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International Journal of Family & Community Medicine

Research Article

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The use of energy drinks in adolescents: a risky behaviour

Abstract

The use of energy drinks in adolescents: a risk behaviour

Objective: to identify the knowledge, perceptions and risks associated with the use of energy drinks (EDs) in adolescents.

Methods: the following databases were consulted for this narrative review: Pubmed, Cinahl, Cuiden Plus and Scopus. Free and controlled language was used (MeSH). There were limitations in terms of language (English and Spanish), the last five years of publication (2014-2019) and adolescents (10-to-19 years old).

Results: twenty-six (26) articles were selected out of 702; 82.6% of these had a quantitative approach, the majority were descriptive cross-sectional studies (57.6%). Findings were classified into "knowledge and perceptions by users", "influence in rest and modo" and "substance abuse" The use of EDs was perceived as a typically male behaviour, not healthy, and for sports activities in general; besides, it was associated with physical activity, violent behaviours, worse performance and academic failure, emotional problems, sleep pattern problems, hyperactivity, reckless driving, substance abuse, and alcohol dependency.

Conclusions: lack of information and aggressive marketing campaigns encourage the abuse of energy drinks, which leads to a higher risk of substance abuse. Preparing preventive programs and updating the current ones, as well as nutritional advice and education for health, could be essential in order to solve this problem.

Keywords: energy drinks, health-related behaviour, mood disorders, academic performance, athletic performance, use of alcoholic drinks, public health, adolescent behaviour, review

Volume 3 Issue 5 - 2019

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Received: October 05, 2019 | **Published:** October 16, 2019

Abbreviations: WHO, world health organization; EDs, energy drinks; EFSA, European Food Safety Authority; CNS, central nervous system

Introduction

The World Health Organization (WHO) warns us that the increased consumption of energy drinks (EDs) could mean a danger to the public health of young people.[1] These drinks without alcohol, gasified, of great variability in beverage containers and with a degree of carbonation lower than that of a soft drink, are characterized by having a high caffeine content (320 mg/L).[2–4] The rest of the ingredients are very heterogeneous, from taurine to ginseng, guarana, B vitamins and carbohydrates.[1,2] They do not include caloric intake in joules that justify the term "energy", nor any nutritional value, they only contain pharmacologically active substances. They are marketed as drinks that increase athletic performance, being awake, attention, reactivity, concentration and reduce both physical and mental stress.[1,2] Regarding the regulation of energy drinks, nutritional labelling is governed by the provisions of the "Regulation Nº1169/2011"[5] for all Member States of the European Union (EE MM) which, establishes that any product with a proportion of more than 150 mg/L of caffeine should add the proportion in% or mg/100mL and the warning: "High caffeine content. Not recommended for children or pregnant ".

The origin of the EDs dates back to Asia, specifically to Thailand, from where exportation around the world began in the 80s of the last century. But the popularity was reached with the appearance of the drink "Red bull ™" in 1987 of Austrian origin.[6] Since 2006, a total of around 500 different ED brands have been commercialized and sales continue increasing.[2,6] In 2015 they reached around 50 billion dollars and they are expected to reach 60 billion dollars by 2021.[3] According to data from the European Food Safety Authority (EFSA), it was estimated that the prevalence of consumption among the adolescent population was 68% among the EE MM in 2013; being more frequent in men than in women.[7] 53% consumed them mixed with alcohol. In Spain with a prevalence of 62%, 43% claimed to consume them mixed with alcohol.[7] Health experts express that EDs could mean a potential danger to the health of minors, since they produce cardiovascular and cognitive disorders[3,8] associated with caffeine abuse. The EFSA estimated that the safety limit on caffeine intake in adolescents could be around 3 mg / kg/day.[9]

