PERINATAL JOURNAL

Original Article

Perinatal Journal 2025; 33(3):79-87

https://doi.org/10.57239/prn.25.0333008

Perceptions of energy drink consumption among female high school students: A Q-Methodological study

So Yeon Park*

Department of Nursing, Songho University, 25242 Hoengseong, Republic of Korea

Abstract

The purpose of this study was to examine the subjective perceptions of energy drink consumption among female high school students, and to examine the characteristics and common perceptions by type. Q methodology was employed with 35 participants who sorted 35 statements regarding energy drink consumption. Data were analyzed using factor analysis through the Method program. Three distinct perception types emerged, accounting for 46% of the total variance. Type 1 was labeled Concern about Dependence, Type 2 Striving for Abstinence, and Type 3 Recognition and Coping. These types reflected different patterns of expectations, concerns, and coping strategies related to energy drink consumption. Despite these differences, all groups reported experiencing anxiety during consumption and expressed concern about caffeine dependence. Perceptions of energy drink consumption among female high school students are characterized by a complex structure of expectations, concerns, and coping strategies, rather than a simple positive–negative dichotomy. Educational programs targeting adolescents should emphasize awareness of the adverse effects of energy drinks while promoting alternative strategies for energy management, such as adequate sleep, physical activity, and balanced nutrition. In addition, tailored interventions are warranted for groups at higher risk of dependence.

Keywords: Energy drinks, Caffeine, Students, Adolescent, Attitudes

1.Introduction

1. Need for the study

In recent years, the consumption of High-Caffeine Energy Drinks (HCEDs) among adolescents has increased markedly. High school students, in particular, are easily exposed to HCEDs due to academic stress, insufficient sleep, and decreased concentration. Energy drinks are frequently marketed as products that provide temporary arousal, relieve fatigue, and enhance attention, thereby being consumed by adolescents as if they were everyday beverages rather than functional drinks [1]. Among this population, female high school students are considered especially vulnerable to HCED consumption. This vulnerability is linked to heightened emotional sensitivity, concerns about appearance and body weight, and anxiety related to academic examinations [2,18].

Energy drinks typically contain high concentrations of caffeine, sugars, taurine, and vitamins. Excessive intake has been associated with adverse effects such as insomnia, anxiety, nervousness, increased heart rate, gastrointestinal disturbances, and, in severe cases, cardiovascular complications [3,4]. Adolescents, in particular, are at greater risk because their metabolic capacity for caffeine is lower than that of adults, making them more susceptible to side effects even at relatively small doses. Moreover, limited awareness of health risks and weaker self-regulatory ability further heighten this vulnerability [5]. Despite these risks, energy drinks are often perceived positively as tools for enhancing concentration and alleviating fatigue. Among female high school students, in particular, energy drinks are repeatedly consumed during examination periods or under conditions of sleep deprivation.

Previous research on female high school students' consumption of energy drinks has primarily employed quantitative approaches, focusing on consumption patterns, frequency, or correlations with mental health. For example, studies utilizing data from the Korea Youth Risk Behavior Web-based

Correspondence: So Yeon Park, Department of Nursing, Songho University, 25242 Hoengseong, Republic of Korea, **e-mail:** bun8973@naver.com. **Received:** October 26, 2025 **Accepted:** December 4, 2025

- This research was supported by the Regional Innovation System & Education(RISE) program through the Gangwon RISE Center, funded by the Ministry of Education(MOE) and the Gangwon State(G.S.), Republic of Korea.(2025-RISE-10-014)

Survey reported that higher frequencies of HCED intake were significantly associated with negative mental health indicators such as smoking, alcohol use, depressive symptoms, suicidal ideation, and experiences of violence, while levels of happiness were comparatively lower [6,7]. These findings suggest that HCED consumption extends beyond the realm of simple dietary preference and may constitute a behavior that poses potential risks to adolescents' mental health [8].

