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CAFFEINE CONSUMPTION AND ITS EFFECTS ON COLLEGE STUDENTS IN NCR

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Introduction:

It is seen that caffeine in various forms is consumed by 92% of the students and with a daily intake of about 173mg/d among the caffeine users. Coffee being the main source of intake, students also consume caffeine in other forms like energy drinks, tablets or tea for various reasons. Some use it as a stimulant whereas some use it only for its taste. However, it is also observed that excess caffeine consumption may prove to be harmful instead of beneficial and is benefits are not permanent. The research would be focused on the students in the age group of 17-25 years which includes college students who seem to be the maximum consumers of caffeine in carious forms.

The motivation behind this study is to understand the intake of caffeine among the students and thus make a note of the effects of the same. It will also be studying whether or not the students have experienced any ill effects as of now or if at all they are aware of the harmful effects that might be caused by caffeine in the longer run. This research would help have a holistic view of the effects and harms of consuming caffeine on a regular basis and study what is the main driving force for the consumption of caffeine.

The study aims at focusing on analysing the gap found and hence work on the hypothesis formed.

Research Objectives

1. To identify the regularity of caffeine consumption in college students and the amount consumed.
2. To understand the consumption patterns and the reasons behind it.

3. To understand the health-related problems and the problems faced if any after caffeine consumption with respect to concentration and retention of information.
4. To try and understand the relationship between the consumption of caffeine and its relevance with academic pressure.

Literature Review:

Title of the paper	Name of the authors	Name and indexing of the journal/ book	Geography/ region of study	Framework adopted and major findings of the study	Gaps identified/ addressed	No. of citations received as on 2020
1. A survey of energy drink consumption patterns among college students	Brenda M Malinauskas, Victor G Aeby, Reginald F Overton, Tracy Carpenter-Aeby and Kimberly Barber-Heidal	Nutrition Journal	Central Atlantic region of the United States.	51% of the sample chosen used more than one energy drink over a month. Majority of the consumers used it either for insufficient sleep, increase energy or to use with alcohol drinks. Some people we noticed to experience having headaches or heart palpitations from consuming caffeine drinks.	Recognizing students who realise the amount caffeine present in the energy drinks and the effects associated with it.	299
2. Ad lib caffeine consumption, symptoms of caffeinism, and academic performance	Gilliland, K., & Andress, D.	The American Journal of Psychiatry		Excessive consumption of caffeine results in anxiety, depression in the high consumers of caffeine and in some cases, it may also result in higher frequency of psychophysiological disorders, and lower academic performance.		138
3. Pattern Analysis of High-caffeine Energy Drink Consumption and Adverse	Jieun Lee, Wan Huh and Eun Joo Choi	YAKHAK HOEJI	College of Pharmacy, Chosun Universit	High-caffeine energy drink consumption frequently cause most common symptoms such as tremor, insomnia, anxiety, and	further long-term research and awareness of these	1

Effects among College Students in a University			y, Gwangju Korea	nervousness and rarely leading to serious adverse effects like seizure, acute mania, and stroke due to caffeine overdose. College students mostly consumed energy drinks to keep awake (46%) when studying and to recover fatigue (27%). Approximately 44% respondents mainly reported palpitation (73.9%) and insomnia (72.8%) regarding adverse effect questionnaire.	issues.	
4. Sleep quality and sleep patterns in relation to consumption of energy drinks, caffeinated beverages, and other stimulants among Thai college students	Vitool Lohsoonthorn, Hazar Khidir, Gardenia Casillas, Somrat Lertmaharit, Mahlet G. Tadesse, Wipawan C. Pensuksan, Thanapoom Rattananupong, Bizu Gelaye & Michelle A. Williams	Sleep and Breathing International Journal of the Science and Practice of Sleep Medicine	Thailand	According to the research there is no influence of caffeinated products on the sleep patterns of college students. Overall, a poor sleep quality was found to be 48.1 %. It was also seen that a significant percent of students used stimulant beverages (58.0 %) out of the 2854 studied.		58
5. Intake of caffeine from all sources and reasons for use by college students	Caroline R.Mahoney Grace E.Gile Bernadette P.Marriott Daniel A.Judelson Ellen L.Glickman Paula J.Geiselman Harris	Clinical Nutrition	United States	The main reasons for intake of caffeine observed were to stay awake, its taste, improved concentration, increase energy and an alternative for stress. It was seen that students, especially women, consume somewhat more caffeine than the	To study the impact of caffeine consumption.	3