This substance, adenosine antagonist at the level of the central nervous system (CNS), in moderate doses produces an improvement in memory, attention, alertness and reactivity in fatigued adults. Currently, it is inadvisable the case of minors because it entails a cognitive overstrain for the brain, and the physiological remedy to relieve fatigue is to take a rest.[3] However, it is still popular in this age group of the population and the "marketing" campaigns are aimed at adolescents, although tolerance to stimulants at these ages is still to be determined.[3] In adults, many adverse effects associated with the consumption of EDs have been detected, mainly, tachycardia, hypertension, motor hyperactivity, increased capacity of attention, increased gastric secretion, diuretic effect and temperature rise. Other more rare and severe are rhabdomyolysis, coronary vasospasm,

supraventricular and / or ventricular arrhythmias, and psychosis.[2,8] However, more interesting is from the psychosocial prism. The use of EDs is associated with risky behaviors, mainly the use of marijuana and alcohol.[2] Mixing alcohol with EDs (AmED) has become a risky practice that has increased over the years, with adolescents being regular consumers and the main risk group.[3] The role of nursing is crucial in order to develop a population-level awareness among adolescents about the risks of EDs, as well as necessary to generate safe environments and, above all, as a promoter to lead adolescents to a responsible consumption of alcohol reached when they come of age. Consequently, the objective of this review is to identify the knowledge, perceptions and risks associated with the consumption of EDs in adolescents in order to justify future nursing interventions for their prevention.

Methods

Narrative review based on bibliographic searches in four databases. In Cuiden plus and Scopus, free language was used, and in Pubmed and Cinahl, both free and controlled language was used based on the descriptors of the "MeSH" thesaurus. The construction of the search statement was carried out according to a division of the terms into 3 large blocks: subject of study, population under study and outcomes in Table 1; which were later unified in the same statement by means of Boolean operators of type AND. Likewise, limitations such as the "English" and "Spanish" language were applied, the last 5 years of publication comparing those articles published from April 2014 to April 2019 and exclusively in Scopus, due to the importance as a filter "Nursing discipline was applied" and thus select those jobs related to the role of nurses and health sciences in general. Likewise it was also considered as inclusion criteria, the work carried out in healthy adolescents (10 to 19 years old), both qualitative and quantitative, fundamentally, cross-sectional studies that will associate the consumption of energy drinks with lifestyles and secondary sources that collate this type of studies were considered as inclusion criteria. As exclusion criteria, work done on young adults, university students, exclusively isotonic or carbonated drinks and expert opinion articles were discarded.

Table 1 Search strategies and results

Database	Search strategy	Studies retrieved from search	Studies include after reading of title	Studies include after reading of abstract	Studies include after reading the complete study
Pubmed	(((energy drinks[MeSH Terms]) OR ("energy drink"[Title/Abstract] OR "energy shot"[Title/Abstract] OR "stimulant drink"[Title/Abstract]) OR "caffeinated drink"[Title/Abstract] OR "energy drinks"[Title/Abstract] OR "stimulant drinks"[Title/Abstract] OR "caffeinated drinks"[Title/Abstract] OR "energy shots"[Title/Abstract]))) AND (((adolescent[MeSH Terms]) OR ("high schoolers"[Title/Abstract]) OR teen*[Title/Abstract] OR adolesc*[Title/Abstract]) OR pubesc*[Title/Abstract]) OR young* [Title/Abstract]) OR youth* [Title/Abstract]))) AND ((((impulsive behavior[MeSH Terms] OR dangerous behavior[MeSH Terms] OR health behavior[MeSH Terms] OR risk factor [MeSH Terms] OR self injurious behavior[MeSH Terms] OR conduct disorder[MeSH Terms] OR mood disorder[MeSH Terms] OR academic performance[MeSH Terms] OR athletic performance[MeSH Terms] OR life style[MeSH Terms] OR marijuana abuse[MeSH Terms] OR alcohol drinking[MeSH Terms] OR tobacco use disorder[MeSH Terms] OR nursing[MeSH Terms] OR public health[MeSH Terms]) OR ((behav*[Title/Abstract] OR risk*[Title/Abstract] OR "mood disorder"[Title/Abstract] OR hazardous[Title/Abstract] OR performance[Title/Abstract] OR nurs*[Title/Abstract] OR "public health"[Title/Abstract] OR exercise[Title/Abstract] OR "physical activity"[Title/Abstract] OR alcohol[Title/Abstract] OR marijuana[Title/Abstract] OR smok*[Title/Abstract] OR "self-harm"[Title/Abstract]))))	377	198	112	18