However, quantitative research alone is insufficient to fully explain how female high school students perceive energy drinks, what meanings they ascribe to them, and the internal structure of perception and the diversity of attitudes. For instance, while some may regard energy drinks as an "addictive indulgence," others may perceive them as a "necessary tool for academic performance." Existing studies, however, have not adequately captured these heterogeneous patterns of perception [9,19]. Moreover, even within the same population group, female high school students may perceive energy drinks either positively or negatively depending on their psychosocial context, and in some cases, they may hold ambivalent feelings toward consumption [10].

In this context, Q methodology offers a distinctive approach for structuring subjective perceptions and categorizing them into homogeneous types [11,12], making it particularly suitable for the purpose of this study. Q methodology combines the rigor of quantitative statistical analysis with the depth of qualitative exploration, enabling the classification of complex attitudes, emotions, and cognitive frameworks beyond surface-level perceptions [12,17]. Especially for populations such as female high school students, who display diverse responses depending on their psychological states, Q methodology provides a structural understanding of perception types without reducing individual cases to generalized patterns or single-variable explanations.

Accordingly, this study applied Q methodology to explore in depth female high school students' perceptions of energy drink consumption and to structure these perceptions into distinct types, thereby offering a new perspective on adolescent health behaviors. Specifically, the study sought to identify diverse perception related to consumption, coping strategies, risk awareness, and attitudes toward potential dependence, and to provide an integrated explanation of each type and its contextual background. The findings are expected to serve as foundational data for the development of school-based health education, addiction prevention programs, tailored nursing interventions, and food regulation policies. Accordingly, this study aimed to explore the subjective perceptions of female high school students regarding energy drink consumption using Q methodology. Specifically, the study sought to:

- Identify and classify the types of perceptions related to energy drink consumption among female high school students;
- Describe the key characteristics of each perception type in terms of motives, awareness of risks, and coping strategies; and
- Provide implications for educational and preventive interventions to promote healthy behaviors and reduce dependence on energy drinks.

Ⅱ. Research Methodology

1. Research design

This study employed an exploratory design using Q methodology to identify and describe the perception types of female high school students regarding energy drink consumption. Q methodology is a research approach that quantifies subjective perceptions and classifies them into distinct types, making it particularly suitable for structurally analyzing the diverse perceptions of high-caffeine beverage consumption among female adolescents.

2. Research procedure

1) Selection of the Q-Population and Q-Sample

To generate the Q-population, statements related to female high school students' energy drink consumption were collected through a review of domestic and international literature, preliminary interviews, open-ended questionnaires with female students, and focus group interviews (FGIs). A total of approximately 100 statements were gathered. After removing duplicates and overlapping expressions, and ensuring that diverse perspectives were

represented, the statements were reviewed by experts. Ultimately, 35 statements were selected as the Q-sample. The final Q-sample encompassed a wide range of categories, including motives for consumption, perceived positive effects, adverse experiences, recognition of dependence, and coping strategies.

2) Selection of the P-Sample

The P-sample was composed of 35 female high school students enrolled in schools in Seoul and the metropolitan area who had prior experience consuming energy drinks and voluntarily agreed to participate. Participants were recruited through purposive sampling, as the goal of Q methodology is not demographic representativeness but rather the inclusion of individuals who can provide diverse perspectives for identifying perception types.

3) Q-Sorting

Participants were randomly presented with 35 Q-statements and asked to sort them according to their personal views using a nine-point forced distribution (normal distribution) ranging from **"most agree" to "most disagree."** Following the sorting task, in-depth follow-up interviews were conducted to elicit participants' reasoning, particularly regarding the statements they most strongly agreed or disagreed with. Each Q-sorting session, including the interview, required approximately 20–30 minutes to complete.

4) Data analysis

The Q-sorted data were analyzed using the PC-QUANL program (version 0.74) through Principal Component Analysis (PCA) with Varimax rotation. Factors with eigenvalues of 1.0 or higher were retained, and interpretable, valid perception types were identified. Each type was then labeled based on its distinctive statement patterns and characteristic perceptions.

