

Spreading Awareness Of The Importance Of Giving Up Energy Drinks And Their Dangers Among The Saudi Population

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Abstract:

Background: The use of energy drinks has been high in Saudi Arabia, especially among youth. However, there is a lack of information on the awareness of the Saudi public about energy drinks, their ingredients, their potential health impacts, and the safe amounts of their consumption. The study aims to measure the awareness, knowledge, and attitudes of the Saudi public towards energy drink consumption and its impacts on their health.

Methods: A descriptive study design using a cross-sectional approach was employed. The study involved 150 participants in Saudi Arabia. A structured questionnaire was used as a tool in collecting information from the participants. The questionnaire was self-administered, and SPSS software was used in analyzing the collected data.

Results: The study revealed that 76.67% of the respondents had ever consumed energy drinks. The study also showed that the majority of the consumers were between 18-25 years of age (60%), with Code Red being the most preferred brand of energy drink (32.67%). The study also revealed that 36.67% of the consumers consumed their energy drink once a week, mainly in the evening (58.67%). The study showed that 62% of the respondents were aware of some complications that may arise from the consumption of energy drinks. However, the study also revealed that 92.67% of the respondents had never checked their energy drink levels. Additionally, 74.67% of the respondents did not know the normal range of safe consumption of energy drinks. The study revealed that there is a significant relationship between gender and consumption history (0.002), preferred brand (0.024), and knowledge of complications (0.033). The study also revealed that males had higher consumption rates than females; however, males had less knowledge of complications than females. Additionally, age had a significant relationship with consumption history (0.013) and perceived physical effects (<0.001).

Conclusion: Energy drink consumption is common in the Saudi population, with a higher prevalence in young adults. While awareness of the health risks is moderate, there is a serious lack of knowledge on the safe level of consumption and physiological monitoring. The study has shown the urgent need to address the knowledge gap in the Saudi population with regard to energy drink consumption to reduce the risk of health problems.

Keywords: Energy drinks, Saudi Arabia, Awareness, Health Risks, Knowledge, Attitude.

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I. Introduction

Within the last two decades, the beverage industry has experienced a rapid rise in the consumption of energy drinks. Energy drinks are defined as non-alcoholic beverages that are rich in caffeine, taurine, vitamins, and large amounts of sugars. These are specially designed to provide energy, increase alertness, and improve physical as well as mental performance. Energy drinks have been initially targeted at athletes; however, this market has been greatly expanded to include adolescents, students, as well as workers who need to overcome fatigue and boost concentration. Despite their large consumption, energy drinks have been at the center of an intense debate regarding their safety profile (1).

The main health-related concerns associated with energy drinks revolve around their high caffeine content, which varies between 80 mg and more than 300 mg per serving, thus exceeding the daily intake limit for adolescents and young adults (2). Overconsumption has been associated with a number of detrimental physiological consequences, including heart-related problems, palpitations, and hypertension, as well as sleep disturbances and anxiety, in addition to gastrointestinal upsets (O'Brien et al., 2008). The practice of combining energy drinks with alcohol or using them as a means of coping with physical exercise further increases the

adverse consequences, thus necessitating hospital visits in extreme cases (3). Despite the established detrimental consequences, the general public continues to perceive energy drinks as harmless products.

In the Kingdom of Saudi Arabia, energy drinks consumption is an important issue in health matters. Several studies in the region have shown a high prevalence of consumption among different populations, particularly among university students and youth (4). The special socio-cultural conditions in Saudi Arabia, with its young age structure and late-night social activities along with high levels of academic pressure, can be an important factor in energy drinks consumption. However, while patterns of consumption are frequently investigated, there is a lack of information regarding what the Saudi Arabian people know about what energy drinks contain and how they can impact health in different ways (5).

Previous studies conducted in Saudi Arabia have identified alarming findings in this context. For instance, it was identified that a majority of young consumers are not aware of stimulants like taurine or caffeine limits that constitute safe consumption levels (Oliveira Batista et al., 2025). They tend to take these stimulants at a young age and then continue to use them in a habitual manner without being aware of the dependency potential or health consequences. Moreover, social media marketing and promotional campaigns tend to create an imbalance in the perception of benefits and potential risks (6).

