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Environmental Prevention of Addictive Behaviors

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ABSTRACT

Addictive behaviors remain a major public health issue in Spain and other European countries. This is evidenced by the high healthcare costs associated with primary care consultations, specialized resources, hospital admissions, and mortality resulting from drug-related problems. Preventing the emergence of issues related to addictive behaviors is a complex endeavor that must be addressed through a health-centered policy implemented at different levels (universal, selective, and indicated). This policy should prioritize prevention through a multi- and interdisciplinary approach, incorporating a cross-cutting perspective and a developmental outlook that goes beyond the individual level. This article aims to present a clear overview of the concept, theory, and applications of environmental prevention, which is less familiar to professionals working in the field of addictive behaviors. The article concludes by illustrating various environmental prevention measures (regulatory, economic, and context-based) aimed at addressing addictive behaviors, while also discussing key barriers and considerations for their implementation.

La Prevención Ambiental de las Conductas Adictivas

RESUMEN

Las conductas adictivas siguen siendo un problema de salud pública de primer orden en España y también en otros países de Europa. Prueba de ello es el elevado gasto sanitario derivado de las consultas en atención primaria y otros recursos especializados, los ingresos hospitalarios y la mortalidad derivada de los problemas relacionados con el uso de drogas. Prevenir la aparición de los problemas relacionados con las conductas adictivas se convierte en una empresa compleja, que ha de acometerse sobre la base de una política centrada en la salud e implementada a distintos niveles (universal, selectiva, indicada). Esta política debe priorizar la prevención con un enfoque multi e interdisciplinar, con una óptica transversal y con una perspectiva evolutiva o del desarrollo y más allá de lo individual. Este artículo tiene como objetivo presentar de una forma clara el concepto, teoría y aplicaciones de la prevención ambiental, menos conocida entre los profesionales de las conductas adictivas. Se concluye ejemplificando las distintas medidas (regulatorias, económicas y basadas en la configuración de los contextos físicos) de prevención ambiental para las conductas adictivas y se discuten las barreras y conclusiones más relevantes para su implementación.

Palabras clave

Prevención ambiental
Conductas adictivas
Alcohol
Tabaco
Juego de azar

Beyond the Biopsychosocial Model: Nudge Theory as an Explanation of Addictive Behaviors

Imagine you are in a cafeteria at lunchtime, waiting in line to order your lunch, feeling restless due to the incipient hunger that is making itself known in your grumbling stomach. To the left, there are trays, and in front of you, you see a glass display case with some very appetizing desserts, different flavored slices of cake, ice cream, etc. As you are a chocolate lover, you do not hesitate to take a slice of cake. Stop! What if, instead of a dessert, you had the choice between a watermelon, a banana, and a natural yogurt? Or what if the first thing you saw when you arrived at the cafeteria were the different options for the first and second courses—would you still choose a slice of cake?

At least three reflections can be drawn from this scenario. First, the decision to consume a high-calorie food such as a slice of chocolate cake is not only determined by the information a person has about the effects of eating sugars and other high-calorie foods on their health. In fact, people rarely have all the relevant information to make a decision and they devalue or ignore information that is too complex or meaningless at the time (e.g., previous intake of the recommended daily amount of sugar, emotional state, etc.). Second, this decision-making is influenced by factors such as the state of ingestion deprivation, learning history (e.g., the contingent relationship between food and its consequences), and even modeling by others with whom one identifies (e.g., the presence of a friend who exercises strict control over their own intake). Third, the context or physical environment where the decision is made is crucial, particularly the configuration or arrangement of the stimuli presented.