3. Ethical considerations

Prior to participation, the purpose and procedures of the study, as well as issues of anonymity and voluntary participation, were fully explained to both the students and their guardians. Written informed consent was obtained from all participants and their guardians. Participants were informed that they could withdraw from the study at any time without penalty. All data were anonymized and used solely for research purposes.

Ⅲ. Research Results

1. Formation of Q-Types: Q-factor analysis of female high school students' perceptions of energy drink consumption extracted three distinct types. Together, these three types accounted for 46% of the total variance: Type I explained 19.6%, Type II 3.93%, and Type III 1.86% (Table 1). Correlations among the three types are presented in Table 2. These values indicate the degree of similarity between types: the correlation coefficient between Type I and Type II was r = –0.75, between Type I and Type III was r = 0.98, and between Type II and Type III was r = –0.80. Thus, Type I and Type III showed a very strong positive correlation, indicating a high degree of similarity, whereas Type II displayed distinct negative correlations with both of the other types, confirming its contrasting characteristics (Table 2).

Table 1. Eigen value, variance, and cumulative percentage (N=35)

Variables	Type I	Type II	Type III
Eigen value	19.6	3.93	1.86
Variance (%)	0.56	0.11	0.05
Cumulative variance	0.56	0.67	0.73

Table 2. Correlation Matrix between Types (N=35)

Variables	Type I	Type II	Type III
Type I	1		
Type II	-0.75	1	
Type III	0.98	-0.8	1

2. Characteristics and interpretation of types

An examination of the participant distribution across perception types revealed that 18 students were classified as Type I, 6 as Type II, and 11 as Type III. The demographic characteristics of participants in each type, along with their factor weights, are presented in Table 3. Within each type, participants with higher factor weights were considered to more strongly represent the prototypical characteristics of that type. To analyze the subjectivity of female high school students' perceptions of energy drink consumption, interpretation focused on statements

that received strong agreement (Z score ≥ +1) or strong disagreement (Z score ≤ −1). The distinctive characteristics of each type were identified based on statements in which the standardized scores for a given type differed markedly from those of the other types. The resulting perception types of female high school students are summarized in Table 3.

According to Kim (1992), when a participant shows a high loading (≥ 0.80) on a given factor, that individual is regarded as representative of the Q-factor; therefore, their opinions and demographic information require particular attention in the interpretation of Q types. In line with this guideline, the present study incorporated such considerations in classifying the perception types. Furthermore, to ensure the most appropriate categorization of types, analyses were conducted by designating between two and five factors. The final results indicated that three factors provided the clearest structure, with each type demonstrating the highest factor loadings, thereby representing the optimal classification of Q types (Table 4).

1) Type I: "Concern about dependence"

Statements that received the strongest agreement among Type I participants included "I choose energy drinks with the expectation that my concentration will improve" (Z = 1.15) and "I often drink them because they are easily available at convenience stores" (Z = 1.11). In contrast, the strongest disagreement was shown for "I have worried that I might be addicted to caffeine" (Z = −2.06) and "I feel as if I cannot control myself, making it difficult to regulate my consumption" (Z = −2.06). Compared to Type II, Type I participants expressed much stronger agreement (difference ≥ +1.00) with statements such as "I feel anxious if I don't drink energy drinks" (Z = 1.80) and "I have continued to drink them habitually even after exam periods ended" (Z = 1.47). Conversely, they expressed much stronger disagreement (difference ≤ −1.00) with "I feel as if I cannot control myself, making it difficult to regulate my consumption" (Z = −2.06) and "I have worried that I might be addicted to caffeine" (Z = −2.06). When compared with Type III, Type I participants again showed stronger agreement with "I feel anxious if I don't drink energy drinks" (Z = 1.80) and "I have continued to drink them habitually even after exam periods ended" (Z = 1.47), while demonstrating stronger disagreement with "I believe healthy sleep habits are more effective than energy drinks" (Z = −2.06) and "I have worried that I might be addicted to caffeine" (Z = −2.06).