Evaluation of the Knowledge, Attitude, and Practice of the population regarding the consumption of energy drinks plays an important role in developing an effective strategy to address this issue. Knowledge, Attitude, and Practice studies have been successfully applied to address various health-related issues in Saudi Arabia. These studies have helped address issues like tobacco use, vaccination, and chronic conditions. However, there is a lack of comprehensive knowledge, attitude, and practice studies regarding the effects of energy drinks consumption within the general Saudi population. Existing studies have been conducted on specific populations such as university students and medical students. This issue requires evaluation of the general population as well.

Thus, the objective of the current study is to fill in the gap by measuring the level of awareness, knowledge, and attitudes towards the health impacts of energy drinks among the general public living in Saudi Arabia. More specifically, the current study attempts to identify sociodemographic predictors of energy drink consumption and examine the correlation between energy drink use and awareness of its related health risks. The findings of the current study will be critical in assisting policymakers, healthcare professionals, and public information specialists in designing interventions aimed at reducing the potential risks associated with energy drink misuse in Saudi Arabia.

II. Procedure Methodology

Study Design

To examine the awareness, consumption habits, and health risks of the general population of Saudi Arabia regarding the consumption of energy drinks, a descriptive cross-sectional study design was employed.

Study Setting and Population

To carry out this study, the population of Saudi Arabia was considered, including residents of Saudi Arabia aged 18 years and above. The study participants were recruited from different areas of Saudi Arabia, including Central, Western, Eastern, Northern, and Southern regions. The study participants were recruited through physical distribution of study tools in public places, including malls, universities, and primary health care centers, as well as through online platforms to represent a broad demographic spectrum of the population.

Sample Size and Sampling

The sample size was computed using a single proportion sample size formula. The proportion of energy drink consumption among Saudi people was assumed to be 50%, based on findings from previous studies. A confidence level of 95% and a 5% margin of error were used. Additionally, 10-15% was added to allow for non-response rates. A total of 150 samples formed part of the final analysis. Stratified sampling was used to incorporate all regions and genders.

Inclusion and Exclusion Criteria Inclusion criteria:

Saudi people or residents aged 18 years and above who gave their consent to be part of the study. Exclusion criteria: People who did not fill out the questionnaire completely or those who could not give their informed consent.

Data Collection Tool

A structured self-administered questionnaire was designed in Arabic with an optional translation to English. The tool was based on existing knowledge, attitude, and practice surveys related to energy drinks in the past. The questions were modified to suit the environment. The tool was divided into four sections:

Sociodemographic Data

Age, gender, nationality, education level, and occupation.

Consumption Patterns

History of consumption, brand of energy drink (e.g., Code Red, Red Bull, Power Horse), frequency of consumption, time of consumption, and subjective physiological effects (e.g., feeling energized, hyperactive, or nothing).

Awareness and Knowledge:

Knowledge levels of the participants about health complications that may arise, if they ever checked their levels of energy drink consumption (physiological monitoring), knowledge about the safe levels of consumption, and knowledge about how to prevent health complications.

Attitudes:

The interest shown by the participants in receiving further information about health risks.

Piloting was done on a small group of participants before administering the questionnaire to the general population to ensure clarity and reliability. Internal consistency was checked to ensure the scales were valid in measuring attitudes and knowledge.

Data Collection Procedure

Data collection was conducted within a specified timeframe. The questionnaires were hand-delivered to the respondents, and the links were also shared online for ease of access.

Statistical Analysis

Data analysis was conducted using statistical software (SPSS). Descriptive statistics were conducted to analyze the data collected. To determine the relationship between the demographic variables (gender, age, education level, occupation) and the categorical variables related to consumption and awareness, the Chi-square test was conducted. A value of less than 0.05 indicated that the result was statistically significant.

Ethical Considerations

Ethical clearance was obtained from an appropriate institutional review board. Informed consent was taken in all cases before data collection by explaining the objectives of the study to the participants. The confidentiality and anonymity of all participants were maintained throughout the study.

III. Result

Introduction to Findings

The analysis aims to examine the level of awareness and consumption patterns of energy drinks among the Saudi population. It also aims to highlight demographic information. The data is offering a comprehensive view of the current state of energy drink consumption.

Demographic Distribution

Table 1: Demographic characteristics of the study participants (N=150).

