# Young People and Energy Drink Consumption in England

Findings from the WHO Health Behaviour in School aged Children (HBSC) Survey 2015

*Detailed Analysis on Findings Relating to Consumption of Energy Drinks by Young People*

Commissioned report for Department of Health

**Fiona, M Brooks, Ellen Klemera, Josefine Magnusson, Kayleigh Chester**

University of Hertfordshire

Contact [Fiona.Brooks@uts.edu.au](mailto:Fiona.Brooks@uts.edu.au)

[e.1.klemera@herts.ac.uk](mailto:e.1.klemera@herts.ac.uk)

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**Summary**

* 14% of young people aged 11-15 years report consuming energy drinks 2-4 times a week.
* Consumption of energy drinks increases with age.
* Boys aged 13 and 15 years are the most likely to consume energy drinks regularly, with 20% of 13-year-old boys consuming energy drinks at least 2-4 days a week.
* Being physically active is associated with the consumption of energy drinks. Those young people (especially boys) who meet the recommended physical activity levels are more likely to consume energy drinks than those who do not meet the guidelines.
* Those who regularly consume energy drinks (at least 2-4 times a week) are less likely to eat breakfast on a school day.
* Young people who drink energy drinks are more likely to report that they do not have enough sleep to concentrate at school than those who do not consume energy drinks.
* Across a range of health and well-being measures those who never consume energy drinks appear to have more positive outcomes and have higher life satisfaction than those who consume energy drinks.
* Those who consumed energy drinks regularly or on daily basis were more likely to receive free school meals than those who did not consume energy drinks.

**Introduction**

This short report presents findings from the World Health Organization (WHO) Health Behaviour in School-aged Children study (HBSC) relating to patterns of energy drink consumption among young people aged 11-15 years in England.

The results presented in this report are drawn from the HBSC 2014/15 survey findings. A new question in the HBSC England Survey was included on energy drink consumption for the first time in 2014. The measure asked how frequently young people consumed energy drinks and included a number of brand examples, with the response options: **‘never’, ‘less than once a week’, ‘once a week’, ‘2-4days a week’, ‘5-6 days a week’, ‘once a day’, ‘every day’, ‘every day, more than once’**

In this report the following definitions have been adopted

* Regular consumption of energy drinks refers to 2-4 times a week.
* Daily consumption of energy drinks includes both *every day* and *more than once a day*

**Background**

Energy drinks represent a relatively newer form of non-alcoholic beverage that has grown in terms of volume sales over the past 20 years and represent one of the fastest growing aspects of the beverage market.

Potential impact on health and well-being of energy drink consumption requires more research, especially in terms of consumption by children and younger adolescents. However a recent Canadian study identified associations between energy drink consumption and other health risk behaviours during adolescence including substance misuse and increased depression, suggesting that they may be ‘*a marker for other activities that may negatively affect adolescent development, health and well-*being’ (Sunday, Langillec et al. 2014)’. Other studies have suggested increased links with higher levels of alcohol consumption in young people (Patrick and Maggs 2014) and regular (weekly consumption) by young adults is also associated with being overweight (Karina, Lyng et al. 2014).

Under current EU labelling rules, any drink, other than tea or coffee, that contains over 150mg of caffeine per litre requires a warning label saying: ‘High caffeine content. Not recommended for children or pregnant or breast-feeding women’. In addition to this the UK voluntary ban on selling energy drinks the under 16s came into being in March 2018.

***Content of Energy Drinks***

In the UK energy drinks are marketed under a range of brand names for example, Monster or Red Bull but also include supermarket own brands.

Energy drinks usually contain some variation on the following content and contain between 240-335 calories per standard serving size (approximately 500 ml).

* **sugar** – Energy drinks vary in the amount of sugar per standard drink but contain between 65g (Mountain Dew energy) to about 78g (Rockstar Punched energy), this amount of sugar equates to between 16-20 teaspoons of sugar per can.
* **caffeine**—a stimulant that acts on the central nervous system to speed up the messages to and from the brain. Caffeine is the main active ingredient in energy drinks. There are around 40-50 mg in 250 ml of the average cola drink.
* **guarana**—an extract from a plant that contains about twice the amount of caffeine as coffee beans
* **theobromine**—from the cacao plant. It has a similar effect to caffeine and is found in chocolate and many other foods
* **theophylline**—a drug used for the treatment of respiratory diseases and asthma, marketed under a variety of brand names. It is structurally similar to caffeine. It is also naturally found in tea at very small levels
* **taurine**—occurs naturally in food, especially in seafood and meat, and is necessary for normal skeletal muscle functioning
* **ginseng**—a substance that comes from a variety of plants and is believed to have medicinal properties but has been found to interact with a number of prescription and herbal drugs.

