Master of Science in Public Health

Awareness and Practices Regarding Energy Drink Consumption among Undergraduate Students of Tehsil Taxila

By

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Declaration

In submitting this dissertation, I certify that I have read and understood the rules and regulations of DPH and QAU regarding assessment procedures and offences and formally declare that all work contained within this document is my own apart from properly referenced quotations.

I understand that plagiarism is the use or presentation of any work by others, whether published or not, and can include the work of other candidates. I also understand that any quotation from the published or unpublished works of other persons, including other candidates, must be clearly identified as such by being placed inside quotation marks and a full reference to their source must be provided in proper form.

This dissertation is the result of an independent investigation. Where my work is indebted to others, I have made acknowledgments.

I declare that this work has not been accepted in substance for any other degree, nor is it currently being submitted in candidature for any other degree.

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ABSTRACT

Background:

Energy drinks are those beverages that contain stimulant ingredients such as caffeine and is advertised as a mental and physical booster. They contain sugar, other sweeteners, herbal extracts, taurine and amino acids. They can or can not be carbonated. Coffee, tea and other soft drinks are not considered as energy drinks.

Objective:

To examine the energy drink consumption rate and awareness about energy drink consumption among undergraduate students.

Methods:

A cross-sectional study using convenient sampling technique was used. This study was conducted in UET (University of Engineering and Technology) and WMC (Wah Medical College) Taxila including undergraduate students, both male and female, aged between 18-24 years. A sample of 384 participants were obtained using Open-Epi version 3.01. Data was collected by using a questionnaire which was of self-administrated standard. Data was analyzed using SPSS version 25. Chi-square test of independence was conducted.

Results:

Out of 384 participants, majority were females 220(57.3%) and only 164(42.7%) were males. Majority of the participants aged varied from 20-22 years (23%). Sting (54.4%) was the most consumed energy drink. Regarding awareness, most of the participants (32.6%) were not aware of any adverse effect caused by energy drinks. About 50% of the participants use energy drinks for refreshment/ taste purpose and 54.7% think it is a symbol of fashion. Whereas, majority of the participants 76% agree that energy drink consumption is not good for health.

Conclusion:

Consumption of energy drinks in the universities students are increasing, and students are taking these drinks to gain energy without knowing their ingredients which are quite harmful and cause health hazards.

Keywords:

Energy drinks, Young Adults, Caffeine, Practices, Undergraduate Students, Awareness.

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To start with the greatest name of **Almighty Allah**. Most gracious and merciful, whose bounties are unbounded, whose benevolence is everlasting, whose blessings are uncountable, whose being is eternal, whose mercy is unlimited, whose provisions are un-ending, and whose Love is our life, whose worship is our faith.

I am thankful to my loving **parents** for motivating me and giving all sort of support not only in my academic career but also in all aspects of life.

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CHAPTER I: INTRODUCTION

1.1. Introduction:

Energy drinks refers to those beverages that contain a high level of stimulating substances such as caffeine. It also contains sugar and other supplements that are carnitine or vitamins which are used to improve the mental health and physical performance of consumers (Higgins, Babu and Shearer, 2018).

Energy drinks are different from sports drinks, as sports drinks are used to compensate for water as well as electrolytes which are consumed after physical training or during the training. Energy drinks are different from coffee and tea as well, they contain few ingredients and a small amount of caffeine while energy drinks contain a huge amount of caffeine (Reid, McCrory and Hammond, 2017). It is different from soft drinks as soft drinks do not contain caffeine or sometimes contain a very small amount of caffeine. Some energy drinks are Sting, Monster, Booster, Red Bull, NOS, Rockstar, and Amp. The producers of energy drinks promote that these drinks are energy boosters.

Energy drink consumption appears popular among undergraduate university students in Pakistan across all states. This research concentrates on energy drink consumption awareness and practice. Energy drinks are widely available at the university campus's markets, shops, and canteens without proper regulation and awareness about their consumption, usage, and side effects. The high consumption of its ingredient, which includes: caffeine, sucrose and glucose, glucuronolactone, vitamin B-5, vitamin B-6 and taurine, could become one of the reasons for intoxication, tachycardia, vomiting, cardiac

arrhythmias, seizures, and death (Imran, 2018). The previous studies conducted on this topic reported that its intake is increasing with leap and bounds among the youngers of Pakistan; the report highlighted that among the 426 targeted young participants in the survey, boys consume more energy drinks than girls (64.5% VS 35.5%).

It is important to know about the harmful effect of energy drinks on undergraduate students. The energizing features of energy drinks can increase heart rates (to the point of pulses), dehydrate the organism, and disrupt sleep like all other drugs. Caffeine in excessive amounts can cause significant blood pressure and cardiovascular issues, including cardiac rate irregularities and increased arterial pressure and heartbeat (Subaiea and Alshammari, 2019). Caffeine may also be harmful to students cardiovascular and neurological functions, still evolving. Furthermore, extreme energy drink consumption has been associated with disrupted sleeping habits in youngsters and enhanced risk activities. (Usman and Zaki 2015) states that in some cases, energy drinks also boost physical performance and the intensity of a resistance training programme. For example, many sportsmen consume them exclusively for the stimulant benefit, which helps them focus, awareness and react faster.

Energy drinks are commonly accessible in market place, department stores and cafeterias of the university campuses, with little legislation or awareness of their consumption, use and negative effects. Caffeine, sugar, and glucose, as well as glycosides, vitamin B-5, vitamin B-6, and taurine, may cause intoxication, vomiting, cardiac failure, migraines, and mortality if consumed in excessively. Moreover, study conducted by (Imran and Tallae 2018), on the particular topic have found that its consumption is rapidly growing

among Pakistan's youth. The analysis found that men consume more energy drinks than girls among the 426 young participants surveyed (64.5 percent VS 35.5 percent).

The consumption of energy drinks has grown in popularity since Red Bull was introduced into the market in 1997, an energy drink that is also the leading the market for energy drink today (Wang, 2016). In 2006, an upward of 500 new energy drinks were introduced into the market worldwide, the benefits of which the beverage companies are reaping today in the form of energy drink industry worth 5.7 billion dollars (Wang, 2016). Energy drinks which include Rock Star, Sting, Red Bull, Full Throttle, Amp and Monster are designed in such a way that they provide the consumers with a 'jolt' of energy from the combination of 'energy boosters' and other stimulants (Kassab and Tawfik, 2018).

According to a research conducted by Ballard, Wellborn-Kim and Clauson (2010), the consumption of energy drinks is higher among athletes and medical students under performance and cognitive demands. Several reasons that the students have cited for such high consumption of the drinks include lack of sleep, low levels of energy and having to study over an extended time. The same research also found that with the consumption of energy drinks these students reported to have experienced neurological and gastrointestinal effects, agitations, restlessness and heart palpitations.

The attractiveness and consequently popularity of energy drinks among young adults is credited to their extended advertisement as products that improve physical performance, increase energy and enhance mental alertness (Rath, 2012). As a matter of fact, there are several studies that show that some of the most frequently cited benefits of the consumption of energy drinks include enhancement of mental and physical performance (Curran and Marczinski, 2017), stimulation in the feeling of pleasure (Tóth et al., 2020),

improvement in concentrations levels (Olas and Bryś, 2019) and increased alertness (Olas and Bryś, 2019). Other common ingredients that go into the recipes for energy drinks include derivative of amino acids like creatine, carnitine, taurine, B-vitamins, and some herbal extracts like gingko biloba, ginseng and guarana which are reported to contribute to increasing the feelings of stamina and strength among the consumers (Ghozayel et al., 2020).

In the past few years, the trend of alcohol mixed with energy drinks (AmED) has gained popularity, especially among the young adults resulting from their aggressive marketing coupled with their anticipated benefits and appeal to the consumers (Visram et al., 2017). In light of this new development, major questions have been raised regarding the potential harms and safety of the consumption of energy drinks and AmED (Ghozayel et al., 2020).

A growing volume of evidence of scientific nature show that AmED and energy drinks can have grave long-term and short-term effects on the health, particularly that of adolescents and young adults (Visram et al., 2016). Some of the side effects of the increased consumption of energy drinks that have been frequently reported among the consumers include headaches (Itany et al., 2014), nausea, frequent urination, tachycardia (Jones, Barrie and Berry, 2012), nervousness, insomnia (Jones, Barrie and Berry, 2012), abdominal pain, vomiting, dizziness, hypotension and redness of the skin (Itany et al., 2014). Apart ill-effects on health, there are several studies that have reported the adverse effects of the consumption of energy drinks on the social, behavioral and emotional well-being of the consumers (James, Kristjansson and Sigfusdottir, 2015). These side-effects include restlessness and irritability (Richards and Smith, 2016), anger and daytime

sleepiness (James, Kristjansson and Sigfusdottir, 2015), heightened risk of getting into trouble at work, school or home, and conducting disorders and being involved in violent behaviours (James, Kristjansson and Sigfusdottir, 2015).

1.2. Rationale:

According to the research, made by Popkin et al., (2016) daily intake of calories in the citizens of America has increased about 150 to 300 kcal and about 50% of the additional calories come from sweet beverages. In sweet beverages, energy drinks are highly consuming and their rate is significantly increasing especially in young people. Energy drinks contain a large amount of caffeine and other legal drugs like carbohydrates, taurine, niacin inositol, glucuronolactone, panthenol, and b-complex vitamins (Nagy, Csomós, and Mara, 2019). Most young individuals don't know about the ingredients of these drinks and consume them to stay active and work efficiently. This was quite important to know the rate of the consumption of these drinks among students and the awareness in them about their positive and negative effects (Nowak, Gośliński, and Popławski, 2019). Global consumption shows that in last 5 years there was 10% increase annually. Frequency of energy drink consumption in Pakistan was found to be 52% (Usman et al., 2015). In Pakistan very little concentration has given on energy drinks and there is not much data available regarding the awareness of consuming energy drinks. Therefore, this study was conducted to assess the awareness regarding energy drink consumption.