	R.Lieberman			general population of individuals aged 19–30 years		
6. The "Buzz" on Caffeine: Patterns of Caffeine Use in a Convenience Sample of College Students	Tina R. Norton , Amy B. Lazev , and MacKenzie J. Sullivan	Journal of Caffeine Research Vol. 1, No. 1	United states	A great majority used caffeine on a regular basis. It was also observed that men consumed more caffeine by energy drinks/shots and soft drinks and were more likely to use caffeine while partying and to stay awake during long car rides. The study suggests that caffeine is widely used but the pattern of use may differ.		15
7. Perceived Stress, Energy Drink Consumption, and Academic Performance Among College Students	Michele L. & Kathy A. DeBarr	Journal of American College Health	Illinois, USA.	A positive correlation was seen between perceived stress and energy drink consumption, whereas a negative correlation was observed between academic performance and energy drink consumption.	Education regarding caffeinism, perceived stress and consumption of energy drinks.	52
8. Behavior, Sleep, and Problematic Caffeine Consumption in a College-Aged Sample	Britta L. Anderson and Laura M. Juliano	Journal of Caffeine ResearchVol. 2, No. 1		79% of the sample surveyed reported caffeine consumption on a weekly basis and one of the problems associated with it were faced by three quarters of the consumers. Greater caffeine consumption was negatively correlated with total sleep time whereas in young adults the level of caffeine consumption was positively with social problems, stress,	Caffeine's affect on academics of students.	12

				anxiety and behaviour in general.		
9. Sleep Quality, Sleep Patterns and Consumption of Energy Drinks and Other Caffeinated Beverages among	Sixto E. Sanchez, Claudia Martinez, Raphaelle A. Oriol, David Yanez, Benjamín Castañeda,Elena Sanchez,Bizu Gelaye,3 and Michelle A. Williams	Health (Irvine Calif). Author manuscript	Peruvian college, USA.	The study showed that students with heavy caffeine consumptions had disturbed sleep patterns and also had its poor reflections on their lifestyle characteristics.		14
10. COLLEGE STUDENTS' USE OF CAFFEINE AND ITS RELATIONSHIP TO PERSONALITY	R. Eric Landrum	APA PsycInfo	Wisconsin US State	The use of caffeine by college students is sensitive to a number of variables, including gender, age, whether studying for an exam, or just the specific situation at hand (Rail, 1980). Although whether a student was a morning or evening type was not related to caffeine use, degree of extroversion was significantly positively correlated with caffeine use. Intercorrelations between the various extroversion measures were also significant, indicating a fair amount of validity between the personality measures.	To find out other potential relationships of caffeine with college students.	
11. Daily caffeine use and the sleep of college students	ROBERT A. HICKS. GREGORY J. HICKS. JOSEPH R. REYES. and YVONNE CHEERS	Bulletin of the Psychonomic Society	California, USA	The study carried out showed an inverse relationship between the daily consumption of caffeine and their habitual sleep duration and a non-significant relationship was observed between the	The impact of reduced sleep duration on health and other aspects.	30

				consumption of caffeine and sleep satisfaction.		
12. caffeine and cognitive performance: effects on mood or mental processing	Jennifer Rusted	Caffeine and Behavior: Current Views & Research Trends		Studies show that excess consumption of caffeine may result in the co-occurrence of anxiety and depression among the heavy consumers. Caffeine also affects the neurotransmission system of the human body and all in all reduce the performance of an individual in different fields.		37
13. Caffeine consumption and self-assessed stress, anxiety, and depression in secondary school children	Gareth Richards and Andrew Smith	Journal of Psychopharmacology 2015, Vol. 29(12)	Cardiff University, Cardiff, UK	The results suggest that caffeine consumption may be associated with stress, anxiety, and depression in secondary school children, though the effect on stress disappeared after additional dietary, demographic, and lifestyle variance. The study also identified very high caffeine intake (>1000 mg/w) to be a risk factor associated with anxiety and depression, although effects were sometimes detected at lower doses.	A further study on public health and school policy.	91
14. Awareness and Consumption of Energy Drinks and Associated Factors among College Students in Cheongju	Tae Yang Kim, Soo Min Kim, Ji Yeon Kim, Jeong Yeon Im, Hui Yu, Young-Hee Han and Taisun Hyun	Korean J Community Nutr.	Cheongju	Of all the respondents 45.7% had heard of energy drinks but did not know what they were. However, 76.9% had experience in using energy drinks. The study showed that only 33% of the students used energy drinks at least once a month and there were marginal	Mentions about caffeine and sugar contents in energy drinks.	15