Database	Search Strategy	Studies retrieved from search	Studies include after reading of title	Studies include after reading of abstract	Studies include after reading the complete study
Cinahl	(((MH "Energy Drinks") OR (TI energy drink OR AB energy drink OR TI energy drinks OR AB energy drinks OR TI caffeinated drink OR AB caffeinated drink OR TI caffeinated drinks OR AB caffeinated drinks OR TI stimulant drink OR AB stimulant drink OR TI stimulant drinks OR AB stimulant drinks OR TI energy shot OR AB energy shot OR TI energy shots OR AB energy shots))) AND (((MH adolescence) OR (TI teen* OR TI "high schoolers" OR TI adolesc* OR TI young* OR TI youth* OR AB teen* OR AB "high schoolers" OR AB adolesc* OR AB young* OR AB youth*))) AND (((MH impulsive behavior OR MH dangerous behavior OR MH health behavior OR MH self-injurious behavior OR MH conduct disorder OR MH mood disorders OR MH academic performance OR MH athletic performance OR MH life style OR MH marijuana abuse OR MH alcohol drinking OR MH tobacco use disorder OR MH nursing OR MH public health OR MH risk factors) OR (TI behav* OR AB behav* OR TI performance OR AB performance OR TI risk* OR AB risk* OR TI "physical activity" OR AB physical activity" OR TI exercise OR AB exercise OR TI "mood disorder" OR AB "mood disorder" OR TI hazardous OR AB hazardous OR TI self-harm OR AB self-harm OR TI smok* OR AB smok* OR TI alcohol OR AB alcohol OR TI marijuana OR AB marijuana OR TI nurs* OR AB nurs* OR TI public health OR AB public health)))	220	50	33	7

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Table Coninues...

Database	Search Strategy	Studies retrieved from search	Studies include after reading of title	Studies include after reading of abstract	Studies include after reading the complete study
Cuiden Plus	(([tit=bebidas energéticas] or [res= bebidas energéticas] or [tit=bebida energética] or [res=bebida energética])) and (([tit=adolescente] or [res=adolescente] or [tit=adolescentes] or [res=adolescentes] or [tit joven] or [res=joven])) and (([tit= comportamiento] or [tit=comprotamientos] or [tit=alcohol] or [tit= conducta] or [tit=cannabis] or [tit= actividad física] or [tit=rendimiento académico] or [res=comportamiento] or [res=comportamientos] or [res=alcohol] or [res=conducta] or [res=cannabis] or [res=actividad física] or [res=rendimiento académico] or [tit=conductas] or [res= conductas]))	2	0	0	0
Scopus	((TITLE-ABS-KEY ("energy drinks") OR TITLE-ABS-KEY ("energy drink") OR TITLE-ABS-KEY ("energy shot") OR TITLE-ABS-KEY ("energy shots") OR TITLE-ABS-KEY ("stimulant drink") OR TITLE-ABS-KEY ("stimulant drinks") OR TITLE-ABS-KEY ("caffeinated drink") OR TITLE-ABS-KEY ("caffeinated drinks")) AND ((TITLE-ABS-KEY (adolesc*) OR TITLE-ABS-KEY (teen*) OR TITLE-ABS-KEY ("high schoolers") OR TITLE-ABS-KEY (young*) OR TITLE-ABS-KEY (youth*)) AND ((TITLE-ABS-KEY (behav*) OR TITLE-ABS-KEY (risk*) OR TITLE-ABS-KEY ("modo disorder") OR TITLE-ABS-KEY (nurs*) OR TITLE-ABS-KEY ("public health") OR TITLE-ABS-KEY (exercise) OR TITLE-ABS-KEY ("physical activity") OR TITLE-ABS-KEY (alcohol) OR TITLE-ABS-KEY (marijuan) OR TITLE-ABS-KEY (smok*) OR TITLE-ABS-KEY ("self harm"))	103	13	6	1
Database	**Search Strategy**	**Studies retrieved from search**	**Studies include after reading of title**	**Studies include after reading of abstract**	**Studies include after reading the complete study**
Total		N=702(208 studies duplicates)	N=261	N=151	N=26