Taken together, these results suggest that Type I students perceived energy drink consumption primarily through expectations of enhanced concentration, facilitated by easy accessibility in settings such as convenience stores, which reinforced their dependence. At the same time, they reported feelings of loss of control and worry about caffeine addiction, indicating recognition of potential risks. Accordingly, this type was labeled "Concern about Dependence."

2) Type II: "Striving for abstinence"

The strongest agreement among Type II participants was observed for the statements "I know that drinking energy drinks too often is harmful to my health" (Z = 0.69) and "In the long run, I think they can negatively affect my academic performance" (Z = 0.54). In contrast, the strongest disagreement was shown for "I believe healthy sleep habits are more effective than energy drinks" (Z = −1.94) and "When I drink energy drinks, I feel motivated to study harder" (Z = −1.14).

Compared with Type III, Type II participants showed much stronger agreement (difference ≥ +1.00) with "I try to replace energy drinks with cold water" (Z = 1.76) and "I tried to quit but could not easily stop" (Z = 1.69). Conversely, they expressed stronger disagreement (difference ≤ −1.00) with "I believe healthy sleep habits are more effective than energy drinks" (Z = −1.94) and "I have worried that I might be addicted to caffeine" (Z = −1.94).

These findings suggest that Type II students were aware of the potential health risks of energy drink consumption, including concerns about dependence, and made efforts to discontinue use by seeking alternative strategies such as replacing energy drinks with other options or attempting to establish healthier sleep routines. For this reason, this type was labeled "Striving for Abstinence."

3) Type III: "Recognition and coping"

Type III participants showed the strongest

agreement with the statements "I feel anxious if I don't drink energy drinks" (Z = 1.15) and "I have continued to drink them habitually even after exam periods ended" (Z = 0.66). In contrast, the strongest disagreement was shown for "My concentration in class actually decreases the next day" (Z = –0.72) and "I try to replace energy drinks with cold water" (Z = –0.36). These results suggest that Type III students tended to consume energy drinks habitually, even outside of exam periods, likely due to accumulated high caffeine intake. When abstaining, they reported experiencing withdrawal symptoms such as anxiety. At the same time, they also recognized paradoxical effects, such as decreased concentration despite consumption, which led them to attempt coping strategies by seeking alternative methods. Based on these characteristics, this type was labeled "Recognition and Coping."

Table 3. Demographic characteristics and factor weight for P-Sample (N=35)

Type	Var no.	Factor weight	Gender	Age	Grade	Presence of Adverse Effects	Types of Adverse Effects
Type I	1	0.15	F	18	2	Y	Feeling tired but unable to sleep
(n=18)	3	0.34	F	18	2	N	–
	4	0.11	F	18	2	N	–
	6	0.34	F	17	1	Y	Habitually seeking energy drinks
	7	0.13	F	17	1	Y	Feeling unable to stay awake without energy drinks
	9	0.12	F	18	2	Y	Abdominal pain after consumption
	10	0.59	F	18	2	Y	Frequent urination
	12	0.3	F	19	3	N	–
	14	0.21	F	19	3	Y	Muscle or hand tremors
	16	0.17	F	18	2	Y	Lethargy, chills
	22	0.09	F	19	3	Y	–
	23	1.1	F	19	3	Y	Dental caries due to excessive intake
	24	0.72	F	19	3	Y	Feeling as if drawing on future energy reserves
	25	0.38	F	18	2	Y	Rapid heartbeat, dizziness
	30	0.13	F	18	2	N	–
	31	1.08	F	18	2	Y	Increased nervousness and irritability
	32	0.62	F	17	1	N	–
	33	0.41	F	17	1	Y	Disrupted daily routine or sleep patterns
Type II	5	0.71	F	19	3	N	–
(n=6)	13	0.49	F	19	3	Y	Cold sweats
	26	1.8	F	18	2	Y	Feeling mentally blank
	27	1.67	F	18	2	Y	Intermittent mental fog
	34	1.99	F	19	3	Y	Wanting to sleep but remaining mentally awake
	35	2.59	F	17	1	N	–
Type III	2	0.28	F	19	3	Y	Feeling stressed and more sensitive
(n=11)	8	0.13	F	19	3	N	–
	11	0.34	F	18	2	Y	Stomach pain
	15	0.22	F	18	2	Y	Impaired functioning the next day
	17	0.9	F	17	1	N	–
	18	0.41	F	17	1	N	–