				number of students who consumed it everyday.		
15. Use of Coffee, Caffeinated Drinks and Caffeine Tablets for Cognitive Enhancement in Pupils and Students in Germany	A. G. Franke , M. Christmann , C. Bonertz , A. Fellgiebel , M. Huss , K. Lieb	Georg Thieme Verlag KG Stuttgart · New York	Germany	The use of coffee for cognitive enhancement was 53.2%, 8.5%, and 6.3%, for the use of caffeinated drinks 39%, 10.7%, and 6.3%, and for the use of caffeine tablets 10.5%, 3.8%, and 0.8%. The use of caffeine was widely used among a large population even though the use of tablets still remains less.		65
16. Medical students' use of caffeine for 'academic purposes' and their knowledge of its benefits, side-effects and withdrawal symptoms	K Lee GP Human JJ Fourie WAN Louw CO Larson G Joubert	South African Family Practice		It was seen that the consumption of caffeine increased from the first semester to the final year students as a result of increased academic pressure. It was also seen that the high percentage of caffeine usage and low scores in the caffeine knowledge test indicated that most participants were using caffeine without having enough knowledge of its benefits, side-effects and withdrawal symptoms.	Awareness among people of the different aspects of caffeine consumption, withdrawal symptoms, usage, etc.	32
17. Caffeine effects on mood and memory	Rachel S. Herz	Behaviour Research and Therapy Volume 37, Issue 9		The research focused at understanding whether a psychoactive dose of caffeine would have differential affects on the mood dimensions of arousal versus feelings of pleasantness. The resuls show that whether a psychoactive		79

				dose of caffeine would have differential effects on the mood dimensions of arousal versus feelings of pleasantness. It was also seen that caffeine did not have any effect on the memory of the consumer.		
18. Coffee, Caffeine and Cognition: a Benefit or Disadvantage?	Patocka, Jiri; Navratilova, Zdenka; Krejcar, Ondrej; Kuca, Kamil	Letters in Drug Design & Discovery, Volume 16, Number 10		It was observed that caffeine facilitates performance in tasks involving the working memory, but it has been seen that tasks that rely on working memory may be hindered because of it. However, a detailed research shows that it does not have a long-term effect on the memory and can be taken as a mild stimulant		
19. Caffeine as an attention enhancer: reviewing existing assumptions	Suzanne J. L. Einöther & Timo Giesbrecht	Psychopharmacology volume 225,		The research aimed at understanding the effect of caffeine on complex tasks as it already proved to be helpful in easier tasks. It was found that caffeine consumption increases attention on complex tasks as well. However, even though it shows benefits in attention its effects cannot be attributed to withdrawal reversal.	Study on other aspects of health.	102
20. Caffeine Enhances Memory Performance in Young Adults during Their	Stephanie M. Sherman, Timothy P. Buckley, Elsa Baena, Lee Ryan.	Front. Psychol.	USA	The study helped in understanding the improvement in memory in the morning hours or in the afternoon hours. It was seen that caffeine had a specific benefit for		41

Non-optimal Time of Day				memory in college students during non-optimal hours, i.e., early morning but not in the afternoon. It also suggests that the academic performance may also differ from the time to time and not be affected solely by their caffeine consumption.		
21. An Investigation of How Caffeine Expectancies Affect College Students' Cognitive Performances	Katie Alyse Berg	Honors thesis collection		The study concluded that the amount of caffeine consumed did not influence memory and performance, however, it was seen that there were effects on individual attention of the students who consumed caffeine.		1
22. A study on caffeine consumption and its association with stress and appetite among call centre employees in Mumbai city, India	Lakshmi B. Kale, Kejal Joshi Reddy	International Journal of Community Medicine and Public Health	Mumbai, India	It was seen that caffeine had a negative impact on the appetite levels. Moreover, smoking was observed to worsen the effect of caffeine on appetite. It was also seen that the participants were also at a higher state of risk for stress and more than half of the samples tested were at risk of an abnormal appetite.	Caffeine addiction or withdrawal symptoms should be studied more in detail among individuals with high caffeine consumption. Individuals should be interrogated to study their reasons for caffeine consumption.	2
23. Caffeine Intake Among Adolescents in Delhi	Mridul Gera, Swati Kalra, and Piyush Gupta	Indian Journal of Commu	New Delhi, India	The study of school going participants showed that tea or coffee contributed to	A further research on the guidelines	8