Traditionally, the prevention of addictive behaviors has been aimed at the population as a whole and at specific groups (parents, adolescents, young adults, etc.) with the aim of inducing a change in behavior at the individual level through the provision of information, assuming that people make decisions in an absolutely rational way and ignoring the influence of the context in which these decisions take place (Burkhart et al., 2022). This conceptualization is aligned with the neoclassical economics definition of the human being as a "*homo oeconomicus*" or perfect decision maker (Corr & Plagnol, 2023), suggesting that the preferences of the consumer (of an addictive object) are independent of the context, and of their physical and emotional state. In the field of prevention of addictive behaviors, interventions based on providing information about the addictive object and its risks are a good example of over-reliance on the human being as a rational decision maker. The initial idea is to fill a gap (lack of information) that in itself does not constitute a risk factor for addictive behaviors (Simon & Burkhart, 2021). Contrary to this assumption, evidence has shown that interventions based solely on increasing information are ineffective, especially when implemented as single, isolated interventions (Observatorio Europeo de las Drogas y las Toxicomanías [European Monitoring Centre for Drugs and Drug Addiction], 2019; UNODC, 2018). In fact, there is evidence that increased knowledge about illegal drugs represents an important risk factor for their consumption (Alves et al., 2021), which could be related to curiosity and search for more information about the form of consumption, its psychoactive effects, and health consequences.

Now, the view of human beings as completely rational decision makers has been dismantled by numerous studies, including those of the famous Kahneman and Tversky (Kahneman, 2014), who have shown that we use shortcuts (heuristics) to help us make decisions, due to the fact that our information storage capacity is limited (Foxcroft, 2015). Today we know that decisions are also influenced by our context, emotional state, biography, and learning history (Correia et al., 2010; Murphy et al., 2012; Verdejo-García et al., 2006), as illustrated in the cafeteria scenario described above. Moreover, in the specific case of addictive behaviors, we would predict with high certainty that intention not to consume does not necessarily correlate with abstinence (Faries, 2016). Instead, factors such as associations between environment and behavior over time or stimulus control play an important role in avoiding drug-seeking and drug-taking behaviors or involvement in other addictive behaviors (Villanueva Blasco et al., 2019).

Behavioral economic theory (González-Roz et al., 2020; 2024; Secades-Villa, 2025) and, in particular, the concept of the 'nudge' move away from this traditional perspective known as *homo economicus*, by assuming that both individual and social variables as well as learning history can influence decision making. Linked to libertarian paternalism, the concept of the 'nudge' gained considerable popularity after the publication of '*Nudge: improving decisions about health, wealth and happiness*' in 2008 by Richard H. Thaler and Cass R. Sunstein (Thaler & Sunstein, 2021). In their book, they contrast the classical view of the completely rational man '*homo economicus*', with a definition of human beings as being highly prone to errors in their decision-making.

The nudge concept is framed by dual processing theory composed of two interrelated systems, 'automatic' system 1 (e.g., using the elevator instead of the stairs out of habit) and 'reflexive' system 2 (e.g., joining a gym to improve health) (Lin et al., 2017). In applied terms, a 'nudge' targets system 1 and can be understood as any change in the configuration of the physical or social context, through a particular intervention that alters people's impulsive decision-making, increasing the likelihood of adopting a healthy behavior (e.g., engaging in physical exercise) rather than a risky one (e.g., taking drugs) (Mertens et al., 2022). Continuing with the cafeteria example, a nudge could involve arranging the food so that sugary items are not visible in display cases or vending machines, while healthier foods are accessible, affordable, or even incentivized (e.g., a discount on the daily menu).

Nudge theory has much to do with environmental prevention, which deploys a series of strategies aimed at altering the immediate context (physical, cultural, social, and economic) in which people make decisions (Burkhart, 2011). It is, therefore, a perspective that goes beyond the individual factors on which the biopsychosocial model focuses, recognizing that people live within social systems shaped by cultural and social norms, peer influence, advertising, commercial determinants, marketing strategies, and laws and regulations that affect the accessibility and availability of addictive behaviors.

What Works in the Prevention of Addictive Behaviors?

The answer to this question can only be found in research aimed at evaluating the efficacy and effectiveness of prevention programs. Today, what works in prevention is closely linked to

the concept of 'good practice'. A good practice refers to the best possible intervention based on the knowledge available to us, taking into account that it must meet three requirements: it must be effective, useful, and better than an alternative procedure (Becoña, 2023).

A burning issue is whether or not preventive practices are evidence-based. To this end, we have a number of databases indexing prevention programs for addictive behaviors that have evidence of efficacy and effectiveness. Whilst not exhaustive, Table 1 summarizes some of the most popular prevention programs. In each of the databases listed, one can enter keywords of interest in each specific area—universal, selective, and indicated prevention. For example, in the Pubmed database, a person interested in identifying effective universal school prevention programs could enter the following search command in the main search engine: "school prevention program AND substance use AND efficacy".