*(Source Australian Medical Journal 2012).*

**Overview of Energy Drink Consumption Patterns**

In the HBSC England study, 14% of young people aged 11-15 reported consuming energy drinks at least 2-4 times a week and 5 % of all young people reported drinking energy drinks at least daily. Whereas 53% reported that they never consumed energy drinks.

The levels of energy drink consumption among young people in the HBSC England study appears to be comparable with consumption patterns found in other international studies, for example, in Denmark a weekly consumption rate of just over 15% was reported among young adults (Seifert, Schaechter et al. 2011). Higher rates have been identified in other European countries, with the highest consumption found in the USA (Karina, Lyng et al. 2014)

Boys were more likely to consume energy drinks every day than girls, with girls being more likely to report they never consumed energy drinks. Across all age groups a higher proportion of boys than girls reported consuming energy drinks, either once a day or at least 2-4 times a week (Table 1) This gendered pattern of consumption with higher rates among males has also been found by other international studies (Seifert, Schaechter et al. 2011).

Older adolescents, both boys and girls also reported consuming more energy drinks than their younger peers (Table 1). Other studies have also reported an increase in consumption by age, for example one study found that 51% of college students regularly consumed energy drinks several times a week (Velazquez, Poulos et al. 2012).

**Table 1 Energy drink consumption patterns by age and gender**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Never | | Less than once a week | | Once a week | | 2-4 days a week | | 5-6 days a week | | Once daily | | More than once daily | |
|  | Boy | Girl | Boy | Girl | Boy | Girl | Boy | Girl | Boy | Girl | Boy | Girl | Boy | Girl |
| 11-year olds | 54% | 70% | 22% | 18% | 10% | 6% | 7% | 4% | 3% | 2% | 2% | 1% | 3% | 1% |
| 13-year olds | 42% | 59% | 27% | 22% | 12% | 8% | 10% | 5% | 5% | 2% | 2% | 2% | 3% | 3% |
| 15-year olds | 35% | 55% | 33% | 27% | 13% | 6% | 10% | 7% | 4% | 1% | 2% | 2% | 3% | 2% |
| total | 44% | 62% | 27% | 22% | 12% | 7% | 9% | 5% | 4% | 2% | 2% | 1% | 3% | 2% |

***Energy drinks and free school meals (FSM)***

There appears to be an association between receiving FSM and drinking energy drinks, in that among those who say that they never drink energy drinks, or drink less than once a week, 11% of students receive FSM, whereas among students who report that they drink at least one energy drink a day, 23% receive FSM and 16% who regularly consume energy drinks receive FSM. In the HBSC England sample as a whole 13% receive FSM.

**Health and Well–being**

Self-rated health and subjective life satisfaction are both markers for overall well-being, attainment and achievement in adolescence and future life chances.

***Self-rated health***

In the HBSC England general sample 86% of young people rated their health as good or excellent (Figure 1), with this figure showing an upward trend over the last decade. (This figure is very similar for those who never drink energy drinks (87%), however in comparison, 79% of those who regularly consume energy drinks rate their health as either good or excellent (Figure 2).

There is also a marked gender difference, girls who consume energy drinks are much less likely to report their health as being good or excellent than their male peers who consume energy drinks or their female peers who do not consume energy drinks.

For boys no substantial difference was found in terms of self-rated health and between energy drink consumption.

**Figure 1: Young people who reported their physical health to be 'good' or 'excellent' by age and gender**

**Figure 2: Proportions of young people who rated their health as good or excellent and consume energy drinks 2-4 times a week, (by age and gender)**

***Life satisfaction***

64% of those who regularly consume energy drinks and 55% of daily consumers rate their life satisfaction as high (score of 8-10 considered to be *thriving*).

In comparison, for the HBSC England general sample 74% of young people rate their life satisfaction as high and 84% of those who never drink energy drinks.

Notably, those who consume energy drinks were also more likely to be among those who report very low life satisfaction (score of 0-4 *struggling*). See Figures 3 and 4 below.