1.3.Research Questions:

- What are the positive and negative effects of energy drinks?
- How to assess the awareness and practices regarding energy drink consumption?
- What is the association of energy drinks consumption with socio-demographic variables?
- What are the ingredients of energy drinks?

1.4. Research Aim and Objectives:

- To assess the awareness and practices regarding energy drinks consumption among the undergraduate students of two universities in Wah Cantt.
- To identify the determinants of energy drink consumption practices among the undergraduate students.
- To assess the association with socio-demographic variables.

CHAPTER II: Literature Review

2.1. Literature Review:

Casuccio and Immordino (2015) state that energy drinks have a global business worth approximately 15 trillion dollars, with a local (Western) market worth approximately 100 billion dollars. Because global drinks firms began selling energy drinks in March 2010, overall energy drink demand has grown. Furthermore, because of its concentration-enhancing and fatigue-relieving qualities, consumption patterns are rising, especially amongst undergraduate students who are stressed with tasks and assessments. Furthermore, Ibrahim and Al Ahmadi (2014) argue that energy drinks are easily obtainable at university canteen machines, and college students frequently consume them. Furthermore, because such consumption may be risky, reliable information and healthy consumption guidelines must be made accessible focused on an analysis of energy drink awareness and consumption patterns among college students, who have been the primary customers.

This, for a fact, presents energy drinks as a harmful source that leaves an effect on the health of young consumers usually undergraduate students. Hence, Energy drinks (ED) are also known as drinks or beverages rich in sugar which are harmful to human health (Aljaloud, 2016). Undergraduates or teenagers usually prefer these drinks as a sort of energy-booster or enhancement drink that brings energy to the human body. The consumption of these drinks in places such as general stores, canteens, cafes have

become common (Nowak & Jasionowski, 2016). The consumption level of these drinks is now available in both alcoholic and non-alcoholic forms around the globe. A piece of news by (Reid & others, 2017), has experienced a drastic change in the consumption of energized or boosting drinks to boost immunity. Though, the unrevealed, negative facts about these drinks explore the harmful effects of their consumption. Despite being aware of the harmful side effects of these drinks, they are widely consumed and are potentially harmful to health. (Crabtree & others, 2018) added that many studies and researches have identified different perceptions and real-life experiences of young adults after addiction to these damaging drinks.

The awareness of energy drink components, including taurine and caffeine, the reasons for purchasing, the motivation for consuming, and consumption levels are all affected by the awareness of energy drinks. Furthermore, as consumers of energy drinks grow younger, their reasoning for consuming energy drinks and their consuming behaviors influence energy drink consumption due to their increased levels of awareness and understanding regarding energy drinks. Furthermore, energy drink use is very common among undergraduate students, and it is primarily focused on youngsters. The most popular reasons for undergraduate students to consume energy drinks are to obtain excess energy, improve concentration, combat sleep, increase alertness when studying and driving, and improve mental health (Sylvetsky et al., 2020).

Energy drinks are non-alcoholic beverages that are rich in stimulants mainly caffeine. Caffeine has been recorded as one of the most popular drugs used around the world. The drug works as a stimulator that affects the nervous system of the human body.VKM (2019) found that around 90% of the world population consumes caffeine as a naturally

occurring source which was obtained from different plants such as cocoa beans, lea leaves and kola nuts also referred to as a kind of caffeine. Caffeine is known as a natural stimulant that provides energy to the human body and performs as a natural stimulator to relax human nerves and stress levels (Quadra & others, 2020). Hence, this is why the consumption of caffeine makes the human body stay awake and less drowsy as the substances involved in the caffeine produce energy sources to keep the human system active. Mostly, people consume caffeine in the morning to keep them awake to fulfil their requirements.

Such include office-goers, professional people, school and college students and teenagers. A huge amount of caffeinated substances are available around the world at stores and shops which are easily accessible to almost everyone. Caffeine was first discovered in 1820 from natural plants and other sorts of herbs.

Later, after the advancement of technology, the variations in caffeine produced highly toxic products which were harmful to human health. These were prepared in laboratories, tested and later sold in the market purchased by consumers (Ehlert, Twiddy & Wilson, 2020). Researchers also believe that after the advancement in the development of caffeine-related products, energy drinks and alcohol manufacturing industries allied together to produce drinks that contain both energy drinks and alcohol. This leads to several health risks such as reduced drowsiness whilst diminishing the effects of alcohol which can provoke kidney-related diseases.

Furthermore, Luo and Du (2021) revealed that it is true that energy drink consumption is becoming the reason for an emerging public health concern. As a result, it is crucial to understand awareness of potentially beneficial and harmful effects and practices among

undergraduate students. Increasing blood pressure and pulse rate have been connected to an increased chance of high blood pressure and cardiovascular disease. The study conducted by Subaiea and Alshammari (2019) shows that excessive energy drink consumption elevated blood pressure and heart pulse rates substantially around 90 minutes and approximately 24 hours after consumption. These elevations in heart pulse and arterial pressure are assumed to be mostly related to the caffeine component of energy drinks, as one big 12-ounce (355-ml) can carries 108 milligrams of caffeine, approximately equivalent to one cup of coffee. Although these changes, young people and children who consume energy drinks regularly are expected to have major heart issues.

The study performed by Mwape and Mulenga (2019) revealed that consuming an energy drink on occasions is expected to impact kidney function negatively. Frequent consumption of energy drinks was found to encourage a reduction in kidney dysfunction in rats in 12-week research. These findings, however, have not been confirmed in human studies.

Moreover, consuming an energy drink has been associated with increased high-risk behaviors in studies (Williams et al., 2018). Energy drinks have also been associated with youth brain injury (Graczyk et al., 2020) Furthermore, in their study, Casuccio and Immordino (2015) found that undergraduate students who had traumatic brain injuries within the preceding year have been at least multiple times as probably to have taken energy drinks as those who had traumatic brain injuries over a year before.

Therefore, Mehta & others (2021) also supports that these concentrated drinks, when combined can lead to risk factors and violent changes in human behaviour and lifestyle.

In the majority, the average consumption of caffeine among students was up to 209mg where 10 students consumed less than 100mg (17.9%) and 13 students consumed over 200 and 300 milligrams (3.6%) while some consumed 500 milligrams of caffeine. The survey answered that the common reasons for the consumption of these energy drinks were for taste development and energy boost (Kate, 2021). In a news, Susie (2022) reported that parents who were most likely to buy their young teenager's energy drinks over the years fear their consumption to be harmful to their health. As a reason, this is why caffeine and other energy drinks have become a dependable source for students in the university.

Moreover, studies show a link between a high sugar diet and an increased risk of chronic. In addition, one of the studies performed by Aslam and Khan (2013) revealed that more than half of energy drink consumers have adverse effects such as sleepiness, dehydration, increasing pulse rate, vomit, and abdomen pain. Meanwhile, 47.0 % of consumers suffer exhaustion, 39.7% suffer severe migraine, 34.5 % suffer exhaustion in their bodies, 39.8% suffer a rise in blood pressure, and 15% suffer tremors.

Over the past few years, energy and soft drinks have gained huge popularity due to their taste (Abu-Reidah, 2020). This trend is highly visible among college students at the graduation level. University students consume or make use of caffeine and such energy-related drinks to reduce stress despite being aware of its effects. The intake of caffeine has both positive and negative effects which are both harmful for an individual's physical and mental health and stability. Medical emergencies such as caffeine intoxication is serious cases found due to the huge consumption level of caffeine if taken non-seriously. According to research by (Dryllis & others, 2018), this case occurs if the intake of

caffeine exceeds the level of 250 mg which can prove dangerous to human organs such as brain, heart, and kidney-related diseases. Some of the symptoms of caffeine intoxication include fidgeting, shivering, gastro disturbance, frequent urination etc (Kumar, Kaur, Panghal, Kaur & Handa, 2018). According to the criteria of the Diagnostic and Statistical Manual of health Disorders, it was found that other symptoms also include rising heartbeat, insomnia, and change in psychological behaviour.

The focus of this report on the undergraduate students is a high concern as such students experience high times of stress either due to studies or personal issues. Deemah, Razan and Raneem (2021) found that various researches had been conducted in countries like Saudi Arabia, Puerto Rico and Turkey which resulted in 49% to 58.99% of students' young adults being involved in the intake of highly caffeine-related products to relieve stress. According to the perception of some students, it was discovered that students who aimed to improve their academic progress use caffeine as a belief that it might improve their academic fulfillments or help effective studying. Therefore, caffeine has become a more common source of intake for undergraduates. A survey by the University of Wisconsin-Platteville in 2020 revealed the habitual changes, changes in mental and physical behaviour and financial expense of caffeine. As a result, it was revealed that consumption, spending on products, academic performance and health were affected from a different perspective.

2.2. Adverse effect of energy drinks on Socio-Demographics and Health:

Elias (2021) reported that the trend of energy drinks has proved harmful for students as it was reported that the consumption of energy drinks such as Red Bull resulted in the heart failure of a 21- year old. This news reports the negative effects of energy drinks which are mostly enjoyed by students in lunch breaks, canteens and where limited restrictions or awareness campaigns have been carried out to avoid these conditions. These health conditions that can be caused due to consumption of a huge amount of caffeine include disturbance in a heartbeat which can lead to high blood pressure and chances of heart failure. Hence, the level of caffeine cannot just affect physical health but also invoke anxiety and stress levels among individuals. This can lead to the consumer being exhausted and highly disturbed due to a behavior change. Sleeping disorders count as one of the most common factors which are affected due to caffeine intake. The lifestyle and eating habits of people are imbalanced as the consumers who chose energy drinks over natural drinks are more likely to be diagnosed with diabetes Type 2 and other diseases (Ahmed, 2015).