Results

In the searching process, a total of 702 articles were obtained, as shown in Table 2. 28 articles were selected, from 25 primary sources (89%), of which 2 with a qualitative approach (7.15%), 23 with a quantitative approach (82.15) mostly cross-sectional studies (57.15%), and 3 articles from secondary sources (10.7%). The dossier of the work has been divided into three thematic categories: knowledge and perceptions of consumers, influence on rest and mood and substance abuse.

Table 2 Studies selection

Study	Year/Country	Objective	Design	Findings
Francis J et al.[10]	Australia 2017	To determine adolescent's knowledge, motivations and strategies to decrease consumption of ED.	Focus Group N:41 (12-15 years)	Enhanced energy, prize, accessibility, peer pressure, pleasant taste and commercial strategies are facilitators of consumption of ED.
Scuri S et al.[11]	Italy2019	To determine the frequency of consumption of ED in high school students.	Cross-Sectional N:1581	A 93% of participants know the mainly ingredients of ED. The main use it to play sport, study and leisure activities.
Mansour B et al.[12]	Israel2019	To value the awareness of risk associated in consumption of ED.	Cross-Sectional N:400 (16-18 years)	The consumption is more prevalent in boys. There is inverse association between knowledge and consumption of EDs.
Costa BM et al.[13]	Australia 2014	To explore perceptions, patterns and contexts of consumption of ED.	Focus Group N: 40 (12-15 years)	Adolescents have limited knowledge about common ingredients of EDs, and some have difficulties to distinguish EDs from other drinks.
Study	**Year/Country**	**Objective**	**Design**	**Findings**
Costa BM et al.[14]	Australia 2016	To value patterns of consumption of EDs in adolescents.	Cross-Sectional N: 399 (12-18 years)	Consumption of EDs is prevalent in adolescents, is associated with psychological symptoms and the maximum number of ED appropriated in a day varied.
Emond JA et al.[15]	USA 2014	To describe the TV programming and their audience during the advertising of ED.	Cross-Sectional N:139	EDs are advertised in adolescent channels of US network and cable television.
Nowak D et al.[16]	Poland 2016	To examine the consumption of ED in adolescent athlete.	Cross-Sectional N: 707 (13-16 years)	The 69% of adolescents who consuming EDs are athletes and reported headache, pain abdominal, nausea, vomiting, insomnia and anxiety mainly.
Gallo Salazar C et al.[17]	Spain2015	To evaluate the effectiveness of EDs during pre-exercise in physical performance of elite junior tennis Player	Experimental N: 14 (15-17 years)	The use of ED improves handgrip force, the running intensity and number of sprints.

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Table Coninues...