At the European level, and grounded in the science of prevention, the European Union Drugs Agency (EUDA) has made a great effort to disseminate evidence-based prevention and to train professionals working in the field of addictive behaviors. This training covers effective interventions in school, family, and environmental contexts; the etiology of addictive behaviors; advocacy for prevention; and program evaluation. A clear example is the European Prevention Curriculum project (EUPC training; https://www.euda.europa.eu/best-practice/european-prevention-curriculum-eupc_en), aimed at training people working in the field of prevention, including technical prevention staff, but first and foremost policy makers and decision makers on the implementation and funding of prevention programs (Observatorio Europeo de las Drogas y las Toxicomanías [European Monitoring Centre for Drugs and Drug Addiction], 2019). Anyone interested can receive more information and apply for training in their autonomous community in Spain.

What is Environmental/Structural Prevention and Why is it Effective?

Since the 1990s, the globally adopted classification system for preventive interventions has followed the model proposed by Gordon (1983), which distinguishes interventions according to their target audience (i.e., universal, selective, and indicated prevention). However, in recent years, a movement has emerged that stresses the need to update this classification to incorporate what is known as environmental (or structural) prevention. In 2014, David Foxcroft introduced a new proposal, suggesting a typology based on the functionality of preventive strategies (rather than the timing or targets of interventions). According to Foxcroft (2015), preventive interventions can be grouped into three categories or "functions": informational, developmental, and environmental. These three types of prevention should not be viewed as mutually exclusive but

rather as complementary. For example, informational and developmental (educational) prevention programs work best in contexts where environmental prevention is moving in the same direction.

Informational prevention aims to increase awareness and knowledge about specific risk behaviors by sensitizing the population to their consequences. An example of this approach is a media campaign warning about the dangers of alcohol consumption. On the other hand, developmental prevention focuses on promoting adaptive behaviors and preventing risky behaviors by strengthening the skills and competencies necessary for people to achieve their developmental goals, as occurs in social skills training programs. A representative example is the 'triple P' positive parenting program (Sanders et al., 2002), which offers parents strategies to help them build healthy relationships, manage their children's behavior, and prevent behavioral problems. Finally, environmental prevention seeks to modify the physical, economic, and regulatory environment to limit the accessibility and availability of drugs, minimize the opportunity to engage in addictive behaviors, and increase opportunities for adaptive behaviors. An example would be raising the minimum age for the purchase of alcohol or reducing the cost of access to sports facilities, thus promoting healthy lifestyles incompatible with addictive behaviors.

The first two types of prevention focus on intervening directly on individuals, modifying their beliefs and skills, while environmental prevention acts on the physical and social context in which they operate. Unlike persuasion-based interventions, environmental prevention does not initially aim to modify people's attitudes or convictions (Burkhart, 2011), nor does it require motivation, particular skills, or deliberate action. Instead, it focuses on altering the discriminative stimuli that facilitate impulsive decision-making and risky behaviors by directly modifying the environment with all the visual, olfactory, and social stimuli it may contain.

Environmental prevention strategies can be classified into three categories: regulatory, economic, and physical (Observatorio Europeo de las Drogas y las Toxicomanías [European Monitoring Centre for Drugs and Drug Addiction], 2019). Regulatory measures consist of policy changes that regulate access to and availability of risky behaviors, through legislation or regulations. Economic measures impact users and non-users and include taxes on addictive products, pricing policy legislation, or the use of economic incentives (e.g., subsidizing healthier alternatives). Finally, environmental restructuring measures seek to alter the physical environment by modifying properties or locations of objects and other stimuli in order to encourage healthy behaviors and prevent engagement in addictive behaviors. Table 2 lists the main environmental prevention measures in each of the categories.