According to a website by NHS, a single container of energy drink can contain between 54 to 62 grams of sugar which are harmful to adults who are advised to consume less than 30g of sugar a day (Elsalem, Al-Azzam & others, 2020). Moreover, teenagers who are likely to drink these drinks 2 to 3 times a day are unaware of the health complications. Playing a side role in the advertisement of energy drinks through ads, billboards, discount offers, students are more attracted to the influential visuals and ads. Such advertisements are appealing and pleasing to the consumer eye which invokes the interest among them to

look for an energy-boosting lifestyle. Target audiences who are involved in this are students, party-goers, athletes, and gym going people (Raj, Devi & Priya, 2018).

A report by the University of Waterloo (2018) discussed that over half of the students belonging to Canadian families and are moreover young adults who consumed energy drinks experienced serious health conditions. This study also found that a nationwide survey conducted among the Canadian youth found that over half of caffeine consumers have reported experiencing adverse health conditions such as increased heartbeat, nausea, seizure attacks, fatigue and breathing problems. To eradicate and reduce the consumption of caffeine among Canadian youth, Canadian legislation carried out laws and regulations which prohibited the usage of energy drinks among children who purchase drinks every time (Jessica, Cassondra & others, 2017). During the conduction of the study, researchers found that over 2,055 young Canadians aged between 12 to 24 are highly addicted to consuming energy drinks which 55.4 % have reported experiencing health issues Raj, Devi & Priya, 2018).

2.3. Operational Definitions:

2.3.1. Energy drinks:

Sting, Red Bull, Monster, Booster and Rockstar etc.

2.3.2. Caffeine:

A stimulant compound found naturally in coffee, tea, cocoa (chocolate), kola nuts and also added to soft drinks, foods and medicines. Caffeine is marketed as a physical and mental booster (Aslam et al., 2013).

2.3.3. Young Adults:

Young adulthood (generally defined as 18-22 or 18-24).

2.3.4. Awareness:

The fact or condition of knowing something with familiarity gained through experience or association.

2.3.5. Practices:

The actual application or use of an idea, belief or method as opposed to theories relating to it.

2.4. Keywords:

Energy drinks, Young Adults, Caffeine, Practices, Undergraduate Students, Awareness.

CHAPTER III: Methodology

3.1. Research Design:

A quantitative research approach using cross-sectional study design was carried out to assess awareness and practices regarding energy drink consumption among undergraduate students.

3.2. Research Duration:

Study period for the current research was six months from October 2021- March 2022.

3.3. Study Setting:

The study was conducted in the Public and Private HEC recognized Universities of Taxila. Participants were selected from University of Engineering and Technology (UET) and Wah Medical College (WMC).

3.4. Research Participants:

Study participants are all adult both male and female (18-24 years). Sample was selected on the basis of inclusion and exclusion criteria.

3.4.1. Inclusion Criteria:

- Undergraduate students aged 18-24 years are included
- Both male and female students
- Those who want to participate in the study

3.4.2. Exclusion Criteria:

- Those who do not want to participate are excluded from the study
- Those who have never consume are excluded

3.5. Sample Size Calculation:

Sample size was calculated using proportion formula for sample size calculation in OpenEpi menu, version 3 software. Previous prevalence was taken as 50% as reported by a study (Shaikh et al., 2018). Sample size came out to be 384 with 95% confidence interval (C.I) and 5% margin of error.

3.6. Sampling Strategy:

Desired sample was calculated using non-probability convenient sampling strategy.

3.6.1. Sampling Unit:

Public and Private Universities of Taxila were the sampling units.

3.6.2. Observational Unit:

Students enrolled in Bachelors program were the observational unit.

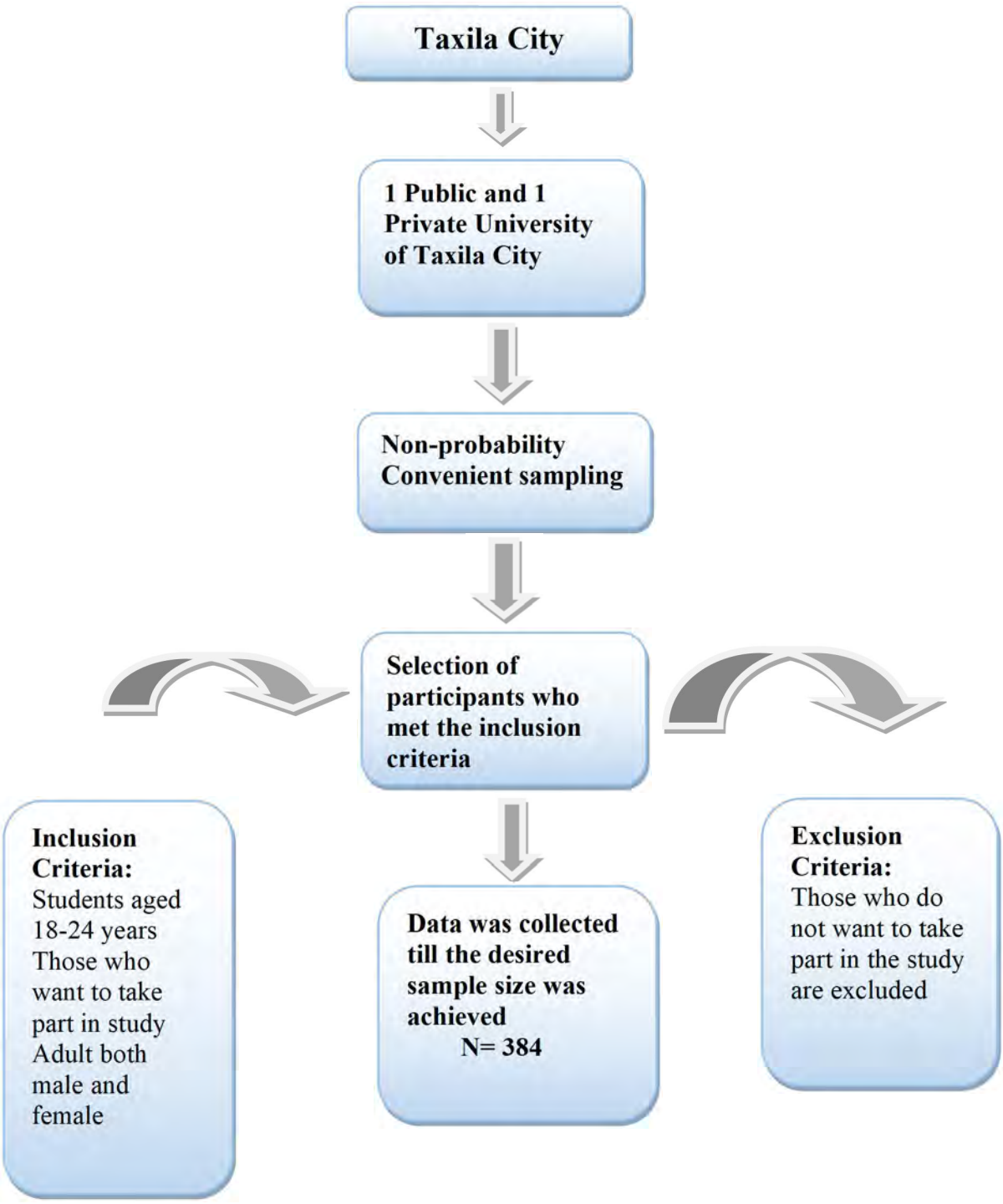

Figure 1: Non-Probability Convenient Sampling Strategy

3.7. Data Collection Instrument:

3.7.1. Questionnaire Design:

Data was collected using a self-administered questionnaire (Appendix 2) which was adapted from a pretested validated questionnaire (Aslam et al., 2013).

3.7.2. Content of the Questionnaire:

Questionnaire developed consisted of three sections.

- First section contained questions regarding socio-demographic characteristics of the participants.
- Second section was concerned with the awareness of energy drink usage and it comprised of 16 questions.
- Third section was focusing on the practices of participants including 5 questions regarding energy drink usage.

3.7.3. Study Variables:

3.7.3.1. Dependent Variable:

The main outcome variable of the study was energy drink consumption which is also the dependent variable.

3.7.3.2. Independent Variable:

Independent variables were awareness and practices along with the socio-demographic factors of the questionnaire.

3.8. Data Collection Process:

3.8.1. Pilot Testing:

Pilot testing was performed before starting the formal data collection procedure. The study was pretested on twenty respondents (10% of actual sample size). Performa was tested for any further changes, no major changes was done after pilot testing. Data from pilot testing was not included in final analysis.

3.8.2. Formal Data Collection:

Data was collected by the researcher herself. All the participants aged (18-24 years) were approached. Consent was taken from all the participants and only those who agreed to take part in the study were selected for the further research process. Data collection was completed in approximately 2 and half months. All filled questionnaires were kept safely and no one had access to it other than researcher.

3.9. Data Analysis Procedure:

Code book was developed and data was entered in Statistical Package for Social Sciences (SPSS) version 25. After careful data entry, data was checked for any error before proceeding for the further analysis. Data analysis was done in two phases; descriptive analysis and inferential analysis.

