



Legal regulations and consumption of energy drinks in the European Union and selected member states

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Abstract

Introduction and Objective. Energy drinks (EDs) are rapidly growing beverages high in caffeine, sugar, and stimulants, raising public health concerns, especially among youth. The aim of the review is to analyze EU and selected national regulations (Poland, Spain, Hungary) and consumption trends, highlighting key challenges for public health.

Review Methods. A literature review was based on searches in PubMed, Google Scholar, and ScienceDirect, complemented by national and international reports and surveys. Both existing and draft legal Acts in selected EU Member States and EU secondary legislation were analyzed.

Brief description of the state of knowledge. At the EU level, EDs are regulated only through general food law (Reg. 178/2002) and labelling rules (Reg. 1169/2011) requiring caffeine disclosure and health warnings. Several Member States have gone further: Lithuania (2014) and Latvia (2016) banned sales to minors, Poland (2024) introduced a nationwide ban with penalties, and Hungary (2025) adopted similar measures with strict sanctions. Spain lacks a national ban, although regions such as Galicia have implemented preventive restrictions.

Summary. Energy drinks, high in caffeine and sugar, pose increasing public health risks, particularly for youth. EU law provides only general regulations and labelling requirements, while Member States differ in adopting stricter measures, from nationwide bans (Lithuania, Latvia, Poland, Hungary) to regional initiatives (Spain). Comparative analysis shows the need for coherent policies to reduce health risks linked to consumption.

Key words

public health, adolescents, caffeine, energy drinks, European Union regulations

INTRODUCTION AND OBJECTIVE

Energy drinks (EDs) constitute a relatively new yet rapidly expanding category of food products, the global proliferation of which over the past two decades has attracted increasing attention from regulatory authorities [1–3]. They are beverages with a high content of caffeine, sugar, and other stimulatory substances, although no universally accepted legal definition exists about their consumption. The Scientific Committee on Food of the European Commission defines them as products with elevated caffeine levels and the addition of ingredients rarely found in conventional soft drinks [4]. Due to their composition, potential health effects, and a distinct target consumer group, EDs remain under continuous scrutiny by institutions responsible for food safety and public health [5]. Numerous reports indicate that energy drinks may exert adverse effects on multiple organ

systems. Documented outcomes range from mild symptoms, such as anxiety, gastrointestinal disturbances, dehydration, nervousness, and tachycardia, to serious clinical conditions, including rhabdomyolysis, acute kidney injury, ventricular fibrillation, seizures, acute mania, and stroke. In rare cases, fatal outcomes associated with excessive consumption have also been reported [6].

At the European Union (EU) level, there is no single, harmonized legal act dedicated exclusively to EDs. Regulation of this category relies on the general framework of EU food law particularly Regulation (EC) No. 178/2002 [7] complemented by specific provisions concerning caffeine, set out in Regulation (EU) No. 1169/2011 [8].

Detailed requirements for the labeling of beverages with high caffeine content are outlined in Annex III, point 4.1 of Regulation (EU) No. 1169/2011. According to these rules, any beverage – other than coffee, tea, or one whose name clearly indicates such products – that contains more than 150 mg of caffeine per litre in its ready-to-drink form, must bear the visible statement: ‘High caffeine content. Not recommended for children, pregnant or breastfeeding women’. This information

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must appear in the same field of vision as the product name, and the label must also indicate the precise caffeine content in mg per 100 ml [8].

Analogous obligations apply to other food products, such as dietary supplements to which caffeine has been intentionally added for a specific physiological purpose. In such cases, the label must also include the warning: '*High caffeine content. Not recommended for children, pregnant or breastfeeding women*', and specify the caffeine content per 100 g or, for supplements, per recommended portion [8].

Regulation (EU) No. 1169/2011, as a directly applicable secondary EU law, does not require transposition into national legal systems and binds all producers and distributors across Member States. It thus forms the cornerstone of the European legal framework governing the labeling of EDs. Beyond labelling requirements, energy drinks are also subject to broader EU food regulations. These include Regulation (EC) No. 1924/2006 on nutrition and health claims, which sets conditions for marketing statements implying health benefits [9], and Regulation (EC) No. 1925/2006 on the addition of vitamins, minerals, and other substances to foods, applicable to EDs enriched with functional ingredients [10].

EU regulations focus primarily on mandatory caffeine labelling and ensuring transparent consumer information, while leaving Member States the discretion to adopt stricter protective measures, such as age-based sales restrictions or bans on distribution within educational institutions.