Regulatory Measures

Advertising Bans

The advertising of products such as alcohol, tobacco (including electronic cigarettes), and gambling contributes to their normalization and social acceptance, encouraging consumption and increasing the prevalence of these behaviors, especially in

Table 1
Databases Indexing Evidence-Based Prevention Programs

<https://pubmed.ncbi.nlm.nih.gov/>
<http://www.buenaspracticasadicciones.es/>
https://www.euda.europa.eu/best-practice/xchange_en
<https://www.blueprintsprograms.org/program-search/>

Table 2
Main Environmental Prevention Measures

Regulatory measures
Prohibition of advertising
• Prohibition of advertising in public spaces
• Prohibition of advertising in traditional media (e.g., radio, print) and digital media (e.g., social media, internet banners).
• Prohibition of surreptitious or indirect advertising
• Prohibition of welcome bonuses or promotions
Regulation of sales and access
• Increasing the minimum age for consumption/buying/playing
• Reduction of points of sale and gaming or betting machines
• Implementation of self-monitoring systems
Prohibition of the use of substances in specific environments
• Public places, around educational and recreational centers
• Work areas and transportation
Monitor and sanction non-compliance with existing regulations
• Improvement of the sanctioning system for the sale, distribution, and possession of psychoactive substances to minors or consumption on public streets
• Control of driving under the influence of substances
• Systematic evaluation and sanctioning of establishments and points of sale that violate regulations
Economic measures
Fiscal policies
• Increasing taxes on legal drugs
• Tax incentives and price reductions on healthy products or services
Measures to restructure the physical environment
Modification of packaging and presentation
• Use of generic packaging for tobacco and alcohol
• Long, narrow, straight glasses and ones with small capacity in recreational spaces
• Redesign of gambling machines
• Completely concealing tobacco and alcohol products at points of sale (e.g. separate areas)
Promotion of healthy leisure spaces and activities
• Increasing the supply of alternative leisure activities
• Extension of opening hours for healthy activities
• Creating open and green urban spaces for recreational activities

vulnerable populations (García-Pérez et al., 2024; Lovato et al., 2011; Smith & Foxcroft, 2009). Consequently, an effective tool to mitigate these effects is the limitation of marketing strategies that promote the use of these substances and gambling. This limitation includes prohibitions or restrictions on sponsorships linked to sporting or entertainment events, and also of covert advertising in series, movies, and other media. It is also important to reduce the exposure of these products in media such as television, radio, and especially digital platforms, where algorithms can target specific ads to vulnerable audiences and control is not as strict as in other media. Similarly, it is crucial to restrict aggressive promotions such as "happy hours" for alcohol, or welcome bonuses in gambling, which encourage a higher probability of consumption and loss of control. The regulation of outdoor advertising in public spaces, such as billboards and hoardings, is also a key measure in preventing addictive behaviors, as these advertisements contribute to the ubiquity of products and their social acceptance. In this regard, not all environmental prevention measures are aimed at prohibition or regulation; they also impact the social environment by reinforcing norms and attitudes towards non-use. The implementation of these restrictions has shown a significant decrease in the use of these products, reducing sales of alcoholic beverages, tobacco consumption, and money deposited in gambling accounts (Levy et al., 2018; Quentin et al., 2007; Rossow, 2021; Saffer & Dave, 2006). Notably, total bans (e.g., prohibiting alcohol advertising on TV) are

more effective than partial bans (e.g., limiting alcohol advertising to certain hours) (Quentin et al., 2007).

Regulation of the Sale and Access to Alcohol, and Other Addictive Substances and Products

Increasing the minimum age to consume, buy, or gamble has proven to be an effective measure in several studies. For example, in Spain, raising the drinking age from 16 to 18 years reduced the prevalence of underage drinking by 21% (Brachowicz & Vall Castello, 2019). Along the same lines, in Finland, raising the legal age for gambling from 15 to 18 years produced a decrease from 44% to 13% in the prevalence of slot machine use in minors, in just two years (Raisamo et al., 2015). We should not overlook fundamental aspects: it is not the same to allow the purchase of tobacco in tobacconists, bars, or supermarkets, as it is to limit its sale to a single type of establishment. Likewise, the proximity of the points of sale is also a determining factor; it is not the same to have a tobacconist on every corner as to find the nearest one at a considerable distance. For example, Australia is the first country to make it compulsory to buy e-cigarette vapes in pharmacies. Evidence has highlighted how increasing the price of tobacco sales licenses (Bowden et al., 2014), restricting the days and hours when alcohol can be sold (Hahn et al., 2010; Middleton et al., 2010), as well as limiting the number of electronic gambling machines (Erwin et al., 2021) entails a reduction in the consumption and use of these products, as well as the harm associated with them. In this sense, an important line of action is to restrict to whom, when, and where these products are sold. In the case of gambling, in addition to the aforementioned mechanisms, there are specific and effective strategies to prevent excessive participation and mitigate the associated problems. A notable example is self-exclusion, a measure that has proven effective in reducing problem gambling-related behaviors (McMahon et al., 2019).