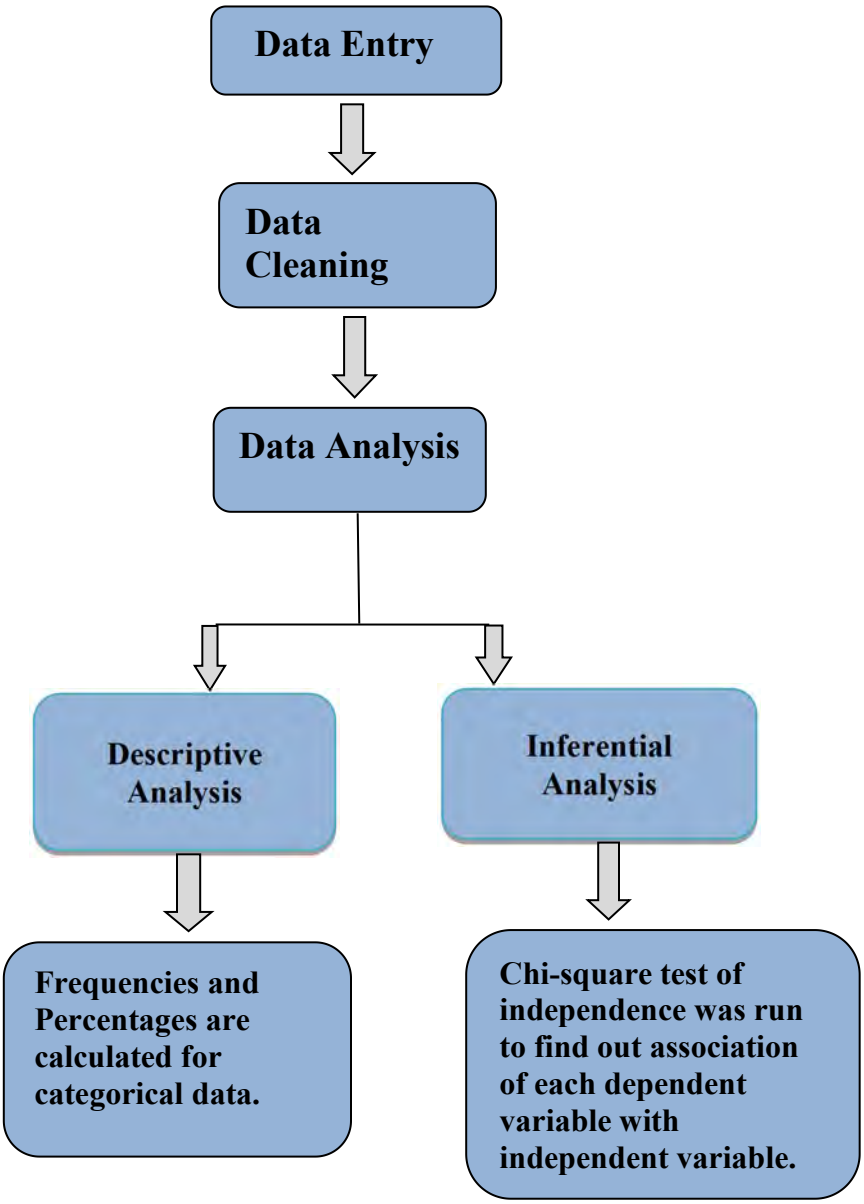

Figure 2: Data Analysis Plan

3.9.1. Descriptive Analysis:

Descriptive statistics were generated for socio-demographic characteristics. For categorical variables, data was summarized in the form of frequencies and percentages and presented in table form, bar chart and pie chart.

3.9.2. Inferential Analysis:

Chi-square test of independence was performed to find out the association of each dependent variable with independent variables. P value less than 0.05 were considered significant.

3.10. Ethical Consideration:

Before starting formal data collection, approval from institutional review board (IRB) of Al-Shifa School of Public Health Rawalpindi, Pakistan has been taken. Permission letter from the Head of Department of Al-Shifa School of Public Health was obtained regarding access to the Universities. Permission was taken from Universities of Taxila for conducting research. Participants were explained about the purpose of the research and consent was taken from them in order to take part in study. Participants were assured for the confidentiality of their data. Data collected from the respondents was kept anonymous and was not shared with anyone. Data was entered in SPSS anonymously. After data entry, hard copies of collected data were kept safely.

CHAPTER IV: Results

A total of 384 respondents were asked to participate in the study. Response rate was 100%.

4.1. Demographic characteristics of the study participants:

Almost similar proportion of the study participants were male (42.7%) and females (57.3%). Participants age varied from 18 to 24 years but a major portion of the participants were 21 years old (22.1%). Participants were belong to private institute (52.3%) and were living with their families (60.4%). Most of the participants (38.5%) were the students of 2 year. Demographic characteristics of the participants are shown in table 1.

Table 1: Demographic characteristics of participants

Variables	Frequency	Percentage%
Gender		
1. Male	164	42.7
2. Female	220	57.3
Age		
1. 18	21	5.5
2. 19	59	15.4
3. 20	77	20.1
4. 21	85	22.1
5. 22	77	20.1
6. 23	44	11.5
7. 24	21	5.5
Institute		
1. Public	183	47.7
2. Private	201	52.3
Residence Place		
1. Hostellite	152	39.6
2. Living with family	232	60.4

Year of Study **1. 1 year** **2. 2 year** **3. 3 year** **4. 4 year**	50 148 99 87	 13.0 38.5 25.8 22.7

4.2. Awareness regarding energy drink consumption:

Majority of the participants were consuming sting (54.4%). About half of the participants (50.8%) were taking tea for addiction. Most of the participants (32.6%) were not aware of any adverse effect followed by (17.4%) thinks that there was no effect cause by energy drinks. About (50%) of the participants use energy drinks for refreshment/ taste. Majority of the participants (76%) think that energy drinks consumption is not good for health. More than half (59.1%) agree that energy drinks causes hypertension and heart problems. Among (63%) participants energy drinks causes weight gain and in (73.7%) causes dental caries. About (37.5%) agree that energy drinks causes neurological problems. Among (43.8%) participants think that energy drinks helps to reduce stress. Peer pressure leads to energy drink usage among (41.7%) participants. Majority of the participants (54.7%) think consuming energy drink is a symbol of fashion followed by (36.7%) do not agree. Almost 38.5% of the participants think that energy drinks cause palpitations. Majority of the participants (40.9%) agree that energy drinks help decrease sleep. More than (75.8%) of the participants never search about energy drinks. Only (38%) found watching on a TV. Results for awareness regarding energy drink consumption are shown in table 2.

Table 2: Awareness regarding energy drink usage

Variables	Frequency	Percentage
Select energy drink		
Sting	209	54.4
Red Bull	71	18.5
Monster	13	3.4
Booster	15	3.9
Others	76	19.8
Are you using any other substance of addiction?		
Tea	195	50.8
Coffee	57	14.8
Cola drinks	14	3.6
Alcohol	10	2.6
I don't use any	108	28.1
What is the most common adverse/withdrawal effect of energy drinks?		
I don't know	125	32.6
Fatigue	31	8.1
Dehydration	36	9.4
Increase heart rate	47	12.2
Increase blood pressure	40	10.4
Headache	38	9.9
No adverse effect it is just rumor	67	17.4
Why people use energy drinks?		
Promote wakefulness	75	19.5
Relief stress	58	15.1
Refreshment/taste	192	50.0
Attract from advertisements	21	5.5
Need more energy	38	9.9
Do you think energy drink consumption is good for health?		

Yes	46	12.0
No	292	76.0
I don't know	46	12.0
Do you think energy drinks causes hypertension and heart problems?		
Yes	227	59.1
No	67	17.4
I don't know	90	23.4
Do you think energy drinks causes weight gain?		
Yes	242	63.0
No	99	25.8
I don't know	43	11.2
Do you think energy drinks causes dental caries?		
Yes	283	73.7
No	56	14.6
I don't know	45	11.7
Do you think energy drinks causes neurological problems?		
Yes	144	37.5
No	117	30.5
I don't know	123	32.0
Do you think consumption of energy drinks helps to reduce stress?		
Yes	168	43.8
No	163	42.4
I don't know	53	13.8
Do you think peer pressure leads to energy drink usage?		
Yes	160	41.7
No	107	27.9
I don't know	117	30.5
Do you think		

consuming energy drinks is symbol of fashion or high class status?		
Yes	210	54.7
No	141	36.7
I don't know	33	8.6
Do you think energy drinks causes palpitations?		
Yes	148	38.5
No	89	23.2
I don't know	147	38.3
Manufacturers claim that energy drinks do many things, for how many things you agree?	157	40.9
Decrease sleep	50	13.0
Concentration and memory loss	34	8.9
Increase ability of decision making	15	3.9
Helps in academic performance	67	17.4
Don't agree with any one of them	61	15.9
I don't know		
Have you ever search about energy drinks?		
Yes	93	24.2
No	291	75.8
From where did you search about energy drinks?		
Friend/relative	106	27.6
Reading in journal/book	20	5.2
Watching on TV	146	38.0
Newspaper	9	2.3
Others	103	26.8

4.3. Practices regarding energy drink consumption:

Majority of the participants (55.2%) use energy drink sometimes in past 12 months. More than (34.9%) of the participants were using 1 cane followed by (32.6%) were using 1 bottle. About (33.1%) experience no specific time for the adverse effects. Most of the participants (33.3%) experienced weight gain. The pattern of consuming energy drink among participants were (29.7%) during free time or taking food. Frequencies and percentages for the practices regarding energy drink consumption are shown in table 3.