The analysis focuses on Poland, Hungary, and Spain, which illustrate three distinct regulatory approaches within the European Union: a national sales ban for minors (Poland), a comprehensive fiscal and marketing control model (Hungary), and a regionally-driven framework with subnational restrictions (Spain).

OBJECTIVE

The aim of the review is to examine the structure, scope and level of restriction within the current legal frameworks governing energy drinks within the European Union, with particular emphasis on national regulations in Poland, Spain, and Hungary, while referencing Lithuania and Latvia as benchmark countries that first introduced age-based retail bans. The review further assesses consumption trends and identifies key public health challenges associated with energy drink intake among adolescents and young adults.

REVIEW METHODS

The literature for the review was collected through a structured search of PubMed, ScienceDirect, and Google Scholar, complemented by a manual review of reference lists and articles published in public health and regulatory journals. The search covered the period from January 2014 – August 2025, corresponding to the timeframe in which the majority of EU-level and national regulatory interventions concerning energy drinks (EDs) were introduced.

The search strategy used combinations of MeSH and free-text terms, including: 'energy drinks', 'caffeine-containing beverages' ('beverages containing caffeine'), 'youth consumption', 'public health policy', 'regulation', 'marketing restrictions', 'labelling', 'EU food law', 'adolescents', 'risk

behaviours'. Boolean operators (AND/OR) were applied to refine results. Only publications in English, Polish, Hungarian and Spanish were considered.

Inclusion criteria comprised: (1) peer-reviewed articles, national and EU legislative Acts, and official regulatory documents; (2) population-based surveys or epidemiological reports concerning consumption patterns; (3) studies addressing legal frameworks, enforcement mechanisms or public health implications; (4) documents related to adolescents or young adults as primary risk groups. Exclusion criteria included: (1) narrative commentaries without empirical or regulatory relevance, (2) studies lacking identifiable methodology or population base, and (3) duplicate publications reporting identical datasets.

Reports from public health institutions, including national surveillance systems and European regulatory bodies, were incorporated to supplement peer-reviewed sources. Both existing and draft legal acts were analyzed to capture the dynamic evolution of regulatory frameworks. The quality and relevance of legal and epidemiological sources were assessed based on institutional origin, transparency of methodology, and alignment with recognized public health indicators. Secondary legislation at the EU level was examined to identify harmonized standards, while national regulations in the selected Member States (Poland, Spain and Hungary) were reviewed to illustrate divergence in legislative restrictiveness.

The selection process was iterative and based on relevance to the study objectives. Particular attention was paid to the legal validity and publication date of the documents to ensure that only the most current and authoritative sources were included. This approach ensured a comprehensive synthesis integrating legal, epidemiological and public health perspectives while reflecting cross-country differences in regulatory strategies.

DESCRIPTION OF THE STATE OF KNOWLEDGE

In the discussion on the regulation of functional and non-alcoholic beverages, it is essential to consider the role of industrial associations, which complement and extend European Union (EU) legal frameworks by adopting codes of conduct and voluntary commitments. Two organizations are particularly relevant in this context: the Union of European Soft Drinks Associations (UNESDA) [11] and Energy Drinks Europe (EDE) [12]. While both represent the interests of manufacturers, they differ substantially in scope and regulatory approach.

The Union of European Soft Drinks Associations (UNESDA) represents the non-alcoholic beverage sector across 23 European countries, including major EDs producers [11]. It developed the Code for the Labelling and Marketing of Energy Drinks, which supplements and extends the obligations set out in Regulation (EU) No. 1169/2011 on the provision of food information to consumers. This code introduces voluntary standards aimed at ensuring responsible marketing communication and transparent consumer information. In addition to the mandatory warning '*High caffeine content; not recommended for children, pregnant or breastfeeding women*' and the requirement to declare the exact caffeine content per 100 ml, UNESDA recommends including further guidance such as '*Consume Moderately*', prohibits claims that EDs can counteract the effects of alcohol, and restricts advertising to

children under 13, as well as promotional activities in schools [13]. Although voluntary, the UNESDA code establishes a minimum industrial standard and is promoted for national adoption through local federations. In doing so, it supports EU objectives on responsible marketing and consumer safety, going beyond the baseline legal requirements and responding to public health concerns, particularly those related to young consumers [13].