Prohibition of the use of Substances in Specific Environments

Prohibiting substance use in public, work, and recreational spaces (including outdoor seating areas) is an effective strategy to reduce substance use. By restricting access and exposure, these measures limit opportunities for use (Fell et al., 2008) and normalize a substance-free environment. For example, tobacco bans in workplaces and public areas have significantly reduced exposure to secondhand smoke (Frazer et al., 2016), also achieving a 10% decrease in smoking prevalence (Hopkins et al., 2010; Levy et al., 2018). It is worth noting some more radical proposals regarding cigarette smoking bans. In New Zealand, the idea of banning smoking for all those born after 2009 has been suggested. Although there is still no clear evidence on the effectiveness of this measure, the initiative itself is a promising development.

Surveillance and Penalties

The sanctioning regime has proven to be an effective tool to control and reduce both drug use and associated problems (Babor et al., 2010, 2019). Penalty measures for the sale, distribution, and possession of drugs are effective in deterring illicit activity, but consistency in their application and the existence of other

complementary measures such as those previously discussed are essential (Willis et al., 2011). In relation to regulations aimed at reducing drug-impaired driving, their effectiveness has been significant when accompanied by certain specific measures. For example, roadside controls, combined with severe sanctions and the withdrawal of driver's licenses, have shown positive results in reducing drunk driving (Babor et al., 2010; Cavazos-Rehg et al., 2012). However, the effectiveness of these measures also depends on the degree of compliance with regulations and the capacity of the authorities to carry out reliable and rapid tests to detect drug use in drivers. In the same vein, systematic evaluation of the legal compliance of establishments and points of sale is crucial. Increased penalties for those who fail to comply with these regulations is a measure that has proven to be effective, provided that it is implemented together with regular inspections and an accessible reporting system (Egerer et al., 2018). In this sense, a system of graduated sanctions that includes fines, temporary or permanent closure of premises, and judicial proceedings ensures not only the deterrence of illicit activities but also the protection of public health.

Economic Measures

Fiscal Policies

Accessibility and availability are two risk factors for addictive behaviors (Babor et al., 2010; Bryden et al., 2012; US Department of Health and Human Services, 2008). Therefore, policies that regulate the access, sale, and use of alcohol, other drugs, and addictive products (gambling) can play a crucial role in controlling consumption. Fiscal policies, such as increasing taxes on products such as alcohol, tobacco, and gambling winnings, have proven to be a very effective tool to reduce consumption (Chugh et al., 2023; Wagenaar et al., 2009). By increasing the prices of these products, governments discourage their purchase, particularly among younger and more vulnerable populations. For example, it is known that doubling taxes on alcoholic beverages and increasing taxes on tobacco by 50% results in a 10% reduction in the consumption of both substances (Kilian et al., 2023; Levy et al., 2018). However, it is equally important to offer healthy products at competitive prices. In our country, for example, the average price of a natural orange juice is usually higher than that of a can of beer. In this sense, one strategy to explore is the implementation of tax incentives for healthy products that can compete directly with alcoholic beverages and other unhealthy products, such as soft drinks or energy drinks (Becoña, 2021). Additionally, it is necessary to reduce the price of healthy activities that are alternatives to drug consumption, such as sports, cinemas, theaters, or museums, and other options such as cultural workshops, recreational activities in public spaces, alcohol-free concerts, or youth centers that offer entertainment alternatives.

Measures to Restructure the Physical Environment

Environmental prevention measures aimed at restructuring the physical environment are less obvious than those focused on regulation. While policies aimed at controlling consumption or limiting access to certain substances are often more visible, interventions that modify the environment often go unnoticed, both by the general population and by professionals in the sector

(Oncioiu et al., 2018). This is because the changes involved are often subtle and gradual, affecting the configuration of public spaces or infrastructures in ways that are not always obvious.