Table 3: Practices regarding energy drink consumption

Variables	Frequency	Percentage%
In past 12 months how often you use energy drinks?		
Daily	60	15.6
Weekly	86	22.4
Monthly	26	6.8
sometimes	212	55.2
How many canes or bottles of energy drinks did you use daily, weekly or monthly in past 12 months?		
1 cane	134	34.9
2 cane	35	9.1
3 cane	30	7.8
1 bottle	125	32.6
2 bottles	32	8.3
3 bottles	28	7.3
Withdrawal/adverse effect are seen after?		
Immediately	35	9.1
12-24 hours	57	14.8

After a week	47	12.2
No withdrawal effect	118	30.7
No specific time	127	33.1
What do you experience after taking energy drink?		
Experience weight gain	128	33.3
Experience palpitations	74	19.3
Hypertension	52	13.5
Dental caries	92	24.0
Neurological problems	31	8.1
What is your pattern of consuming energy drink?	77	20.1
During studying	114	29.7
During taking food	56	14.6
During stress	114	29.7
During free time	22	5.7
Before any sports		

4.4. Inferential Analysis:

4.4.1. Association of Age with knowledge and practices:

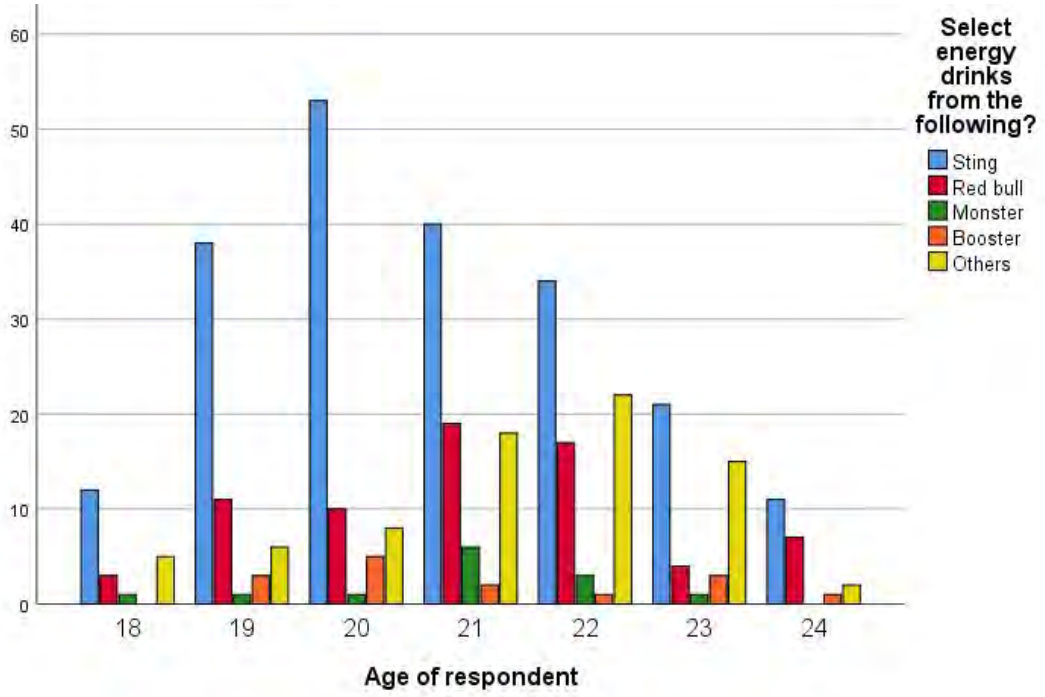

Figure 3: Energy drink selection among study participants

Figure presents a clustered bar chart showing association of energy drinks selection among age 18-24 years. It shows that majority of respondents prefer using sting but some has other choices as well. The results are significant.

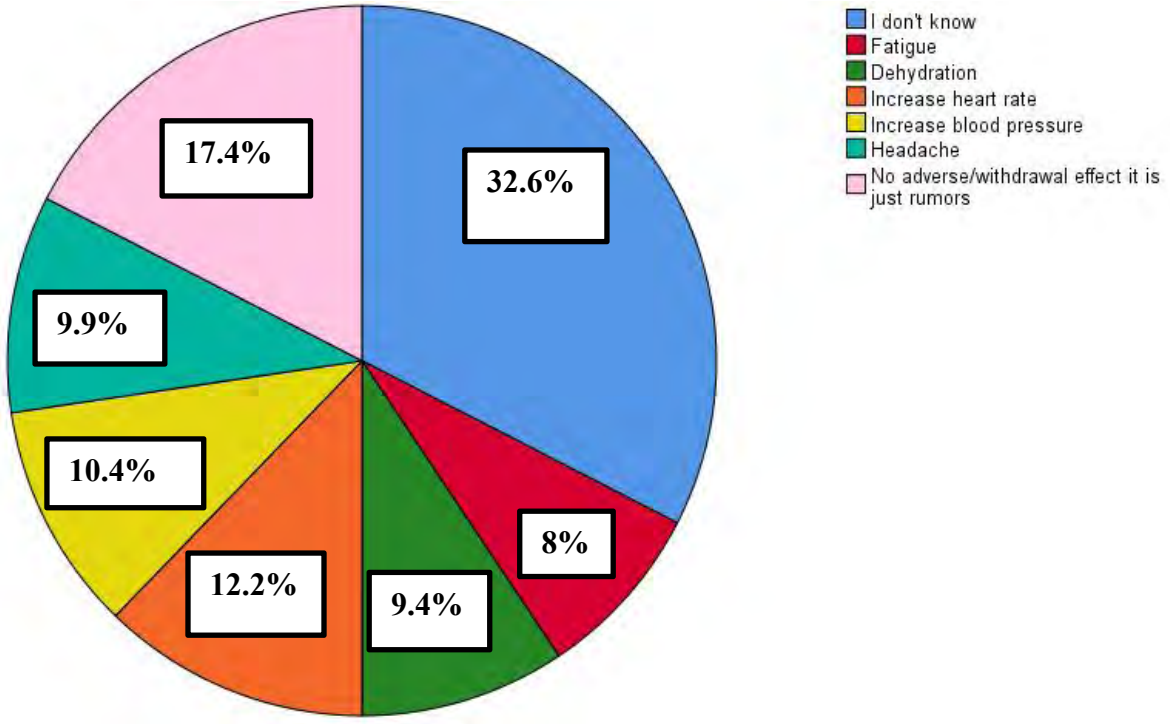

Figure 4: Withdrawal effects of energy drink consumption among participants

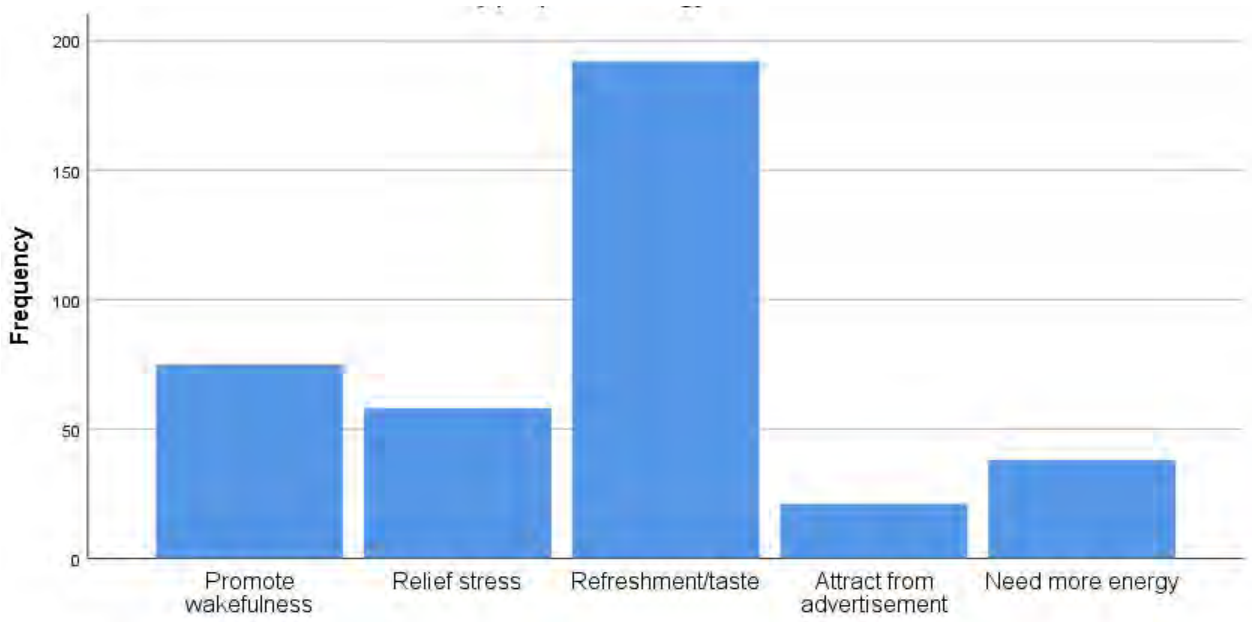

Figure 5: Reasons due to which people use energy drinks

Bar chart showing that people use energy drinks mostly for refreshment/taste with a ratio of 50% however, some has other reasons as well for using energy drinks.

Do you think energy drinks causes neurological problems?		Yes	No	I don't know	P value
Age of respondent	18	9(5.5%)	7(5.5%)	5(5.5%)	
	19	14(15.4%)	17(15.4%)	28(15.4%)	
	20	21(20.1%)	23(20.1%)	33(20.1%)	
	21	41(22.1%)	27(22.1%)	17(22.1%)	
	22	30(20.1%)	24(20.1%)	23(20.1%)	
	23	21(11.5%)	13(11.5%)	10(11.5%)	
	24	8(5.5%)	6(5.5%)	7(5.5%)	**.03**

Table 3: Neurological problems caused by energy drinks

The table showing that neurological problems occur due to energy drinks usage and it has been observed that there is a difference between the responses. Therefore, it can be stated that there is a difference between age and drinks that cause neurological problems. The results are significant as P value is 0.03.