Another major initiative is led by Energy Drinks Europe (EDE), an association representing EDs manufacturers active across the EU. A key document, the Code of Practice for the Marketing and Labelling of Energy Drinks (adopted in Brussels on 9 December 2014), was developed in consultation with regulators and scientific experts to complement EU food law, including Regulation No. 1169/2011 [14].

The EDE Code recommends safe maximum levels of key ingredients, such as caffeine, taurine, and glucuronolactone, requires prominent caffeine warnings with exact content per 100 ml, and promotes moderation messages. Strong emphasis is placed on youth protection: prohibiting marketing directed at children under 13, banning sales and promotions in schools, and explicitly rejecting claims that EDs counteract alcohol effects or the marketing of pre-mixed alcohol – EDs products [14]. Membership in EDE requires adherence to this code, making it an enforceable minimum standard within the association.

A comparative analysis reveals that EDE takes a sector-specific and defensive stance, focusing on safeguarding the image of EDs and promoting responsible marketing, while UNESDA adopts a broader, more pro-active approach encompassing the entire non-alcoholic beverage market and anticipating regulatory developments. Both models illustrate how industrial self-regulation can complement EU law, enabling a more agile response to societal expectations and supporting the development of responsible market practices [11–14].

Regulations concerning EDs across the European Union vary in both scope and level of restriction. A common baseline for all Member States is provided by Regulation (EU) No. 1169/2011 of the European Parliament and of the Council, which requires clear labelling of high caffeine content and disclosure of its exact amount per 100 ml of product. However, several countries have chosen to go further by implementing additional public health measures aimed particularly at protecting children and adolescents, and limiting the marketing of EDs [8]. Lithuania was the first EU country to introduce a nationwide ban on the sale of EDs to individuals under 18 years of age a regulation in force since 2014. In 2016, Latvia adopted similar provisions, extending the ban to educational institutions and introducing further restrictions on advertising and promotional activities [5]. Poland also joined this group of Member States applying the most stringent approach by amending its Public Health Act [15], with new provisions entering into force on 1 January 2024. The legislation prohibits the sale of EDs to minors and bans their distribution in educational facilities as well as in vending machines [16].

The National Health Test for Poles is the largest nationwide survey of health status and lifestyle in the adult Polish population, conducted annually since 2020 as an extensive online questionnaire. Its aim is to monitor health indicators, dietary habits, and health-related behaviors among Poles. The 2024 edition included over 150,000 participants and,

among other topics, addressed the consumption of EDs, covering frequency, consumer characteristics, and temporal trends [17].

According to the most recent data from the National Health Test for Poles, 28% of adult Poles consume EDs, representing a decline compared with 2023 (31%). Gender differences remain marked: 22% of women (unchanged year-on-year) versus 36% of men (down from 40%). The majority (72%) report no consumption, although this percentage decreased by three percentage points compared with the previous year [17]. Daily consumption is reported by 1% of adults, 3% drink EDs several times per week, and 7 – 8% several times per month. An additional 17 – 19% consume them once a month or less, confirming a gradual, though modest, decline in occasional use [17].

Age-stratified analysis revealed distinct patterns. Young adults (18 – 24 years) showed the highest prevalence, 56% reported EDs consumption, a rebound after a drop to 36% in 2023. In the 25 – 34-year group, consumption remained stable at approximately half of the population (48 – 52%), while among those aged 35 – 44 years it stabilized at around 33 – 35%. Older age groups consume significantly less: 24% among those aged 45 – 54 years, 14% among 55 – 64 years, and only 8% among adults over 65. It is important to note that the National Health Test for Poles covers exclusively the adult population, consistent with the national ban on the sale of EDs to minors [17].

A representative survey among Polish adults found that 15.1% consume EDs at least weekly, 9.7% at least monthly, and 13.3% less frequently; 62% report no consumption. Men and younger respondents are significantly more frequent consumers ($p < 0.05$). 83% perceive EDs as harmful, while the majority (87.2%) support the ban on sales to individuals under 18. However, only 45.6% consider the ban effective, and one-in-three respondents had observed minors consuming EDs within the previous 30 days [4].

Recent data from Poland provide initial evidence on the impact and enforcement challenges of the 2024 national ban on the sale of EDs to minors. A 2025 survey among adolescents aged 12–17 years showed that access to EDs remains commonplace, with about 40% reporting consumption in the past month, often through adults or outlets with inconsistent age verification. Although only a small proportion of adolescents attempted to purchase energy drinks online, most of those who did so were able to complete the transaction without effective age verification, suggesting that e-commerce may circumvent existing restrictions. Over half of respondents did not perceive EDs as harmful, which was associated with higher consumption levels. These findings indicate that the legal ban alone may have limited short-term effectiveness, and should be reinforced by educational and preventive measures [18].