Variable	Category	Frequency	Percentage (%)
Age	18-25 years	90	60.00%
	26-35 years	29	19.33%
	36-45 years	19	12.67%
	46 years and above	12	8.00%
Gender	Female	90	60.00%
	Male	60	40.00%
Nationality	Non-Saudi	86	57.33%
	Saudi	64	42.67%

Education Level	Higher education and above	95	63.33%
	Secondary	49	32.67%
	Intermediate	6	4.00%
Occupation	Non-Worker	92	61.33%
	Worker	58	38.67%
Total		150	100%

The highest number of consumers of energy drink lies in the age group of 18-25 years, representing 60% of the total respondents. The second highest consumers of the drink are those belonging to the age group of 26-35 years, representing 19.33%. This may show that the consumption of the drink is more prevalent among the younger age group of the total respondents.

The females represent 60% of the total respondents, whereas males represent 40%. This may show that the consumption of the drink is more prevalent among females than males within the total respondents.

The non-Saudis represent 57.33% of the total respondents, whereas 42.67% represent Saudis. This may show that the consumption of the drink is more prevalent among non-Saudis than Saudis within the total respondents.

The respondents with higher education represent 63.33% of the total respondents. This may show that the consumption of the drink is more prevalent among those having higher education than those having lower education within the total respondents.

The non-workers represent 61.33% of the total respondents. This may show that the consumption of the drink is more prevalent among non-workers than workers within the total respondents. The aim of this study was to evaluate the levels of awareness about the intake of energy drinks and their health hazards in the Saudi population. The results of this study show a complex pattern in the intake of these drinks, demographic differences, and levels of awareness about their intake. The results show that a large percentage of the Saudi population consumes these drinks; however, there is a significant difference between the intake of these drinks and the levels of awareness about their potential health hazards. The results show that 76.67% of the participants have consumed these drinks; however, statistical analysis shows significant demographic differences in these behaviors.

Consumption Behaviors and Preferences

Our results show that energy drink consumption is common, as 76.67% of the participants have already taken energy drinks. The most popular brand among them was "Code Red" at 32.67%, followed by a substantial number of people choosing "None of these" at 31.33%.

The consumption habits show that most energy drink consumers take energy drinks once a week, i.e., 36.67%. A worrying number of people take energy drinks three or more times a day, i.e., 6.67%. The time at which they take energy drinks is mostly in the evening, i.e., 58.67%. This could be because they want to be more alert during social events or to overcome daytime tiredness.

Physiological responses show that 61.33% of people do not feel anything after consuming energy drinks, which is surprising. This could be a reason for people consuming energy drinks, as they are not aware of the physiological responses. A smaller number, i.e., 8%, felt hyperactive. Only 22% felt energized.

Table 2: Energy drink consumption patterns, brand preferences, frequency, timing, and physiological effects.

Survey Question	Response Option	Frequency	Percentage
Have you ever drunk any energy drinks before	Yes	115	76.67%
	No	35	23.33%
Favourite energy drink	Code red	49	32.67%
	None of these	47	31.33%
	Red bull	26	17.33%

	Many brands	23	15.33%
	Power horse	5	3.33%
Number of times this drink is consumed per day	Once a week	55	36.67%
	None of these	48	32.00%
	Once a day	19	12.67%
	Once a month	11	7.33%
	Three times or more	10	6.67%
	Twice a day	7	4.67%
The time you drink this drink	In the evening	88	58.67%
	None of these	45	30.00%
	Lunch time	12	8.00%
	In the morning	5	3.33%
Do you feel anything after drinking this drink	I don't feel anything	92	61.33%
	Feel energized	33	22.00%
	None of these	13	8.67%
	I feel hyperactive	12	8.00%

Awareness of Health Risks and Knowledge Gaps

One major observation in this study is the difference between behavior and knowledge about health hazards. Despite the fact that 62% of the respondents indicated their knowledge about the complications associated with the intake of energy drinks, there is a wide knowledge gap in specific health parameters. These include:

- 92.67% have never checked their levels of energy drinks in their system
- 74.67% do not know the normal range of the intake of energy drinks
- Only 69.33% know how to prevent drinking energy drinks

This observation shows that despite the existence of knowledge about health hazards, there is a wide knowledge gap in specific parameters. This is a major concern in light of the health hazards associated with the intake of energy drinks, which include cardiovascular hazards, sleep disorders, and dependency (5,7–9). Interestingly, there was an expressed interest by 62% of participants to be provided with more information regarding the risks of energy drinks. This may be an area that could be targeted to promote positive public health interventions. The expressed interest may indicate that consumers could be educated to potentially make more informed decisions regarding energy drinks.

Table 3: Participants' awareness and knowledge regarding health risks, safe consumption limits, and prevention strategies.