Among girls who regularly consume energy drinks 49% report high life satisfaction compared to 69% of girls in the national sample as a whole. Among boys there was less of a difference in terms of life satisfaction between regular energy drink consumers and the main sample (72% Vs 79%).

**Figure 3: Young people who reported having ‘Low life satisfaction' (0 to 4 on Cantril ladder) by age and gender**

**Figure 4: Proportions of young people with low life satisfaction and who consume energy drinks 2-4 times a week (by age and gender).**

***Multiple health complaints***

70% of daily energy drinkers and 63% of regular drinkers (2-4 times a week) reported having 2 or more health complaints compared to 50% reported within the HBSC sample as a whole and 43% of those who never drink energy drinks (Table 2).

The reporting of multiple health complaints is highly gendered, with girls generally reporting a higher frequency than boys (Figure 5). However, among 15 year girls who regularly consume energy drinks 87% reported having multiple health complaints 2 or more times a week, compared to 72% of 15 -year old girls for the HBSC sample as a whole.

**Table 2: Proportion of young people who reported having multiple health complaints 2 or more times a week and regular energy drinks consumption**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age 11 years** | | **Age 13 years** | | **Age 15 years** | | **Totals** | |
|  | **HBSC England National rate** | **Drinking energy drink 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking**  **energy drink 2-4 times a week** |
| **Boy** | **41%** | **51%** | **43%** | **55%** | **49%** | **59%** | **44%** | **55%** |
| **Girl** | **44%** | **59%** | **59%** | **68%** | **72%** | **87%** | **57%** | **71%** |
| **Totals** | **43%** | **55%** | **51%** | **62%** | **61%** | **73%** | **51%** | **63%** |

**Figure 5: Young people who report having 2 or more health complaints at least once a week by age and gender**

***Body image***

Given the high calorie content of energy drinks, behaviours and perceptions that might relate to weight management issues were considered in relation to consumption of energy drinks.

32% of those who regularly consume energy drinks reported their body was ‘too fat’, which is in line with the proportion (30%) of young people in the national sample reporting the same. However, among girls who regularly consume energy drinks 49% reported that they are ‘too fat’, compared to only 38% of girls in the national sample. Among boys there was no considerable ifference between groups in terms of reporting their body size was ‘too fat’ (23% regular consumers of energy drinks Vs 22% main sample).

***Being on a diet***

Overall, 16% of those who regularly consume energy drinks reported that they were currently on a diet or doing something to lose weight, (in line with the national sample (14%)). However among girls who regularly consume energy drinks, 23% reported being on a diet or doing something to reduce their weight compared to only 17% of girls from the national sample. Among boys there were no notable differences in terms of dieting behaviours between regular energy drink consumers and the main sample (12% Vs 11%).

**Energy Drinks and Positive Health Behaviours**

***Five fruits and vegetables a day***

Slightly lower proportions of regular energy drinkers reported eating five portions of fruit and vegetables a day compared to the national sample as a whole (30% v.38%).

Young people who never drink energy drinks were more likely to report eating ‘five a day’ than those who consume energy drinks 2-4 times a day (42% v.30%).

No considerable gender differences were identified.

***Breakfast Eating***

Just over a third (36%) of those who drink energy drinks every day and less than half (48%) of those consume 2-4 times a week reported eating breakfast 5 days a week compared to the HBSC overall figure of 66% (Table 3).

**Table 3 Proportion of young people who eat breakfast 5 days a week/every day during the week and daily energy drink consumption.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age 11 years** | | **Age 13 years** | | **Age 15 years** | | **Totals** | |
|  | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** |
| **Boy** | **83%** | **63%** | **71%** | **54%** | **65%** | **38%** | **73%** | **52%** |
| **Girl** | **74%** | **33%** | **50%** | **9%** | **49%** | **17%** | **58%** | **20%** |
| **Totals** | **79%** | **48%** | **61%** | **32%** | **57%** | **28%** | **66%** | **36%** |

There was also an association between never eating breakfast and energy drink consumption, with 14% of young people from English National report never eating breakfast during week days; compared to 36% of daily energy drinkers and 26% of regular drinkers.

Although girls are less likely to regularly consume energy drinks than their male peers, those that do so regularly (2-4 times a week) are also much less likely to eat breakfast on a school day than girls who never consume energy drinks (34% vs 13%).