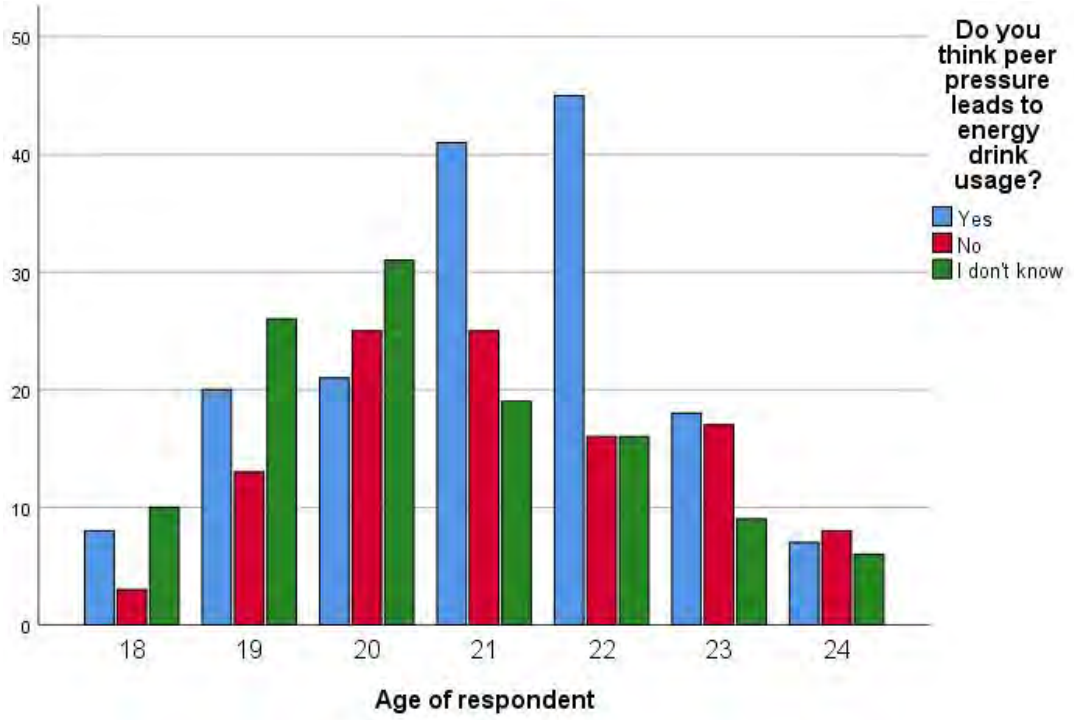

Figure 6: Role of peer pressure in energy drink usage

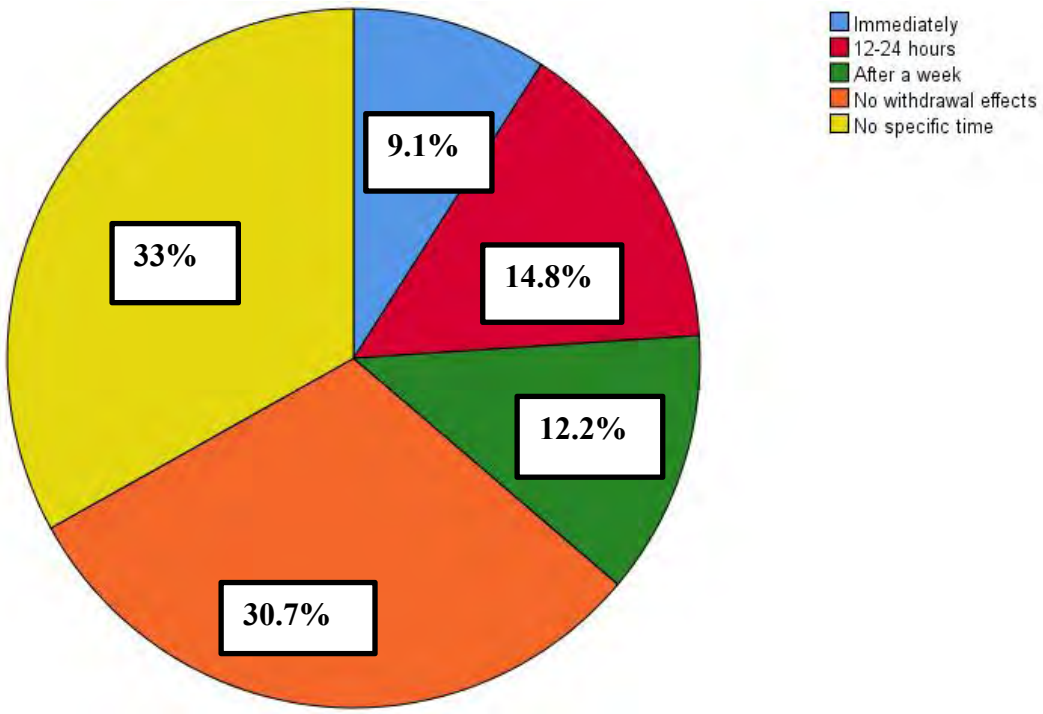

Figure 7: Withdrawal effects due to energy drink usage in respondents

4.4.2. Association of Gender with knowledge and practices:

Variable		GENDER		X^2 (df)	P value
		MALE n= 164	FEMALE n=220		
Select energy drinks from the following?	Sting	99	110	**21.12(4)**	**.000**
	Red bull	30	41		
	Monster	7	6		
	Booster	11	4		
	Others	17	59		
Are you using any other substance of addiction?	Tea	81	114	**10.26(4)**	**.03**
	Coffee	18	39		
	Cola drinks	5	9		
	Alcohol	8	2		
	I don't use any	52	56		
What is the most common/withdrawal effect of energy drinks?	I don't know	60	65	**15.30(6)**	**.01**
	Fatigue	13	18		
	Dehydration	13	23		
	Increase heart rate	18	29		
	Increase blood pressure	23	17		
	Headache	7	31		
	No adverse/withdrawal effect it is just rumors	30	37		
Why people use energy drinks?	Promote wakefulness	20	55	**21.49(4)**	**.00**
	Relief stress	24	34		
	Refreshment/taste	99	93		
	Attract from advertisement	12	9		
	Need more energy	9	29		

Do you think energy drink consumption is good for health?	Yes	25	21	**6.69(2)**	**.03**
	No	114	178		
	I don't know	25	21		
Do you think energy drinks cause dental caries?	Yes	102	181	**20.66(2)**	**.000**
	No	37	19		
	I don’t know	25	20		
Do you think energy drinks causes neurological problems?	Yes	50	94	**6.14(2)**	**.04**
	No	57	60		
	I don’t know	57	66		
Do you think consumption of energy drinks helps to reduce stress?	Yes	64	104	**5.73(2)**	**.05**
	No	81	82		
	I don’t know	19	34		
Do you think peer pressure leads to energy drink usage?	Yes	56	104	**8.08(2)**	**.01**
	No	56	51		
	I don’t know	52	65		
Do you think energy drinks causes palpitations?	Yes	42	106	**20.50(2)**	**.00**
	No	44	45		
	I don’t know	78	69		
Have you ever search about energy drinks?	Yes	57	36	**17.31(1)**	**.00**
	No	107	184		
In past 12 month	Daily	25	35		

how often you use energy drink?	weekly	55	31		
	Monthly	5	17	**21.24(3)**	**.00**
	Sometimes	75	137		
How many canes or bottles of energy drinks did you use daily, weekly or monthly in past 12 months?	1 cane	48	86		
	2 cane	18	17		
	3 cane	17	13		
	1 bottle	41	84	**25.28(5)**	**.00**
	2 bottles	22	10		
	3 bottles	18	10		
What is your pattern of consuming energy drinks?	During studying	21	56		
	During taking food	60	54		
	During stress	27	29		
	During free time	48	66	**13.90(5)**	**.01**
	Before any sports	8	14		

The results of the chi-square of the Gender indicates that there is a significant value and this indicates that there is a difference in the Genders regarding the questions that were asked. It also indicates that the males and females have different answers that have led to the difference between the responses to occur. Therefore, it can be stated that the results of the chi-square of Gender is significant.

4.4.3. Association of Year of study with knowledge and practices:

		Select energy drinks from the following?					
		Sting	**Red bull**	**Monster**	**Booster**	**Others**	**P value**
Year of study	1 year	33(13%)	6(13%)	2(13%)	1(13%)	8(13%)	
	2 year	87(38.5%)	34(38.5%)	6(38.5%)	7(38.5%)	14(38.5%)	
	3 year	42(25.8%)	19(25.8%)	4(25.8%)	6(25.8%)	28(25.8%)	
	4 year	47(22.7%)	12(22.7%)	1(22.7%)	1(22.7%)	26(22.7%)	**.003**

Table 4: Energy drink selection among study participants

The results shown above reflects that there is significant difference between the responses which has provided the value of 0.003. It can be seen that the respondents with different year of study tends to have the different selection of the energy drinks. The selection of the energy drink hence has been seen dependent on the year of study of the respondents.