A study among adolescents aged 13 – 19 years in the Pomeranian Province in northern Poland, confirmed the high prevalence of ED consumption, reported by about two-thirds of respondents. Intake was more common among boys, high school students, and those with lower academic performance. Positive attitudes toward EDs were linked to more frequent and higher-volume consumption, while negative attitudes predominated among girls and high-achieving students. The findings highlight the importance of addressing perceptions and risk awareness in prevention efforts [19].

A study among Polish university students from medical and non-medical faculties showed that, despite better knowledge of ED risks among medical students, their consumption frequency was similar to their non-medical peers. The main motives were alleged increased energy and concentration, while social reasons were less relevant. Female students more often supported the sales ban for minors and stricter rules on advertising. These findings suggest that awareness alone does not translate into reduced consumption, underscoring the need for targeted education and effective policy enforcement [20].

Legislative changes introduced at the beginning of 2024 may significantly influence future consumption trends. In addition to implementing obligations arising from European Union food law, Poland has introduced its own national regulations concerning EDs. The key measure is the amendment to the Public Health Act of 2023, which entered into force on 1 January 2024. The Act introduced a ban on the sale of EDs to persons under the age of 18, as well as a prohibition on their distribution in educational institutions and from vending machines. The Act provides a legal definition of an 'energy drink' as a product classified in the Polish Classification of Goods and Services (PKWiU) under class 10.89 or section 11, containing added caffeine or taurine in quantities exceeding 150 mg/L (excluding naturally occurring caffeine). The legislation also introduced an obligation for clear and permanent labeling of the product packaging with the wording '*Napój energetyzujący*' or '*Napój energetyczny*' – 'Energy Drink'. Violations of these new provisions are subject to strict financial and legal penalties: fines of up to 2,000 PLN for retailers, and for manufacturers or importers, penalties up to 200,000 PLN and possible restriction of liberty [15, 16]. In Poland, enforcement of the national sales ban for minors is primarily overseen by the State Sanitary Inspectorate, supported by the Trade Inspection and law enforcement authorities. Non-compliance may result in administrative fines or penalties under the Code of Petty Offences, while misleading advertising and marketing practices fall under the supervision of the Office of Competition and Consumer Protection.

In Spain, the definition of EDs is established by the Ministry of Health through the national survey framework, stating that they are beverages designed to increase endurance and stimulate the body by combining ingredients such as caffeine, taurine, glucuronolactone, vitamins, and botanical extracts. This definition is framed within the Spanish National Plan on Drugs which monitors their consumption among young people [21, 22]. Data on the consumption of EDs in Spain indicate a notably high popularity of this product category, especially among this age group. of people. According to the Spanish Agency for Food Safety and Nutrition (AESAN), 31% of Spanish adults aged 18 – 65 consume EDs, of whom 16% are regular consumers – so-called chronic users, consuming these products 4 – 5 times per week or more. Among adolescents aged 10 – 18, the percentage of consumers is significantly higher, reaching 62%, with approximately 10% of them drinking EDs very frequently [23].

Population-based studies including adolescents and young adults aged 14 – 34 also indicate a wide prevalence of this practice: 38.8% of respondents reported drinking EDs, and in the youngest group (14 – 18 years), this proportion reached as high as 50%. The most commonly reported frequency was 1 – 3 times per week (33.7% of consumers), while about 3% of

respondents declared daily consumption. Another important phenomenon is the combination of EDs with alcohol, 15.5% of all EDs consumers admitted to this, and in the 14 – 18 age group the figure was as high as 32.1%. The studies also highlight clear gender differences: men are almost three times more likely to consume EDs than women (OR = 2.94; $p < 0.001$), and a strong association was shown between EDs use and other risky behaviours, such as e-cigarette use (OR = 3.84; $p < 0.001$) [24].

At the national level, Spain currently has no general ban on the sale of EDs to minors. Legal provisions related to this product category are based primarily on general food safety regulations and labelling requirements, supervised by AESAN, among others [23]. The legal framework includes obligations derived from European Union law, including Regulation (EU) No. 1169/2011, which requires producers to label high-caffeine beverages with an appropriate consumer warning [8]. The Ministry of Health and the Spanish Association of Pediatrics have issued several statements on this matter, stating that it is not at all advisable for these individuals to consume this type of beverage [25, 26]. For that reason, in 2021, to update the PAOS strategy [28], the government expressed its intention to introduce stricter regulations concerning advertising directed at children and the availability of energy drinks in school environments [27]; however, this measure is still under development.