	19	0.27	F	19	3	Y	Feeling as if the heart might burst; auditory hallucinations
	20	0.19	F	19	3	N	–
	21	0.32	F	19	3	Y	Flushed face and rapid heartbeat
	28	0.19	F	19	3	Y	Inability to sleep followed by delayed fatigue
	29	0.27	F	18	2	Y	Hand tremors while trying to hold a pen

Table 4. Representative Q-samples and Z-scores in types (*N*=35)

Type	No.	Statement	Z-score
Type I: Concern about Dependence		I choose energy drinks with the expectation that my concentration will improve.	1.15
	18	I often drink them because they are easily available at convenience stores.	1.11
		I have tried them after seeing recommendations on social media (SNS).	0.95
		I have seen information about the side effects of energy drinks in the news or online.	0.48
		I have consumed them even after witnessing friends experience side effects.	0.28
		Drinking them late at night disrupts my sleep pattern.	0.21
		Drinking them improves my concentration and helps with studying.	0.16
		I drink energy drinks during exams to overcome drowsiness.	0.04
		During exam periods, I rely on them because I feel I can manage with less sleep.	-0.05
		I tried to quit but could not easily stop.	-0.06
		I think it is worthwhile to drink them if they help, even briefly, with academic performance.	-0.19
		I have consumed them even though parents or teachers warned me they are unhealthy.	-0.22
		Energy drinks make my mood swings more intense.	-0.24
		After experiencing the effect once, I kept seeking them out again.	-0.37
		I believe energy drinks are effective.	-1.25
		When I felt physical discomfort, I tried to stop consuming them.	-1.38
		I feel as though I cannot control myself, making it difficult to regulate consumption.	-2.06
		I have worried that I might be addicted to caffeine.	-2.06
Type II: Striving for Abstinence	6	I know that drinking energy drinks too often is harmful to my health.	0.69
		In the long run, I think they can negatively affect my academic performance.	0.54
		I have experienced physical symptoms such as stomachache or heart palpitations after drinking them.	0.43
		I become distracted and find it difficult to concentrate on studying.	-0.01
		When I drink energy drinks, I feel motivated to study harder.	-1.14
		I believe healthy sleep habits are more effective than energy drinks.	-1.94
Type III: Recognition and Coping	11	I feel anxious if I don't drink energy drinks.	1.15
		I have continued to drink them habitually even after exam periods ended.	0.66
		After drinking them, I feel more energized and able to study longer.	0.63
		I feel that fatigue is relieved when I drink energy drinks.	0.31
		I feel uncomfortable if I don't drink them.	0.23
		I try to improve concentration without reducing sleep.	0.13
		I have experienced physical side effects such as hand tremors, headache, or facial flushing.	-0.13
		I have continued to drink them habitually even after exam periods ended.	-0.16
		I naturally drink them because my friends also do.	-0.34

		I try to replace energy drinks with cold water.	-0.36
		My concentration in class actually decreases the next day.	-0.72

3. Consensus items across types

The results indicated that female high school students' subjective perceptions of energy drink consumption could be classified into three distinct types, each characterized by unique features. However, certain items reflected shared views across the types, while others consistently revealed disagreement. The items that received the highest agreement were "I feel anxious if I don't drink energy drinks" and "I try to replace energy drinks with cold water." In contrast, the items that showed the strongest disagreement were "I feel as though I cannot control myself, making it difficult to regulate consumption" and "I have worried that I might be addicted to caffeine" (Table 5). In summary, a common perception among female high school students was that they often felt anxious when attempting to reduce sleep and increase concentration during examination periods if they did not consume energy drinks, while simultaneously making efforts to substitute them with alternative beverages. Nonetheless, these students also expressed concern about caffeine dependence and a sense of fear regarding their inability to fully control their energy drink consumption.