Modification of Packaging and Presentation

The use of generic packaging for tobacco products, with an unattractive design that makes the brand invisible, has proven to be an effective measure to reduce spending on cigarettes (Underwood et al., 2020). This approach also shows a protective effect by discouraging consumption, especially among non-smokers (Jetly et al., 2022). In contrast, in the case of alcohol, there are no studies that address this approach. Moreover, alcoholic beverages are not required to include information on ingredients or calorie content in their labeling. Regardless of whether including this information would be suitable for prevention purposes, this highlights the difficulty of researching and legislating in this sector, despite the parallels with the success seen in tobacco control.

The design of glasses and bottles used for the consumption of alcoholic products is another interesting measure for reducing both alcohol intake and expenditure. Available research suggests that eliminating larger options in bar and restaurant offerings, as well as reducing the size of bottles and glasses, can have a noticeable impact on the amount of alcohol consumed (Mantzari & Marteau, 2022). For example, a 25% reduction in the amount of alcohol served in an establishment can lead to an approximately 20% decrease in total consumption (Kersbergen et al., 2018). In addition, when people serve themselves alcohol at home, they tend to pour larger amounts into short, wide, curved glasses compared to tall, straight, narrow ones (Langfield et al., 2022), which is evidence of the influence of container design on drinking patterns.

In the gambling domain, redesigning the structural features of games and devices to make them less salient and reinforcing is also presented as an effective strategy to prevent overuse and reduce the risk of addiction. For example, it has been observed that gambling with credits instead of real money tends to distort players' perception of spending, which may lead to more gambling (Kersbergen et al., 2018). Also, the time between placing a bet and obtaining the prize is a crucial variable, as the addictive potential increases significantly when the prize is obtained quickly (Chóliz, 2010). In fact, one study found that increasing the time between placing a bet and obtaining the prize by seven seconds significantly reduced erroneous beliefs (e.g., illusion of control) regarding gambling (Cloutier et al., 2006). Another key aspect is imposing limits on the maximum and minimum amounts that can be wagered, as well as on deposits into online gambling accounts. These measures have been found to be effective in significantly reducing both the amounts wagered and the associated financial losses and problems (Broda et al., 2008; Sharpe et al., 2005; Tanner et al., 2017). In addition, some studies suggest that acoustic and visual stimuli in gambling devices and establishments affect gambling behavior (Noseworthy & Finlay, 2009; Spenny et al., 2010), so their limitation could contribute to the prevention of addictive behaviors.

Completely concealing alcoholic and tobacco products at points of sale has shown promising results. There is evidence linking the concealment of in-store cigarette displays to lower risk of future consumption among youth and adolescents (Dunbar et al., 2019; Martino et al., 2024; Shadel et al., 2016), suggesting that the

removal of visual stimuli may reduce the temptation to start or continue smoking. In the case of alcohol, although evidence is more limited, data indicate that strategic placement of alcoholic products in visible locations within establishments can increase sales by up to 46% (Nakamura et al., 2014), suggesting that hiding them or relegating them to less accessible areas could have the opposite effect. In this regard, one possible measure would be to hide alcoholic beverages from public view, so that consumers would have to request them directly from the vendor. This could reduce the impulse to purchase these products "automatically".

Promotion of Healthy Leisure Spaces and Activities

The measures mentioned above have focused on modifying the physical environment directly linked to substances and gambling, which is essential. However, a complementary approach is equally important: changing the physical context to encourage activities that offer alternatives to addictive behaviors. Although few studies have evaluated the effectiveness of alternative leisure programs in preventing addictive behaviors, and the results obtained so far are inconclusive (Calafat et al., 2009), behavioral economics has consistently shown that the availability of alternatives to drug use maintains an inversely proportional relationship with consumption (Acuff et al., 2019, 2023). To this end, it is important not only to reduce the price of alternative activities as mentioned above, given that the concept of price refers not only to the economic cost, but also to the personal effort required for access to the alternative reinforcer (González-Roz et al., 2020). Thus, it is necessary to make these activities more accessible and attractive than the less healthy ones: for example, by making publically available sports facilities (basketball courts, skate parks) and green areas throughout the different neighborhoods of a city. In addition, increasing the variety of these activities and diversifying leisure options is crucial, as a wider choice will ensure that the interests and needs of the majority of young people are met. It is equally important that these activities compete directly with traditional nightlife, which is often linked to drug use. To this end, the opening hours of these healthy alternatives should be extended, offering an attractive and accessible option to conventional nightlife.