In recent years, legislative initiatives have emerged at the regional level. One example is Galicia, an autonomous community in north-western Spain, which adopted a law introducing a ban on the sale and consumption of EDs by persons under the age of 18, restrictions on advertising directed at young people, and the obligation to display these products separately from other soft drinks at points-of-sale. Such measures signal growing interest in the issue of EDs within Spanish public health policy, and in the future may lead to the development of unified national solutions [29].

Unlike the existing national provisions based primarily on informing consumers about caffeine content and labelling obligations under EU law (e.g., EU Regulation No. 1169/2011) and Spanish implemented decrees, the Galician regulation is preventive in nature and imposes concrete sales restrictions. This represents a significant shift, as Spanish law so far has not included uniform prohibitions on the availability of EDs to minors, leaving enforcement and sanctions to the autonomous communities. Enforcement of these measures is carried out by regional health authorities and consumer protection agencies, which are responsible for monitoring compliance, imposing administrative fines, and overseeing the implementation of local restrictions [29]. Asturias, another autonomous community in north-west Spain, has followed the Galician example by implementing similar measures, and in 2026 is expected to introduce legislation prohibiting the sale of EDs to anyone the age of 16. The legislation will mandate age verification in vending machines, the physical separation of these products in retail outlets, and penalties of up to €600,000 for severe infringements [30].

Galicia has thus become a legislative pioneer, followed by Asturias, and similar bills are already being developed in other autonomous communities, including Aragon, the Balearic Islands, Castilla-La Mancha, Navarre, the Basque Country, as well as the Valencian Community and Castile and León. In parallel, the Ministry of Consumer Affairs has announced central-level actions, including restrictions

on the advertising of EDs as part of a policy to counter the promotion of products with unfavourable nutritional profiles among children and adolescents [31].

The growing interest in legal regulations corresponds to the high popularity of EDs among young people. Data from the Spanish Justicia Alimentaria (Food Justice) organization indicate that as many as 70% of Spanish adolescents aged 10 – 18 regularly drink EDs, and 12% consume them in very large quantities (more than 7 litres per month). Alarming high consumption is also reported among the youngest children, about 20% of those aged 3 – 10 have been exposed to such products. The report stresses that the lack of coherent legal standards increases the risk of excessive consumption and exposure of children to stimulating substances, such as caffeine and taurine [32].

The example of Galicia illustrates the growing role of regional law in Spain’s public health protection system and the ability to go beyond the minimum standards set by EU and national legislation. It may serve as a reference point for other regions and an impetus for creating a more unified national policy to protect young people’s health from the harmful effects of EDs consumption.

On Mallorca, part of the Balearic Autonomous Community, there is currently no general ban on the sale of EDs to minors, as introduced by Galicia. Regulations focus mainly on educational and health environments. As early as 2019, Decree 39/2019 was adopted, which restructured the nutritional offerings in schools and health facilities by banning the sale of, among other things, sugar-sweetened beverages, and limiting the availability of products with an unfavourable nutritional profile [33]. In 2025, the Balearic government announced plans to extend these rules to a ban on consuming EDs and highly processed snacks, and will also cover school trips and excursions to strengthening preventive actions among children and adolescents. The regional parliament also approved a non-binding motion urging the prohibition of sales to minors in schools and during extra-curricular activities, alongside awareness campaigns and monitoring studies. The regional Ministry of Health has acknowledged ongoing prevention efforts, but recognized that further regulatory measures are still needed [34]. However, these are not universal retail restrictions; in

commercial outlets in Mallorca, there are currently no age-based limitations on the sale of EDs [35, 36].

Hungary is among the countries of the European Union where the consumption of EDs among adolescents and young adults remains at a high level. Population-based survey data indicate that as many as 68% of Hungarian adolescents aged 10 – 18 have consumed an ED at least once, while among adults aged 18 – 68 this proportion is approximately 30%. About 20% of young people report consuming these beverages regularly, at least once or twice a week, and 2.9% drink more than one can per day, a pattern researchers have classified as posing the highest level of health risk. A distinctive feature of the Hungarian market is the widespread practice of mixing EDs with alcohol, reported by around 24% of young consumers [37].