Study	**Year/Country**	**Objective**	**Design**	**Findings**
Arazi H et al.[18]	Iran2016	To evaluate effectiveness of EDs during pre-exercise in physical performance in female swimmers.	Experimental N: 36 (12-14 years)	The use of ED reduces the record to complete 100 m swim Crawl.
Abian-Vicen J et al.[19]	Spain2014	To evaluate effectiveness of ED in precision in throw, jump performance and endurance in basketball players.	Experimental N: 16 (13-16 years)	The ED increases the height of counter movement jump test and 15 seconds maximal jumping test.
Husarova D et al.[20]	Slovakia 2017	To associate the use of digital devices with consumption of Eds and sleeping quality.	Cross-Sectional N: 7595 (11-16 years)	More time spend in digital devices is associated with higher consumption of ED and a lower quality of sleeping.
Marmorstein NR[21]	USA 2017	To associate the consumption of ED with sleep problems.	Cross-Sectional N: 127 (12-15 years)	The consumption of ED is associated with daytime fatigue and initial insomnia.
Study	**Year/Country**	**Objective**	**Design**	**Findings**
Logan RW et al.[22]	USA 2017	To review the role of brain regard systems in the disruption of circadian rhythms in adolescents	Bibliographical review	Evidence suggest ED can contribute in disruption of circadian rhythms.
Holubcikova J et al.[23]	Slovakia 2017	To associate the chronic consumption of EDs with behavioral problems and health of adolescents.	Cross-Sectional N: 8977 (11-15 years)	The consumption is more prevalent in boys and report more health problems, behavioral problems and negative scholar experiences.
Schwartz DL et al.[24]	USA 2014	To associate consumption of EDs with hyperactive behavior.	Cross-Sectional N: 1649	Higher risk of inattention and hyperactivity in adolescent who consuming EDs.
Kim SY et al.[25]	South Korea2017	To associate the role of emotional factors with consumption of EDs	Cross-Sectional N:121106(13-18 years)	Lack of sleeping, stress, suicidal attempts and low school performance are associated with consumption of ED.
Cofini V et al.[26]	Italy 2016	To associate social, psychological and behavioral characteristics with the consumption of EDs.	Cross-Sectional N:450 (10-18 years)	The consumption is more prevalent in boys. There's no significative association with anxiety and depressive mood.
Study	**Year/Country**	**Objective**	**Design**	**Findings**
Park S et al.[27]	South Korea2016	To associate the consumption of ED with mental health problems in isolation or in combination of "junk food".	Cross-Sectional N:68043 (12-18 years)	The consumption of ED is significative associated with sleep dissatisfaction, stress, depressive mood, suicidal ideation, suicide plan and suicide attempt.
Barrense-Dias Y et al.[28]	Switzerland 2016	To examine whether the consumption of ED at 14 years teenagers predicted the substance use at 16 years teenagers.	Longitudinal N: 621 (14-16 years)	The consumption of ED at 14 years predicted the consumption of substance use at 16.
Marmorstein NR[29]	USA 2019	To associate the consumption of EDs with alcohol use 16 months later.	Longitudinal N:134 (10-14 years)	Early consumption of ED in adolescents predicted later alcohol consumption.
Choi HJ et al.[30]	USA 2015	To associate the consumption of EDs with alcohol consumption in a year.	Longitudinal N:780	The consumption of EDs is a risk factor of alcohol consumption.
Marczinski CA[31]	USA 2014	Review studies which evidence the mixing EDs with alcohol can increase the desire of consumption more alcohol.	Bibliographical review	New studies help to explain why AmED increase the desire of consumption more alcohol.
Study	**Year/Country**	**Objective**	**Design**	**Findings**
Bonar EE et al.[32]	USA 2014	To value the reasons and consequences of mixing alcohol with EDs in emergency department care.	Cross-Sectional N: 439 (14-20 years)	AmED is associated with high risk driving, sex practice after consumption of alcohol and drug use
Williams RD et al.[33]	USA 2017	To compare the different between the driving of adolescents who consuming AmED, alcohol and EDs	Cross-Sectional N: 1305	AmED is associated with high risk driving.
Holubcikova et al.[34]	Slovakia 2016	To associate the consumption of AmED with behavioral problems.	Cross-Sectional N: 8502 (11-15 years)	Adolescents who consuming AmED tent to adopt aggressive behavior.
Lalanne L et al.[35]	Canada 2017	To review the cognitive impact and perception in the intoxication of AmED.	Systematic Review	AmED mask the perception of alcohol intoxication.

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Knowledge and perceptions of consumers