Table 5. Consensus items and average Z-Scores (N=35)

Q-statement		Z-scores
Q3	I feel anxious if I don't drink energy drinks.	1.8
Q4	I try to replace energy drinks with cold water.	1.76
Q32	I feel as though I cannot control myself, making it difficult to regulate consumption.	-2.06
Q33	I have worried that I might be addicted to caffeine.	-2.08

Discussion

This study classified female high school students' perceptions of energy drink consumption using Q methodology, identifying three distinct types: Concern about Dependence, Striving for Abstinence, and Recognition and Coping. These types reflect the expectations, concerns, and coping strategies experienced by adolescents in relation to energy drink consumption.

Type I participants consumed energy drinks due to expectations of improved concentration and easy accessibility, yet simultaneously expressed fears of caffeine dependence and concerns about side effects. This finding aligns with previous research showing that adolescents use energy drinks to enhance academic performance while recognizing associated health risks [14]. Type II participants demonstrated awareness of the harmful effects of energy drinks and attempted to reduce consumption by substituting alternative beverages or improving lifestyle habits, reflecting findings on self-regulatory behavior in prior studies [15]. Type III participants reported habitual consumption and feelings of anxiety when abstaining, while also experiencing diminished concentration and adverse effects after intake, highlighting a discrepancy between expected and actual outcomes. This supports earlier findings that caffeine, despite its short-term stimulating effects, can negatively impact learning efficiency and health [16].

Across all three types, participants expressed agreement with the statement "I feel anxious if I don't drink energy drinks," suggesting that consumption is closely tied to psychological dependence, particularly in the context of academic stress. At the same time, disagreement with statements such as "I have worried that I might be addicted to caffeine" and "I feel as though I cannot control myself, making it difficult to regulate consumption" indicates that adolescents also experience psychological conflict regarding their intake. These findings suggest that energy drink consumption among adolescents is not merely a matter of taste preference but occurs within a complex psychosocial context of stress, anxiety, and self-regulation [1,2].

Taken together, this study confirms that female high school students' perceptions of energy drink consumption are not defined by a simple positive–

negative dichotomy but instead emerge within a multidimensional structure of expectation, concern, and coping. Therefore, adolescent health education should not only raise awareness of the potential risks of energy drinks but also emphasize alternative energy management strategies, such as adequate sleep, regular physical activity, and balanced nutrition. In addition, tailored interventions are needed for groups demonstrating stronger tendencies toward dependence.

Conclusion and Recommendations

This study identified three distinct patterns of perception toward energy drink consumption among female high school students—concern about dependence, striving for abstinence, and recognition and coping. These findings indicate that adolescent caffeine use is influenced not only by individual behaviors but also by broader psychosocial pressures, including academic demands, peer dynamics, and internalized expectations for self-control and achievement. To foster healthier behaviors, school-based health education should address both the physiological risks of caffeine intake and the social motivations that sustain consumption. Educators and school nurses can play a pivotal role by integrating practical modules on energy balance, stress management, and sleep hygiene into the curriculum. In addition, policy-level actions, such as restricting youth-targeted marketing and ensuring transparent product labeling, are necessary to promote informed choices and prevent caffeine misuse among adolescents. Finally, future research should include more diverse and gender-balanced samples across various regions to capture broader psychosocial contexts influencing caffeine consumption and to assess the effectiveness of tailored educational and preventive interventions.