Survey Question	Response	Frequency	Percentage
Do you know the complication of energy drink?	Yes	93	62%
	No	57	38%

Have you ever gone for your energy drinks level in your body?	Yes	11	7.33%
	No	139	92.67%
Do you know the normal range of drink energy drinks?	Yes	38	25.33%
	No	112	74.67%
Do you know how to prevent drinking energy drinks?	Yes	104	69.33%
	No	46	30.67%
Do you want more information about risks of energy drinks?	Yes	93	62%
	No	57	38%

Chi-Square Analysis Discussion

The Chi-square test is a statistical method that is applied to determine whether there is a significant relationship between two nominal-level variables. In our case, we are concerned with understanding the relationship between the answers to the questions asked in the survey and the demographic variables such as gender, age, occupation, and education level.

The study focused on understanding the awareness of energy drinks among Saudi adults. The study also focused on understanding the consumption of these energy drinks in relation to the demographic variables of gender, age, education level, and occupation.

Table 4: Chi-square analysis of the association between demographic variables and energy drink consumption behaviors/awareness.

Question	Variable	Chi ² Value	df	p-value	Interpretation
Have you ever drunk any energy drinks before?	Gender	9.94	1	0.002	Significant
	Age	10.81	3	0.013	Significant
	Occupation	0.37	1	0.543	Not Significant
	Education	2.49	2	0.288	Not Significant
Favorite Energy Drink	Gender	11.20	4	0.024	Significant
	Age	31.09	12	0.002	Significant
	Occupation	6.81	4	0.146	Not Significant
	Education	3.48	8	0.901	Not Significant
Number of Times Consumed Per Day	Gender	11.43	5	0.044	Significant
	Age	14.36	15	0.498	Not Significant
	Occupation	2.37	5	0.795	Not Significant
	Education	13.64	10	0.19	Not Significant
Time of Day Consumed	Gender	7.26	3	0.064	Not Significant
	Age	15.50	9	0.078	Not Significant
	Occupation	5.12	3	0.163	Not Significant
	Education	2.20	6	0.9	Not Significant
Feelings After Consumption	Gender	5.59	3	0.134	Not Significant
	Age	35.83	9	<0.001	Significant
	Occupation	0.53	3	0.911	Not Significant
	Education	2.83	6	0.83	Not Significant
Knowledge of Energy Drink Complications	Gender	4.53	1	0.033	Significant
	Age	0.61	3	0.893	Not Significant
	Occupation	0.11	1	0.74	Not Significant
	Education	5.46	2	0.065	Not Significant

This table summarizes the key results of the Chi-square tests for each question and demographic variable.

Gender-Based Differences

Significant gender differences in energy drink consumption were identified ($\chi^2 = 9.94$, $p = 0.002$). In line with global consumption patterns, energy drink consumption was more prevalent among males (90% reported having tried energy drinks) compared to females (67.8%). Brand preferences also exhibited gender differences ($\chi^2 = 11.20$, $p = 0.024$), with males showing stronger preference for "Code Red" and "Power Horse," while females exhibited preference for "None of these" and "Red Bull."

Males exhibited more frequent consumption of energy drinks ($\chi^2 = 11.43$, $p = 0.044$), with more females showing lesser consumption frequency. Contrary to expectations of higher consumption levels, however, males exhibited significantly lesser levels of complication ($\chi^2 = 4.53$, $p = 0.033$) and prevention ($\chi^2 = 5.69$, $p = 0.017$) knowledge. This is a disturbing trend that warrants immediate attention in designing education campaigns targeting male energy drink consumers. No gender differences were identified in timing of consumption, physical effects of consumption, testing behaviors, and seeking more information.

Age-Related Variations

The influence of age on consumption history was substantial ($\chi^2=10.81$, $p=0.013$), with 18-25-year-olds having the highest consumption rate at 80%. The brand preferences were influenced by age as well ($\chi^2=31.09$, $p=0.002$). Young adults preferred "Code Red" and "Red Bull," while older adults had diverse brand preferences.

The most notable influence of age on consumption was on physical effects. Here, age had a substantial influence on consumption ($\chi^2=35.83$, $p<0.001$). Young adults aged 18-25 felt "energized" or "hyperactive," while older adults aged 46+ felt "not feeling anything."

Contrary to expectations, age had no substantial influence on awareness of complications, testing, or prevention. This indicates that awareness among people is relatively consistent across age groups.