Adolescents identify an "energy drink" with large amounts of sugar, caffeine and energy.[10] There are adolescents who don't know the main ingredients and often confuse EDs with isotonic drinks and cola drinks. Many of them are not able to identify any adverse effects and mistakenly consider that there are equivalences between beverage containers.[10,11] It is possible that the knowledge deficit may act as a facilitating factor for excessive consumption of EDs. According to the Israeli cross-sectional study by Mansour et al.,[12] which compares the degree of knowledge among adolescents who do not consume EDs and those who do so regularly, adolescents who do not consume EDs have more information about the adverse effects and ingredients. Likewise, it is common for adolescents to perceive the consumption of EDs as a habit of the masculine gender, unhealthy and of sports practices in general.[10,13,14] In the USA cross -sectional study by Emond JA et al.,[15] it is observed how the "marketing" associated with the EDs focuses on the promotion of sports practices. Adolescents' athletes, who consume EDs, do it daily, usually 1 container of 250 mL per sports session and they commonly describe a feeling of vigour after consumption (16-18). Investigations conducted in this regard, such as those by Gallo-Salazar C et al.,[17] Arazi H et al.,[18] and Abian-Vicen J et al.,[19] have demonstrated the presence of an ergogenic effect compared to placebo when consuming a ED during pre-exercise (30 minutes or 1 hour before exercise) in sports such as tennis, swimming and basketball. The results were correlated with previous studies in team sports such as rugby, football, basketball and volleyball. However, there were a part of the participants who reported adverse effects after consumption, mainly insomnia, nausea or gastrointestinal discomfort, despite the controlled conditions and two of the studies did not exceed 3 mg/kg/day.[17,19]

Influence on rest and mood

It is known that EDs can act as an environmental factor that modulates circadian rhythms, generating a phenomenon known as "sleep deprivation." Chronic use of EDs have been directly associated with difficulty in falling asleep, less sleep, insomnia and daytime fatigue. These consequences constitute a risk factor for presenting depression, anxiety, substance use, school absenteeism, poor academic performance and adoption of aggressive behaviours such as bullying or fighting within the school environment.[20,21] Daily life requires adolescents to wake up early, so bad sleep hygiene habits lead to less hours of sleep that ultimately lead to difficulty falling asleep. This situation caused by EDs, favours the perpetuation of the consumption habit to be able to counteract daytime fatigue, which leads them to a worse academic performance and to live the night world prematurely, where they are more exposed to substance abuse.[22] In fact, evening chronotypes are associated with depression, decreased reward circuits, poor self-perception, impulsivity and experience new sensations. We believe that sustained sleep deprivation could lead to a damage on adolescents' brain circuits, with a decrease in reward circuits. This seems to be linked to a tendency to suffer from depression and self-harm episodes and to a continuous search to experience new things.[22] This is related to the results of the studies by Holubcikova J et al.,[23] Schwartz DL et al..[24] and Kim SY et al.,[25] in those with higher consumption of EDs, the association between anxious, depressive, hyperactive, violent and self-injurious behaviours increase. However, in the cross-sectional study by Cofini V et al.,[26] this association was not significant, but this study did not consider satisfaction of sleep quality in the adolescents surveyed, one of the main factors associated with increased risk of suicide and depressive symptoms. Issue that was considered in the Korean studies of Park S et al.,[27] or that of Kim SY et al.,[25] in which in chronic consumers there is a significant increase in committing suicide attempts, along with an unsatisfactory rest and an increased state of stress.

Substance abuse

The initiation of substance abuse occurs between the ages of 14 and 18, often preceded by emotional problems such as depression or anxiety. The presence of both tend to generate severe depressive episodes that increase the risk of suicide.[22] In longitudinal studies such as Barrense-Dias Y et al.,[28] Marmorstein NR[29] and Choi HJ et al.,[30] it has been observed that adolescents who frequently consume EDs, begin to abuse alcohol, tobacco and cannabis long before the rest. This exposes them to assume high-risk behaviours with serious consequences for their health, especially for those who mix them with alcohol. Likewise, it has been observed that greater parental control can act as a protective factor to avoid substance abuse.[29] AmED generated enough alarms to be banned in countries like the USA. In fact, it was in this same country that the so-called "alcoholic drinks pre-mixed with caffeine" were born in early 2000. But after 5 years of its launch, cases of ethyl overdose, sudden death and deadly accidents directly related to the consumption of the so-called "premixed drinks" led to its prohibition.[31] However, far from eradicating this consumption habit, it has become a self-taught person practice far from the control of health authorities, in which adolescents decide to mix both drinks as they desire. The most common combinations are vodka with Red Bull™ and "jägermeister" liquor with any energy drink (colloquially known as "Jagerbomb").[32]