Barriers to the Implementation of Environmental/Structural Prevention

Despite the clear effectiveness of environmental prevention, many of the measures known to be effective are not being fully and completely applied at present due to the existence of various barriers to their implementation.

A significant barrier is the resistance and pressure exerted by the alcohol, tobacco, gambling, and more recently, cannabis industries (Burkhart, 2011; Petticrew et al., 2020). These measures would lead to a drastic reduction in their profits, so these industries are understandably trying to defend their interests. It is common to find campaigns in the media that divert the health debate to other sectors, rejecting the restriction of individual freedoms and accusing the state of paternalism. These campaigns advocate the empowerment of citizens, insisting on the need to educate people to properly manage information and make informed decisions. In short, they advocate that individuals should have full freedom to make

decisions (Gigerenzer, 2015; Sama et al., 2021). While empowering individuals is a laudable goal, this narrative is disingenuous because it shifts responsibility solely to the individual. Most policy-driven preventive interventions have focused on an "i-frame" perspective (Chater & Loewenstein, 2022), claiming that effective prevention focuses on strengthening and empowering people on a personal, emotional, and social level. This ignores the fact that large disadvantaged segments of the population are exposed to stimuli, opportunities, promotions, and commercial determinants that push them towards harmful behaviors, yet they are simply encouraged to be more competent, resilient, empowered, and able to make better decisions. From this perspective, public health efforts seem to be directed at those who develop "problem behaviors" rather than at the "problem products" themselves, which are designed and marketed by industry. This approach is particularly evident in the case of gambling, where the industry promotes self-regulatory strategies (Selin, 2016), such as "responsible gambling" campaigns, while simultaneously developing products designed to maximize their addictive potential (e.g., the inclusion of "almost-win" events in slot machines). Not only do these approaches delay the adoption of regulations that favor environmental prevention, but in many cases, such regulations (once adopted) end up being the subject of lengthy litigation in the courts. In this sense, another significant barrier lies in the political will of legislators. And this is lower when decision-makers do not know what prevention is and have no training in human behavior, decision-making processes, or addictive behaviors. Often, a part of society, such as the hospitality sector, shows a lack of support for these measures, and, together with direct pressures from industry, this makes them unpopular. This situation makes legislators reluctant to implement environmental prevention measures. Moreover, it is essential that the regulations are solidly grounded and unambiguous, since any ambiguity is often exploited by the industry, as mentioned above, to take the legislation to court.

Conclusions

Individuals do not always act in a reasonable or rational manner, and they often lack the necessary control over their behavior, even when their intentions are aimed at taking care of their health (Burkhart et al., 2022). In this context, environmental prevention is presented as a fundamental strategy to prevent addictive behaviors. In fact, this approach has proven to be more effective than individual developmental or informational prevention (Foxcroft, 2015). At the international level, the World Health Organization's Framework Convention on Tobacco Control, approved by the United Nations, has been a breakthrough in the fight against smoking and represents a good example of environmental prevention. In Spain, several environmental prevention measures have already been successfully implemented (García-Pérez et al., 2024; Pinilla et al., 2019), such as the 'anti-smoking' laws of 2005 (Law 28/2005) and 2010 (Law 42/2010), aligned with this Convention, as well as regulations on gambling (Law 13/2011 and RD 958/2020). However, we continue to face barriers to the implementation of new measures, and existing laws still have significant room for strengthening and expansion. It is crucial to adopt a public health perspective that focuses not only on individuals but also on the physical, regulatory, and economic environment in which they live. Given the high social, health, and human cost generated by addictive behaviors, it is imperative to

direct our efforts, time, and resources towards the creation of contexts that facilitate healthy behaviors and habits. Implementing these measures is not only fully justified, but—far from generating stigmatization (Williamson et al., 2014)—it actually promotes social justice by protecting the most vulnerable individuals (Romeo-Stuppy et al., 2022).

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