		nity Medicine		more than 50 percent of their habitual caffeine content. It was observed that the caffeine consumption in the students of Delhi was very high.	of a maximum caffeine content in products suitable for children.	
24. Habitual caffeine consumption and its relation to memory, attention, planning capacity and psychomotor performance across multiple age groups	P. A. H. M Hameleers M. P. J Van Boxtel E Hogervorst W. J Riedel P. J Houx F Buntinx J Jolles	Human Psychopharmacology, Vol. 15 Issue 8.		There was no relationship between the age groups and the effect of their caffeine consumption mainly through tea/coffee. Moreover, it was also seen that there was so relationship between caffeine consumption and memory, information processing planning and attention of the people.		142
25. Dispelling the myth that habitual caffeine consumption influences the performance response to acute caffeine supplementation	Lívia de Souza Gonçalves, Vitor de Salles Painelli, Guilherme Yamaguchi, Luana Farias de Oliveira, Bryan Saunders, Rafael Pires da Silva	Journal Applied psychology volume 123, Issue 1.	Nottingham, United Kingdom	Various trails were carried out to learn that the effects on performance of acute caffeine supplementation were not influenced by the habitual consumption of caffeine		81

	, Erika Maciel , Guilherme Giannini Artioli , Hamilton Roschel					

Research Gap:

The research papers, articles and books studied discuss about various aspects of caffeine consumption based on age, sex, demographics etc. Few research papers also focused on a specific geographical area however, the gap identified from the literature review is the study on caffeine consumption and its effects on the college students in Delhi NCR. Thus, this would be the area of focus for the research based on a geographic area. The limited geography for the study would help us determined results specific to an area and more detailed and focused. The aim is to work on the objectives along with keeping the research gap.

Research Methodology:

Type of Research

The type of research used for the project is Casual Research which is another kind of research under the Conclusive Research. Conclusive research is done is carried out to test and validate the formulated hypotheses and specified relationships. This type of research will help in identifying the effects of one variable on another. The consumption of caffeine is the variable in this study and the effects caused by it on the college students are being studied through this medium of research. The research will help in identifying the impacts of the variable by keeping the data structured and finding the answers to the questions “why?” and “how?”.

Type of Research Design

Research design is the conceptual structure through which the research is conducted. It includes the collection, measurement and the analysis of the data. The design of the research tells about the entire plan of the researcher answering the research question or the hypothesis.

The research design for this research project is the Qualitative Method. Under this method there are three further methods namely, the Historic method, Ethnographic method or the Phenomenological method.

Phenomenological method is used for this research. It is described as an approach in sociology that is based on the human character as the subject matter. It is also described as an interpretative, intuitive, and dialectic approach. This is done so as to understand the character for individuals who drink caffeine and their personal experiences.

Research Hypothesis

This study is designed to assess the hypothesis that the consumption of caffeine increases among college students and it thus leads to changes in their functionality and further negative impacts on their health such as anxiety, hypertension or insomnia. The study will also assess if the students are aware of their excess caffeine consumption and its effects.

Population

The population studied for this research project is restricted to the NCR region, i.e., the National Capital Region of our country. The population is also restricted to the age gap between 17-25- year-old college students in the region.

Sampling Considerations

Sampling considerations are those factors which are taken into consideration while we select a sample for the research. The sampling considerations are chosen in such a way that the sample chosen gives an accurate estimation for the research objectives.

The research aims at understanding the effects of caffeine among the college students in NCR. Since NCR includes the prominent cities such as Delhi, Noida, Gurugram and Ghaziabad. It has been aimed to involve students from as many cities as possible. Thus, the factors that have been considered for the sample are their place of residence, college students (17-25 years), aware of their caffeine consumption may be regular or irregular. The sample has been drawn through a questionnaire made via google forms. The sample size would be around 100-150 college students from Delhi-NCR to study their behaviour. The data has been derived by convenience sampling by considering the individual's willingness and availability.