When mixing alcohol with EDs, there is a greater tendency to "binge drinking", alcohol intoxication, alcohol dependence, drunk driving, not wearing a seat belt in the car, car accidents, situations of physical violence, poor school performance, promiscuity and consumption of illicit drugs, tobacco and marijuana.[31,33,34] In Marczinski CA's review[31] we find that this mixture increases the desire to consume more alcohol, as the combination of both drinks generates a perception of less alcoholic intoxication and fatigue as described by Lalanne L et al.[35] Due to the perception of adverse effects arising from decreased alcohol consumption, does not mean that there is no increase in reaction time, decreased attention capacity, less motor coordination and high blood alcohol levels. This terminology was coined with the term "drunk awake".[35]

Discussion

Several authors agree that the lack of knowledge about the risks involved in the consumption of EDs favours such consumption,[10–13] showing that adolescents who have more knowledge about the risks of these drinks do not consume or do so exceptionally.[12] However, not enough interventions are made to address this situation. In fact, only 1 in 9 adolescents receives advice from their doctor or nurse about this type of beverage.[36] Likewise, the existence of studies in which mobile applications have been shown to be useful in reducing prevalence show the usefulness of tools such as "health education" in this problem.[37] As for the consumer profile, it is closely linked to the masculine gender and sport. There are studies that have demonstrated the presence of ergogenic effect and greater vigour during the exercise or sport, which could explain the success of this type of EDs in the field of sport added to the aggressive marketing campaigns.[15–19] Similarly, the review by Visram S et al.,[38] which, on the contrary, does not emphasize the importance of the absence of a safety limit and the presence of adverse effects in all studies, which makes the recommendation for this type of use impossible.

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Following the analysis of results, it has also been observed that chronic consumers of EDs have school and affective problems and may disrupt teens´ sleep patterns, that leads them to acquire violent behaviour and substance abuse.[20–25,27] Likewise, the review by Richards G et al.,[26] which postulates that this type of discovery could be linked to the prejudicial effect that EDs have on adolescents' rest. Longitudinally, the ingestion of EDs predicts an abuse of alcohol, tobacco and marijuana, as well as an initiation to substance use before the age of 14.[28–30] That is, it is a risk factor, whether it is mixed with EDs.[40] Although, AmED remains being one of the greatest current risks of alcoholic dependence, alcohol intoxication and binge-drinking among adolescents.[31–35] This combination of drinks favours the excessive consumption of alcohol, being its main claim the taste.[31,32,35] Among the main weaknesses, the small number of works carried out in Spain in adolescent's population prevent us from knowing if the behaviours described in publications are reproduced significantly in our society. Likewise, although there are cross-sectional studies carried out by nurses, these do not translate into intervention proposals aimed at preventing the abuse of EDs and their consequences in health. Possibly the latter is due to the general lack of analytical studies that allow establishing causal relationships to give the problem the relevance and severity that the cross-sectional studies seem to suggest.

Conclusion

After the narrative review we can affirm that adolescents´ knowledge about the characteristics of EDs determines a lower consumption of these. On the other hand, consumption is mainly a habit of male gender, perceived as unhealthy. Chronic use of EDs causes insomnia and daytime fatigue, this favours the development of depressive symptoms and a continuous tendency to risk taking behaviours. It would be convenient to develop nursing interventions from Primary Health Care aimed at providing knowledge and favouring attitudes and skills in adolescents to prevent the abuse of EDs. From this perspective, this work could serve as a starting point, not only as a basis for future interventions, but to highlight the importance of recording the presence of this consumption habit in nursing assessment to continue exploring its impact in adolescents´ health.

Acknowledgments

None.

Funding details

None.

Conflicts of interest

The author declares there is no conflict of interest.

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Citation: Osaba EB, Galán MLC, Salinas CM. The use of energy drinks in adolescents: a risky behaviour. *Int J Fam Commun Med.* 2019;3(5):216–222. DOI: 10.15406/ijfcm.2019.03.00160