Educational and Occupational Influences

However, education level only marginally affected complication awareness ($\chi^2=5.46$, $p=0.065$), with more educated individuals showing slightly improved levels of awareness. Still, no significant differences were found in any other aspects. This defies the general assumption that education levels correlate with improved levels of health knowledge about energy drinks.

Occupation, worker vs. non-worker, failed to show any significant relationships with any variables. This suggests that employment status does not impact energy drink behaviors and knowledge.

Comparison with Previous Research

Our findings are consistent with earlier research that pointed to the high consumption rates of young adults in Saudi Arabia(10,11). However, our research provides additional information regarding consumption patterns that contribute to the existing body of knowledge. The gap between awareness of complications and the lack of knowledge of consumption levels is a new dimension that is critical for intervention.

The evening consumption pattern that we noted is different from earlier research that pointed to morning consumption patterns of energy drinks (7,8).

Implications for Public Health

Implications of the study's findings for public health in Saudi Arabia:

1. Targeted Education: There exists a need for education, which will provide specific information regarding safe levels of consumption, health risks, and the symptoms of excessive consumption.
2. Regulatory Considerations: The levels of consumption among young adults, as well as the lack of awareness, indicate a need for more stringent labelling guidelines, which might include restrictions regarding the marketing of energy drinks.
3. Healthcare Provider Awareness: Healthcare providers should also be made aware of the consumption patterns of energy drinks and their health effects.
4. Public Awareness: The expressed need for more information regarding energy drink consumption, as indicated by 62%, suggests that public awareness campaigns will be well-received, which will have a positive impact on consumption patterns (11–13).

Limitations and Future Research Directions

This study has some limitations that need to be taken into consideration. These are as follows:

1. The sample might not be representative of the Saudi population because of a higher number of non-Saudi participants.
2. The study only collected self-reported data on consumption patterns, which could be subject to recall bias.
3. The study did not make a distinction between occasional and regular consumers in detail.

The study has shown that energy drink consumption is a public health concern. Therefore, to further study this topic, the following recommendations are made:

1. A longitudinal study would be helpful to assess the health consequences of energy drink consumption.
2. A study could be conducted to assess the underlying motivation for consuming energy drinks among different demographic groups.

3. A study could be conducted to assess the effectiveness of different educational strategies on consumption behaviors.
4. A study could be conducted to assess the association between energy drink consumption and other health behaviors, such as alcohol consumption, exercise, and diet.

IV. Conclusion

The importance of this study lies in its identification of a high prevalence rate of energy drink consumption among the Saudi population, which exhibits specific behavioural patterns and knowledge gaps that call for immediate attention. The study findings show that energy drink consumption is a common phenomenon among the Saudi population, with 76.67% of participants showing evidence of lifetime consumption. Energy drink consumption was mainly among young adults aged 18 to 25 years and was more prevalent among males compared to females. However, females had better knowledge regarding health risks compared to males. In addition, energy drink brand preferences are changing, with Code Red being the most popular brand. However, energy drink consumption patterns show a strong evening consumption habit.

Despite the popularity of these products, a critical disconnect between consumption behaviors and safety awareness has been revealed through the study. Although a moderate percentage of the population (62%) has a general idea of possible complications, the majority of them lack specific information regarding the safe consumption of these products. In particular, a large percentage of the population, i.e., 74.67%, did not know the normal range of safe consumption, while a higher percentage, i.e., 92.67%, had not monitored their levels of consumption. Physiological reactions also vary significantly depending on age, with a higher chance of young consumers experiencing a state of hyperactivity, whereas a large percentage of the population, i.e., 61.33%, did not feel anything, which might inadvertently lead them to consume more.

The findings suggest that demographic factors, especially gender and age, have a pivotal role to play in determining consumption habits as well as risk awareness. The findings that establish a strong link between male gender and consumption frequency, along with low-risk awareness, suggest that this particular demographic needs to be addressed on a priority basis. However, the willingness to receive more information on health risks among 62% of the sample population is a window of opportunity.

In conclusion, there is an urgent need to address the issue of energy drinks consumption in Saudi Arabia through a range of educational and regulatory initiatives. These initiatives should extend beyond the provision of general warnings to specific guidelines on the safe consumption of energy drinks, awareness of the ingredients of energy drinks, and the physiological risks of overconsumption. This will help fill the knowledge gaps, especially among young adults and males, to address the potential adverse health effects of energy drinks consumption.

Conflict of interest: the authors stated that there is no conflict of interest to declare

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