Variables

The variable in this research is the caffeine consumption among different students. The different effects that it may have is also varied among the students.

Scales Used

The scale used is a general nominal scale. This included discrete categories through which the individuals were made to choose from.

Instruments Used

The instruments used to study the sample were mainly a questionnaire and three personal interviews which included questions apart from the interview. The questionnaire helped in getting a basic and overall idea of individuals whereas for detailed in sights form few individuals the interview scheduled was very helpful.

Both the instruments used have been able to provide a great insight to the individuals knowledge about the topic as well as their own personal experiences.

(The link for the questionnaire has been attached in a separate document)

Tools to be used

The survey conducted is based on personal experiences and is a qualitative research thus the scope for tools that can be used remains limited. Basic use of Microsoft Excel for filtering the answers will be used for a better understanding along with graphs to understand their distribution. Basic tools like average/ mean for the amount of caffeine consumption, etc. will be used as well. Correlation will also be used to understand the dependence of the two variables form the recorded observations.

Data Analysis

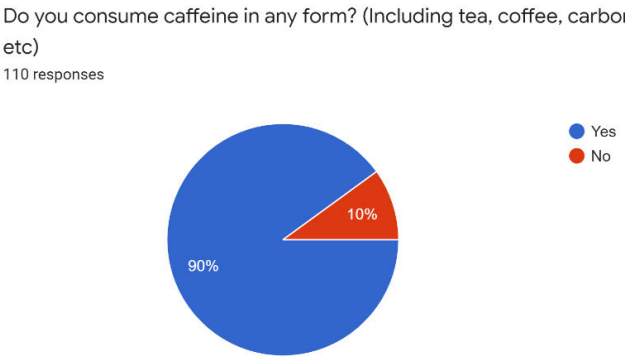
For the study of the research objectives mainly Primary Data is used. This implies to the data which is collected directly by the people via surveys, interviews, field observation, etc. The modes via which primary data was collected were personal interviews, survey via a questionnaire and a through an experimental data choosing the most suited subject. The survey was conducted among One Hundred and Ten college students residing in the National Capital Region, this helped in collecting data regarding their basic caffeine consumption if any and its amount along with understanding any behavioural changes. The

personal interview for detailed insights of five voluntary candidates and an observational experiment on three volunteers to see the difference in activity between two days with and without caffeine consumption. The personal experiment gave a further clarification to an objective and helped understand the topic better.

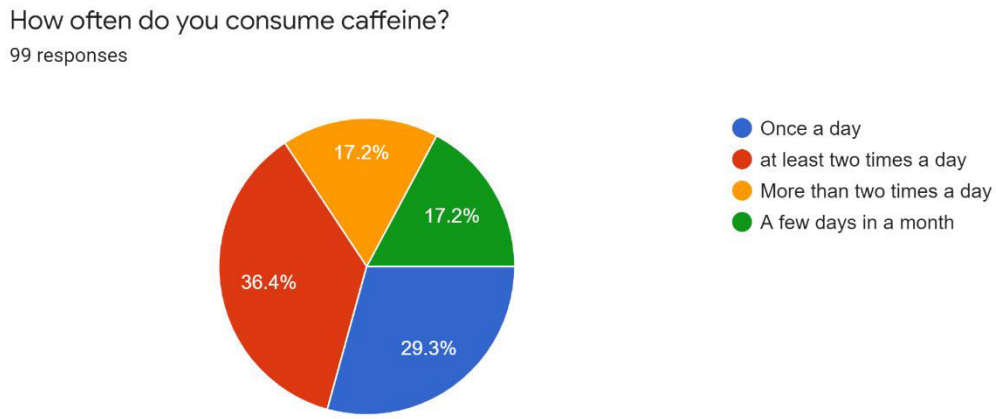
The analysis of the various data collected are as follows.

1. **Questionnaire**

Out of the 110 responses collected it was found that 90% of the student population, consumed caffeine in one form or another, i.e., every 9 in 11 students were seen to have a caffeine consumption whether in form of coffee, tea or energy drinks, etc.

