.

It is now the responsibility of European legislators to listen to the submissions to the Beating Cancer Plan and be receptive to them – only by working together at all levels can we effectively fight cancer and secure a better future for all European citizens. Policymakers across Europe and in Brussels need to use these success stories and implement harm reduction policies which promote a healthier lifestyle.

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