References

1.Park JS, Lee EJ, Lee CY, Jung HS. Consumption status, risk awareness and experience of adverse effects of high caffeine energy drink among university students. J Korean Public Health Nurs. 2015;29(1):102–114.

2.Lee SJ, Na Y, Lee KW. Association between the consumption of sugar-sweetened beverages and high-caffeine drinks and self-reported mental health conditions among Korean adolescents. Nutrients. 2025;17(16):2652. doi:10.3390/nu17162652.

3.Shim JS, Lee JM. Energy drink consumption among Korean adolescents: prevalence and associated factors. Clin Exp Pediatr. 2024;67(10):531-9. doi:10.3345/cep.2024.00171.

4.Menzel J, Spinka F, Pie MJ, Deichl A, Knüppel S, Ehlers A, et al. Chronic high consumption of energy drinks and cardiovascular risk in adolescents: results of the EDKAR-study. Eur J Epidemiol. 2025 Aug 23. doi:10.1007/s10654-025-01292-z.

5.Lim HJ. The classification and health effects of functional drinks. Korean J Health Promot. 2013;13(2):69–76.

6.Yoo JH, Sim KH. The survey on youth caffeine awareness and intake behaviors. Korean J Youth Stud. 2014;21(2):189–210.

7.Kim SA, Park WS, Park SW. Correlation between high-caffeine energy drink intake and mental health in high school students. J Korean Soc Sch Health. 2016;29(3):132–139.

8.Masengo L, Sampasa-Kanyinga H, Chaput J-P et al. (2020) Energy drink consumption, psychological distress, and suicidality among middle and high school students. J Affect Disord 268, 102–108.

9.Vercammen KA, Koma JW & Bleich SN (2019) Trends in energy drink consumption among US adolescents and adults, 2003–2016. Am J Prev Med 56, 827–833.

10.Al-Shaar L, Vercammen K, Lu C et al. (2017) Health Effects and public health concerns of energy drink consumption in the United States: a mini-review. Front Public Health 5, 225.

11.Watts S, Stenner P. Doing Q methodological research: Theory, method & interpretation. London: SAGE Publications; 2012.

12.Kim, H. G. (1992). Understanding of Q-methodology for the study of subjectivity. The Seoul Journal of Nursing, 6(1), 1-11.

13.Kim DH, Kim B, Lee SG, Kim TH. Poor sleep is associated with energy drinks consumption among Korean adolescents. Public Health Nutr. 2023;26(12):3256-65. doi:10.1017/S136898002300191X.

14.Grandner MA, Knutson KL, Troxel W, et al. Implications of sleep and energy drink use for health disparities. Nutr Rev. 2014;72(1):14-22. doi:10.1111/nure.12078.

15.Ruiz LD, Scherr RE. Risk of energy drink consumption to adolescent health. Am J Lifestyle Med. 2019;13(1):22-5. doi:10.1177/1559827617734392.
16.Sampasa-Kanyinga H, Hamilton HA, Chaput JP. Sleep duration and consumption of sugar-sweetened beverages and energy drinks among adolescents. Nutrition. 2018; 48:77-81. doi: 10.1016/j.nut.2017.11.013.
17. Jam, F. A., Ali, I., Albishri, N., Mammadov, A., & Mohapatra, A. K. (2025). How does the adoption of digital technologies in supply chain management enhance supply chain performance? A mediated and moderated model. Technological Forecasting and Social Change, 219, 124225.
18. Mansoor, M., Khan, T. I., Jam, F. A., & Alasmari, M. (2025). From donations to devotion: how cause-related marketing frames drive brand evangelism through cognitive and social pathways in hospitality. International Journal of Contemporary Hospitality Management.
19. Abbas, M., Khan, T. I., & Jam, F. A. (2025). Avoid Excessive Usage: Examining the Motivations and Outcomes of Generative Artificial Intelligence Usage among Students. Journal of Academic Ethics, 1-20.