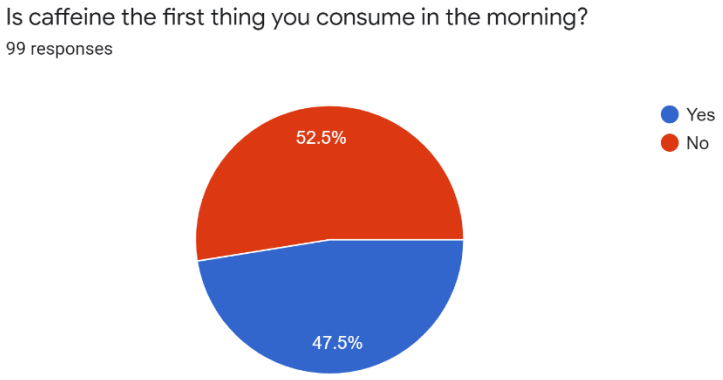


Out of the 110 responses 99 responses that consumed caffeine were surveyed further regarding their consumption. The further pie chart was obtained, it determines the frequency of caffeine consumption by the student. The available options were daily consumption, twice a day, more than two times a day or a few days in a month.

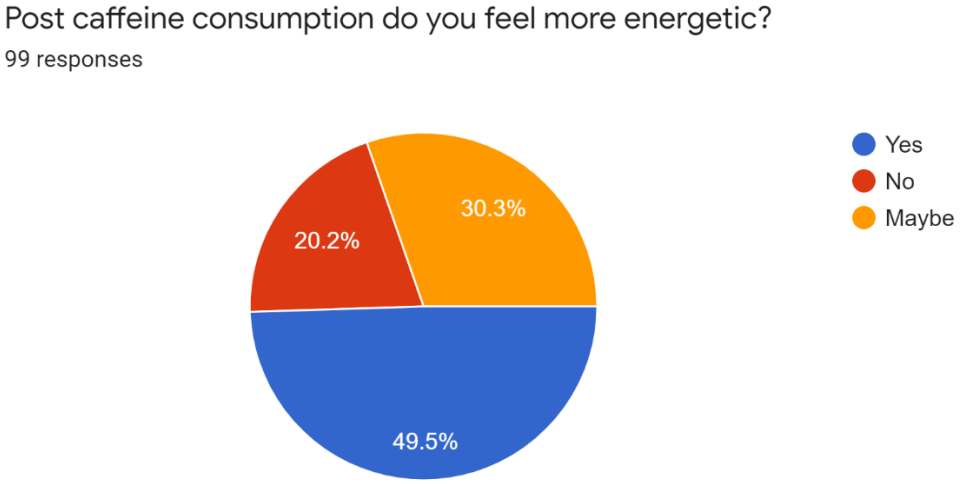


The pie chart shows that 36.4% or 36 in 99 students consumed caffeine at least two times a day. On filtering these responses, it was seen that their caffeine consumption varied from 30mg to more than 210mg in a day. Further filtering the data, it was observed that 8 people consumed more than 150mg of caffeine in a day.

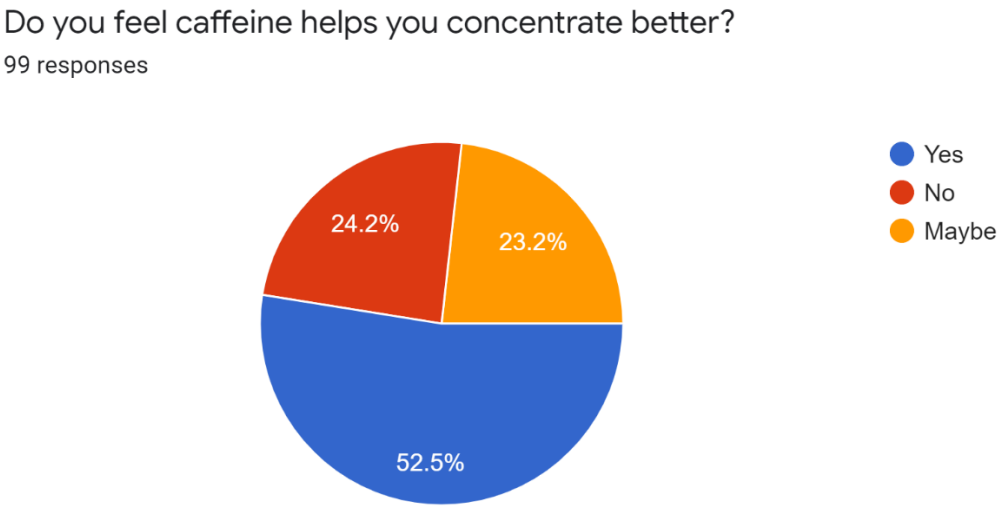
On understanding the cafiene and its pattern the following data was collected. It was seen that 52.5% of the ctudents or 52 students consumed caffiene the first thing in the moning as an energy booster for their day.