In response to the rising consumption and the associated health risks, the Hungarian Parliament adopted a law prohibiting the sale and serving of EDs to persons under the age of 18. The law was passed unanimously and entered into force in June 2025. The new regulations empower the government to define precisely which products will be classified as EDs, based on their content of caffeine and other stimulating substances. Sanctions for retailers have also been introduced: shops found violating the ban may lose their license to sell not only EDs, but also alcoholic beverages and tobacco products for up to one year. In cases of repeated violations, temporary closure of the retail outlet is possible. In Hungary, enforcement is carried out by the National Institute of Pharmacy and Nutrition, which oversees compliance with composition, labelling, and marketing rules. Fiscal control is ensured through the Public Health Product Tax, supervised by the National Tax and Customs Administration. Non-compliance may result in financial penalties or product withdrawal [38–40]. This regulation represents a response to the high level of EDs consumption among young people. Hungary has thus become another EU country alongside Poland, Lithuania, and Latvia to implement systemic measures aimed at restricting the availability of EDs to minors. A detailed description of the applicable regulations is presented in Table 1.

Table 1. Legal regulations on EDs in selected member states

Country / Region	Age Restrictions	Location / Context Restrictions	Definition of Energy Drink	Labelling Requirements	Sanctions	Status / Practical Notes
Poland	Sale of EDs with added caffeine/taurine banned to persons aged <18 years (since 1 January 2024)[14]	Ban on sales in schools, educational institutions, and vending machines	Beverage containing >150 mg caffeine/L or added taurine (excluding naturally occurring)	Mandatory labelling 'energy drink/energy beverage' on packaging	Sale to minors, fine up to PLN 2,000; improper labeling up to PLN 200,000 fine, or restriction of liberty	Law in force; retailers must verify customer age
Spain	No formal sales ban to minors (as of 2025) only discussions on introducing a ban and implementing national and regional regulations	Planned prohibition of consumption during school trips; ban already in place for sugary drinks in school cafeterias and hospitals, potentially expanding to EDs	Spanish Ministry of Health definition [17]; EU caffeine and additives rules apply	EU standard statement of caffeine content and 'high caffeine content' warning	No detailed sanctions yet (draft measures under discussion)	Region considering ban modeled on Galicia; currently only school-related consumption restrictions
Hungary	Sale of EDs banned to persons aged <18 years (effective June 2025)	Applies to all retail, including online sales and home delivery (mandatory age verification at delivery)	Criteria: ≥15 mg/100 ml methylxanthines (e.g., caffeine) or caffeine + taurine/ginseng, etc.	EU standard plus national provisions defining products under the ban	Violations: sales ban on EDs, alcohol and tobacco up to 1 year; repeated offenses → store closure up to 30 days	Law adopted and entered into force 11 June 2025; government refining definitions and enforcement mechanisms

SUMMARY

Key findings. The regulatory landscape surrounding energy drinks (EDs) in the European Union remains fragmented. While EU legislation ensures only baseline consumer information through mandatory caffeine labelling, it does not regulate availability or age restrictions. Consequently, Member States have adopted divergent national approaches. Lithuania and Latvia were first to implement retail bans for minors, followed by Poland in 2024, and Hungary in 2025, whereas Spain has progressed only at the regional level. This regulatory asymmetry has resulted in unequal levels of youth protection across the EU.

Public health implications. Epidemiological data consistently indicate that adolescents and young adults are the primary consumers of EDs, frequently combining them with alcohol. Given the established links with sleep disruption, cardiovascular strain, and risk-taking behaviours, the current legal minimum based solely on labelling is insufficient to safeguard vulnerable populations. Self-regulatory industrial codes provide only partial mitigation and cannot replace binding public health legislation.

Regulatory gaps. Major gaps concern the absence of (1) EU-wide age restrictions, (2) limits on marketing exposure to minors, and (3) robust enforcement mechanisms. Without harmonised standards, the protection of health is highly dependent on national policy priorities rather than on evidence-based risk assessment.

Recommendations. To ensure effective public health protection, regulatory action must move beyond consumer information obligations toward availability regulation. At minimum, a unified EU-level framework restricting sales to minors and limiting marketing practices targeting young people should be considered. Monitoring systems linking legal oversight with surveillance of consumption patterns are essential for the evaluation of policy effectiveness. A shift from voluntary industry codes to enforceable, state-level instruments appears necessary to adequately reduce health risks associated with ED consumption.

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