Energy drinks are reported to be a marker for health risk behaviours (smoking, drinking alcohol to excess etc. (Patrick and Maggs 2014), it is likely their consumption is also associated with poorer nutritional habits (tables 4-6)

**Table 4 Proportions of young people who never eat breakfast and daily energy drink consumption by age and gender**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age 11 years** | | **Age 13 years** | | **Age 15 years** | | **Totals** | |
|  | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** | **HBSC England National rate** | **Daily energy drinkers** |
| **Boy** | **4%** | **12%** | **11%** | **22%** | **14%** | **33%** | **10%** | **22%** |
| **Girl** | **8%** | **40%** | **22%** | **67%** | **24%** | **43%** | **18%** | **50%** |
| ***Total*** | **6%** | **26%** | **17%** | **45%** | **19%** | **38%** | **14%** | **36%** |

**Table 5: Proportion of young people who eat breakfast 5 days a week/every day during the week and regular energy drink consumption**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age 11 years** | | **Age 13 years** | | **Age 15 years** | | **Totals** | |
|  | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** |
| **Boy** | **83%** | **69%** | **71%** | **53%** | **65%** | **55%** | **73%** | **59%** |
| **Girl** | **74%** | **55%** | **50%** | **25%** | **49%** | **31%** | **58%** | **37%** |
| **Total** | **79%** | **62%** | **61%** | **39%** | **57%** | **43%** | **66%** | **48%** |

**Table 6: Proportions of young people who never eat breakfast and regular energy drink consumption by age and gender**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Age 11 years** | | **Age 13 years** | | **Age 15 years** | | **Totals** | |
|  | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** | **HBSC England National rate** | **Drinking energy drinks 2-4 times a week** |
| **Boy** | **4%** | **7%** | **11%** | **21%** | **14%** | **27%** | **10** | **18%** |
| **Girl** | **8%** | **17%** | **22%** | **41%** | **24%** | **44%** | **18** | **34%** |
| **Total** | **6%** | **12%** | **17%** | **31%** | **19%** | **36%** | **14** | **26%** |

***Physical activity***

A significant association was found between engagement in physical activity and energy drink consumption. Overall those who meet the recommended levels of physical activity of one hour a day were more likely to report higher levels of energy drink consumption, than those who do not consume energy drinks, i.e. 35% of daily energy drink consumers and 24% of those who consume energy drinks 2-4 time a week (regular consumers) reported meeting the recommended physical activity levels (for the sample as a whole this figure is 19%) (figure 6). However, the relationship is highly gendered, and the association only operates for boys - boys who reported they never consume energy drinks are less likely to meet the recommended level of physical activity than boys who reported drinking 2-4 times a week or daily (figures 7, 8).

**Figure 6: Young people who meet the recommended level of physical activity**

**Figure 7: Proportions of young people who consume energy drinks daily and undertake one hour of physical activity a day.**

**Figure 8: Proportions of young people who undertake one hour of physical activity by consumption of energy drinks 2-4 times a week.**

***Sleep***

Young people who never drink energy drinks are less likely to report they did not have enough sleep to concentrate at school than those who consume energy drinks, 18% of those who never consumed energy drinks reported that lack of sleep impacted on their ability to concentrate at school compared to 34% of regular energy drinkers (22% for sample as a whole) (Figures 9and 10)

**Figure 9: Young people who report not having enough sleep to be able to concentrate at school.**

**Figure 10 Proportion of young people who reported not having enough sleep by regular energy drink consumption (2-4 times a week).**

**References**

Karina, F., et al. (2014). "Energy drink consumption and the relation to socio-demographic factors and health behaviour among young adults in Denmark. A population-based study." The European Journal of Public Health **DOI:** <http://dx.doi.org/10.1093/eurpub/cku003> **840-844 First published online: 14 February 2014**.

Patrick, M. and J. Maggs (2014). "Energy Drinks and Alcohol: Links to Alcohol Behaviors and Consequences Across 56 Days." Journal of Adolescent Health **54**(4): 454–459.

Seifert, S., et al. (2011). "Health Effects of Energy Drinks on Children, Adolescents, and Young Adults." Pediatrics **127**(3): 511-528.

Sunday, A., et al. (2014). "An emerging adolescent health risk: Caffeinated energy drink consumption patterns among high school students." Preventive Medicine **62**(May): 54-59.

Velazquez, C., et al. (2012). "Associations between energy drink consumption and alcohol use behaviors among college students." Drug and Alcohol Dependence **123**(1-3): 167-172.