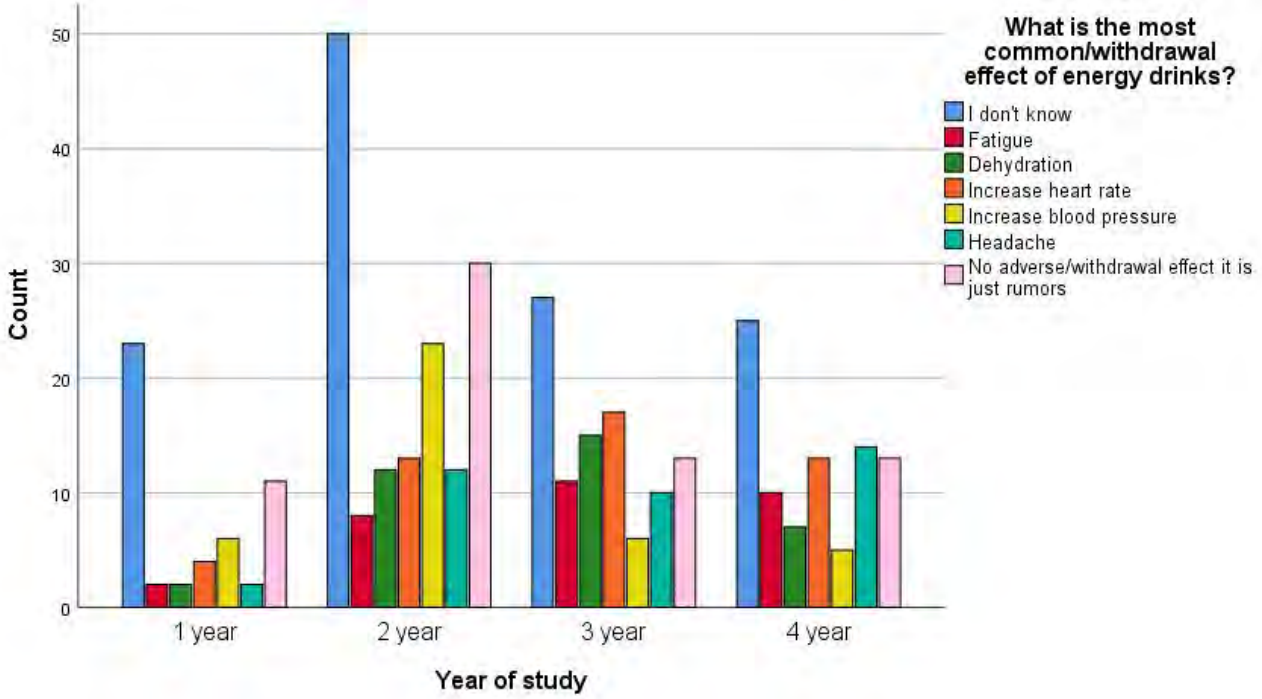

Figure 8: Common causes of withdrawal effects of energy drinks

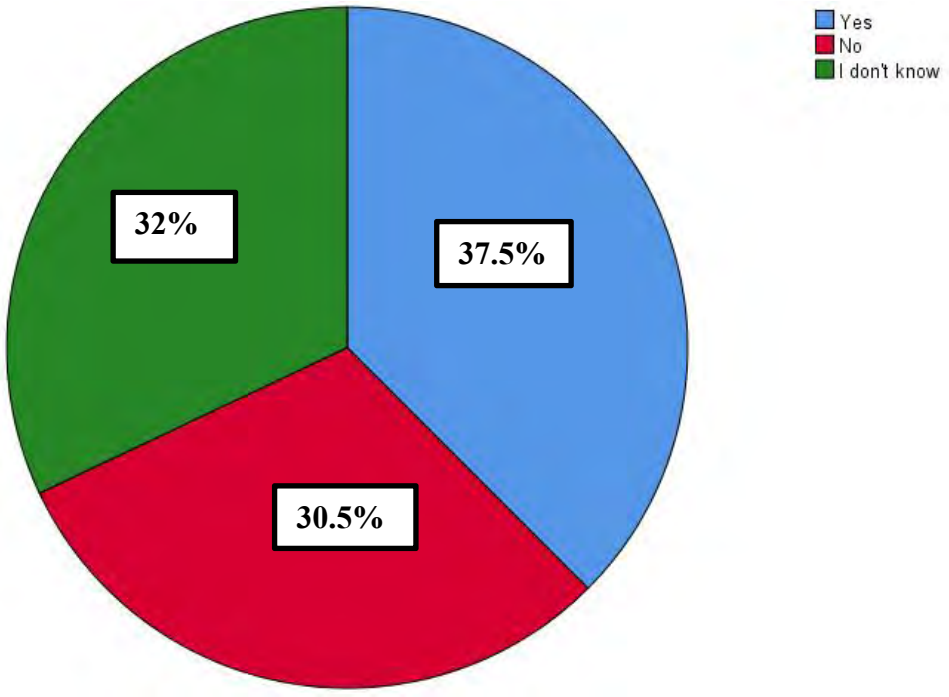

Figure 9: Neurological problems caused by energy drinks

		Do you think consuming energy drinks is symbol of fashion or high class status?			
		Yes	**No**	**I don't know**	**P value**
Year of study	1 year	19(13%)	27(13%)	4(13%)	
	2 year	77(38.5%)	56(38.5%)	15(38.5%)	
	3 year	63(25.8%)	31(25.8%)	5(25.8%)	
	4 year	51(22.7%)	27(22.7%)	9(22.7%)	**.05**

Table 5: Results presenting energy drink consumption as a fashion symbol

CHAPTER V: Discussion

Energy drinks have grown in popularity among young adults. They are widely available on college campuses and recreational hot spots, and are supposed to improve alertness or provide a short-term memory boost. According to the findings of a study, males consume more energy drinks than females (Alsunni and Badar, 2011). Our findings are not consistent with those of other research, which revealed that men used more energy drinks than women. The findings could be explained by advertisements for energy drinks that largely target adult males. Mostly men are competitive, accept challenges, and are energized by situations involving job or role accomplishment and risk-taking. This could explain why males use energy drinks more frequently and in larger quantities than females (Buxton and Hagan, 2012). Our findings were in line with those of a previous study (Reissig, Strain and Griffiths, 2009), that shows people who consumed energy drinks reported less sleepiness and increased alertness because caffeine is the primary ingredient in energy drinks that has a cognitive function (Degirmenci, 2018).

The following study (Aslam et al., 2013) aims to investigate the awareness and practices related to energy drink consumption, identifying their key practices along with assessing the link with the socio-demographic variables. According to the finding of the study (Aslam et al., 2013), it is identified that the consumption of people in Pakistan, specifically the students of Pakistan are increasing significantly of drinks. These drinks are easily available in universities and other educational institutions in Pakistan, however, no awareness and proper regulations have been given to students related to their

consumption and the effects. This study also determined that energy drinks are not similar to soft drinks or sports drinks, although some people categorized them under the type of tea and coffee, however, certain beverage includes only a small amount of caffeine, whereas, in energy drink, a high amount of caffeine has been found, as a stimulating agent. The research by Higgins, Babu and Shearer, (2018) also confirmed the notion of the study that energy drinks primarily contain caffeine and other sugar substances, such as vitamins and carnitine, which can assist in boosting the physical stamina and the mental health of drinkers. That is why the energy drink companies promote this product as an energy booster.

The finding of the study (Rahamathulla, 2017) also determine the side effects of excessive consumption of energy drinks, and it is noted that these drinks can cause intoxication, cardiac arhythmias, tachycardia and sometimes death. It is also noted that consumption of the energy drink is found much higher in females as compared to males, however according to the survey by Imran, (2018) it was found that there are more male drinkers than female. Moreover, the most common energy drinks have been consumed by young Pakistani students are sting, red bull, Rock Star and monster.

It has also been noted that the awareness about the substances in energy drinks, the drivers for their purchase, consumption and the level of consumption are impacted by the awareness. Moreover, the increased consumption in young people has been recorded, the intention for consumption and their behaviour impact their intention to drink, because of the high awareness level and their understanding of these drinks. The researcher Sylvetsky et al., (2020) observed the most common reasons for increased consumption of

energy drinks as the stimulating energy, being more focused, minimize sleep, improving activeness while driving, studying and enhancing their cognitive health. However, this study Sylvetsky et al., (2020) has shown the negative effects of energy drinks on consumer health. As the consequence, it is imperative to comprehend the awareness of the likely advantageous and negative impacts and practices on young students. The following study also highlighted the negative impact of excessive energy drink consumption as the high pulse rate, blood pressure and other cardiovascular diseases. Moreover, its negative impact on kidney functioning has also been found. This negative impact of this study is also supported by Mwape and Mulenga (2019). Other than this the increased arterial pressure is also associated with the consumption of high caffeinated drinks, i.e., energy drinks.

Low doses of caffeine (12.5-50 mg) have been shown to improve cognitive performance and mood, while 200 mg doses have been shown to improve cognitive task, speed, accuracy, and alertness. However, the amount of caffeine in energy drinks easily exceeds the amount required to promote cognitive function (Cabezas-Bou, 2016). Two-thirds of respondents said they take energy drinks to reduce sleep and increase energy levels for studying and finishing work. This could be because caffeine stimulates the Central Nervous System, which increases cortisol release. In our study, the prevalence of insomnia caused by energy drinks was roughly 17%, which was much lower than a study conducted in Thailand (Lohsoonthorn, 2013). Palpitation, tremors, seizures, inability to focus, increased heart rate, and gastrointestinal distress were reported by the majority of subjects who reported recreational use in previous research (Gunja, and Brown, 2012). The vasoconstriction action of caffeine, which causes peripheral vasoconstriction rather

than an increase in cardiac output, may be responsible for the increased blood pressure and heart rate (Ngueta, 2020).

Specifically considering the impact on students, it is noted that the energy drink consumption also resulted in boosting the high-risk behaviors among students. Moreover, it is also identified as the cause of youth brain injury.

The finding of our study depicts that many students consume energy drinks for improving their academic progress, as they think that using caffeine can help in meet their academic goals and study more effectively. However, it is noted that sleeping disorders are subjected to the major problem caused because of energy drink intake. Furthermore, the imbalanced eating habits and disturbed lifestyles also result in increasing diabetes Type 2 among young people or energy drink consumers.

Our study assess the awareness about energy drinks and practices regarding energy drink consumption among young students, a cross-sectional study, adopting the quantitative approach was conducted. The participants were recruited from UET (University of Engineering and Technology) and WMC Wah Medical College) in Taxila. Considering the demographic information about the participants, it has been noted that there were 57.3% females and 42.7% of males among respondents, showing that the responses are more from female students. The age of the students were between 18 to 24 years, however, the majority of the respondents were found 21 years old. It is also noted that the majority of students were taken from private universities, and are those, who live with their families.

The findings of our study depict that the sting is the most consumed drink by the Pakistani undergraduate students, i.e about 54.4%, whereas 50.8% of the participants are

found tea addicted. Considering the awareness of the potential effects, it has been noted that the majority of students were unaware of the negative physical and mental health impact of these drinks, whereas some of the respondents have the misconception that it has no negative health impact. The study also assessed the reasons for consuming energy drinks, and as per the results of the survey, it has been observed that half of the respondents consume energy drinks, as they like their refreshing taste. This finding of our study can also be supported by the research of Poulos and Pasch (2016) that the negative impact of these drinks are very evident, however people are still consuming it as they are refreshing and find it tasty. The results of the following study also identified that majority of the people are aware that certain consumption is injurious to health, and they agree that it causes cardiovascular problems, hypertension, obesity, dental problems and many neurological problems.

Additionally, considering the reasons for the consumption of energy drink, the findings of our study shows that youngsters were using them for reducing stress, and peer pressure and because it is a fashion symbol. However, the majority of respondents agreed that the consumption to follow fashion is the prime reason for the increased rate of consumption. To combat sleep is also one of the reasons reported by 40.9%) of the respondents. The findings also show another fact that a significant number of respondents have never searched about these drinks, i.e more than 70%, however just 38%) know it by TV advertisement.

5.1. Strengths:

In light of this new development, major questions have been raised regarding the potential harms and safety of the consumption of energy drinks. There are several studies that discuss the awareness of energy drinks consumption but this study specifically discusses the practices and awareness concerning the consumption of energy drinks among the TEHSIL TAXILA undergraduate students. The findings of this research study provide support for the intervention of the policy level that is intended to transmute the behaviors of the younger generation concerning the consumption of energy drinks. This research study strengthens the existing literature as this discusses the rate of the consumption of these drinks among students and the aware them about their positive and negative effects, which are not discussed in the existing literature. The findings provide the knowledge to the students that half of the younger generation consumes energy drinks because they like the taste of energy drinks, as it is refreshing. Along with that, this particular research study also encapsulates the fact that the side effects of the excessive use of energy drinks can cause cardiac arhythmias, intoxication, and tachycardia.

5.2. Limitations:

There is a noticeable lack of large-scale generalized research that map out prevalence and demographically specific consumption patterns, and this study provides preliminary data on prevalence, consumption patterns, and awareness about Energy drinks. The fact that our study was conducted in only two medical institutions was the most significant constraint. Despite the fact that these medical colleges have a diverse population from

various socioeconomic backgrounds, they cannot be utilized to forecast the country's general situation. In addition, easy sampling was used, which could have resulted in selection bias and hence was not truly representative of the population under study. The likelihood of recollection bias with relation to the pattern and side effects of energy drinks was another constraint that could have influenced the outcome of our study.

- **Safety limits by FDA:**

Energy drinks are categorized as " dietary supplements " and are not approved by Food and Drug Administration (FDA). FDA approves and regulates ingredients that are intentionally added to energy drinks. New food additives must be tested and reviewed by FDA to ensure that they are safe and reliable.

- FDA recommends a 400mg of daily intake of caffeine. It is enough for your body to get the energy boost that you need.
- A single container of energy drink can contain between 54-62 grams of sugar which are harmful to adults who are advised to consume less than 30 grams of sugar a day.
- Energy drink consumption limit to no more than 16 ounces (473 ml) of a standard energy drink per day.

CONCLUSIONS AND RECOMMENDATIONS

5.3. Conclusion:

This study summarizes all the best possible aspects of particular research study. It provides us information, understanding and findings related to certain study. Besides this, it adds value to future studies that will be conducted on this particular research topic.

The analyst carried out this study to analyze the awareness and practices regarding energy drink consumption among students of undergraduate in surroundings of Tehsil Taxila. It is determined that popularity and attraction of energy drinks among young students is mainly credited to advertisements and TV's as those products that enhance physical performance of human body provides energy and alert the mind. Energy drinks has gained more popularity among young students. It is available widely at recreational spots and university campuses. This point of view is also supported by the study conducted by (Aslam et al., 2013) that mostly youth started using these energy drinks by gaining attraction through ads on television or internet.

The findings and results of our study represent that the sting is considered the most consumed energy drink in the Pakistani younger generation. With respect to the awareness of the possible effects, it has been examined that the majority of the adults were ignorant of the negative mental health and physical influence of the particular drinks, whereas some of the respondents have the delusion that it does not contain any negative effect on the health. The research study also evaluated the explanations for consuming beverages and energy drinks, and as per the survey results evaluated in the

study, it has been perceived that half of the younger generation of the participants as they like the taste of energy drinks as it is refreshing.

5.4. Recommendations:

As the following study evaluated the awareness and the practices of energy drink consumption among undergraduate students. There is potential for future researchers to carry forward this research to analyses the practices and awareness of school level students, the general public and older age groups i.e. heterogeneous populations. Moreover, as the following study researched Pakistani students, however, the perception of the product, understanding of the impact, preferences and impact may vary from culture to culture. Therefore, there is scope for the researcher to conduct the study in other regions and cultures as well, so that the comparisons between the nation's ideologies regarding energy drink consumption can be assessed.Furthermore, research on the impact of promotional activities on the increased consumption of energy trends also needs to be conducted. Along with the research that awards public about the negative impact of these high caffeinated drinks, so that their decision can be influenced.

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Appendix A - Questionnaire

AWARENESS AND PRACTICES REGARDING ENERGY DRINKS CONSUMPTION AMONG UNDERGRADUATE STUDENTS OF TEHSIL TAXILA: A CROSS-SECTIONAL STUDY

Please read all questions carefully and tick the most appropriate answer. You are requested to fill all information accurately so that appropriate results can be derived. All information will be kept confidential and your identity will not be disclosed at any time. Moreover, your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study.

Name of Researcher: Unaiza Sohail **Respondent's Signature**

Organization: Al-Shifa School of Public Health Rawalpindi

SECTION - A

DEMOGRAPHICS

1. Gender

- Male (1)
- Female (2)

2. Age _____ (Years)

3. Institute

- Public (1)
- Private (2)

4. Place of resident

- Hostellite (1)
- Living with family (2)

5. Year of study

- 1 year (1)
- 2 year (2)
- 3 year (3)
- 4 year (4)

SECTION - B

DESCRIPTIVE PART

PART 1 Awareness regarding usage of energy drinks

1. Select energy drinks from the following?

- Sting (1)
- Red Bull (2)
- Monster (3)
- Booster (4)
- Others (Please Specify) _____ (5)

2. Are you using any other substance of addiction?

- Tea (1)
- Coffee (2)
- Cola drinks (3)
- Alcohol (4)
- I don't use any (5)

3. What is the most common adverse/withdrawal effect of energy drinks?

- Fatigue (1)
- Dehydration (2)
- Increase heart rate (3)
- Increase blood pressure (4)
- Headache (5)
- No adverse or with drawl effect it is just rumors (6)
- I don't know (7)

4. Why people use energy drinks?

- Promote wakefulness (1)
- Relief stress (2)
- Refreshment/ Taste (3)
- Attract from advertisement (4)
- Need more energy (5)

5. Do you think energy drink consumption is good for health?

- Yes (1)
- No (2)
- I don't know (3)

6. Do you think energy drinks causes hypertension and heart problems?

- Yes (1)
- No (2)
- I don't know (3)

7. Do you think energy drinks cause weight gain?

- Yes (1)
- No (2)
- I don't know (3)

8. Do you think energy drinks causes dental caries?

- Yes (1)
- No (2)
- I don't know (3)

9. Do you think energy drinks causes neurological problems?

- Yes (1)
- No (2)
- I don't know (3)

10. Do you think consumption of energy drinks helps to reduce stress?

- Yes (1)
- No (2)
- I don't know (3)

11. Do you think peer pressure leads to energy drink usage?

- Yes (1)
- No (2)
- I don't know (3)

12. Do you think consuming energy drinks is symbol of fashion or high class status?

- Yes (1)
- No (2)
- I don't know (3)

13. Do you think energy drinks causes palpitations?

- Yes (1)
- No (2)
- I don't know (3)

14. Manufacturers claim that energy drinks do many things, for how many things you agree?

- Decrease sleep (1)
- Concentration and memory loss (2)
- Increase ability of decision making (3)
- Helps in academic performance (4)
- Don't agree with any one of them (5)
- I don't know (6)

15. Have you ever search about energy drinks?

- Yes (1)
- No (2)

16. From where did you search about energy drinks?

- Friend/ Relative (1)
- Reading in any journal/ book (2)
- Watching on a TV (3)

- From newspaper (4)
- Others (Please specify) _____ (5)

PART 2 Practices regarding usage of energy drinks

1. In past 12 month how often you use energy drink?

- Daily (1)
- Weekly (2)
- Monthly (3)
- Sometimes (4)

2. How many canes or bottles of energy drinks did you use daily, weekly or monthly in past 12 months?

- 1 cane (1)
- 2 cane (2)
- 3 cane (3)
- 1 bottle (4)
- 2 bottle (5)
- 3 bottle (6)

3. Withdrawal/ adverse effects are seen after?

- Immediately (1)
- 12-24 hours (2)
- After a week (3)
- No withdrawal effects (4)
- No specific time (5)

4. What do you experience after taking energy drinks?

- Experience weight gain (1)
- Experience palpitations (2)
- Hypertension (3)
- Dental caries (4)
- Neurological problem (5)

5. What is your pattern of consuming energy drinks?

- During studying (1)
- During taking food (2)
- During stress (3)
- During free time (4)
- Before any sports (5)

Appendix B – Consent Form

Title of Study:

Awareness and Practices regarding energy drinks consumption among undergraduate students of Tehsil Taxila.

Researcher:

Unaiza Sohail. MSPH Student, Al Shifa School of Public Health Rawalpindi.

Purpose:

It is established that energy drink consumption has become an escalating public health problem hence it is important to know the awareness about potential positive and negative effects and practices among undergraduate students.

Time Required:

It is anticipated that it will take approximately 15 minutes of your time to complete the survey.

Voluntary Participation:

Participation in this study is voluntary. You have the right to not open or complete the anonymous survey.

Confidentiality:

Data from the surveys will be completely anonymous and reported in aggregate form. Your name will not be collected at any time. After data collection, the survey and demographic responses will be password-protected. Once submitted the researcher will not be able to withdraw responses due to anonymity and de-identified data.

Risks:

This study will not pose any harmful risk to the participants.

Benefits:

There are no direct benefits associated with participation in this study. The potential benefit from this research is to assess the practices and awareness among students regarding consuming energy drinks and their harmful effects on health.

Payment:

You will receive no payment for participating in the study.

Right to Withdraw From Study:

You have the right to withdraw from the study at any time before submitting the survey without penalty.

If you have questions about the study, contact the following individual:

Unaiza Sohail

Unich1996@gmail.com

Contact # 03080421224

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Name of Participant_____

Signature of Participant _____

Date _____ **DD/MM/YY**