Majority of the student population was found to be dependent in the caffeine consumption in the form or tea or coffee as their day begins. On filtering the data 13 students of 52 believe that their caffeine consumption early in the day made them feel energetic whereas some consumed is as habit. Overall, from the total data collected, 79 students felt more energetic post their caffeine consumption including a sure ‘yes’ or a ‘maybe’. The data is represented in the chart below.

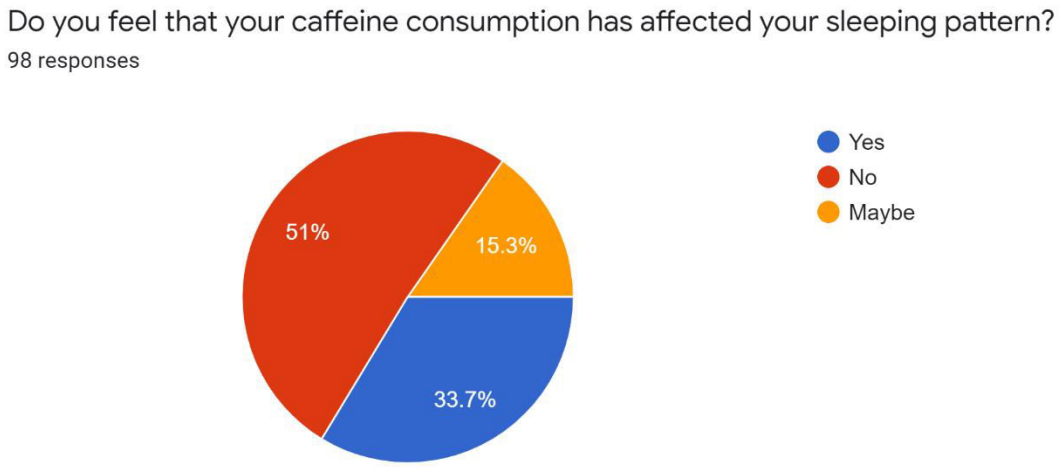


It is also believed that caffeine in many forms seems to help people concentrate better on their work or academics. Understanding this relationship of their concentration with their caffeine consumption, the following results were obtained.

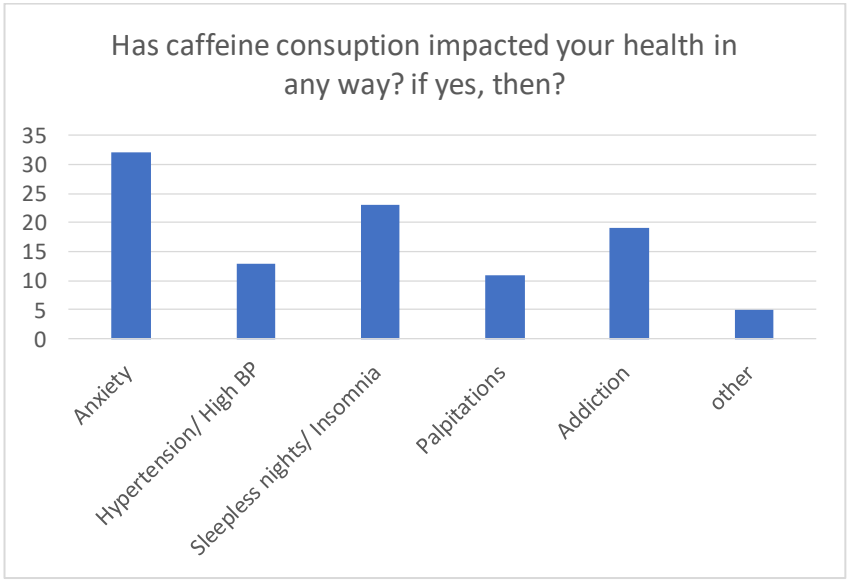


52.5% or 52 students of 99 seem to have improved concentration results post their caffeine consumption, whereas, another 24 students chose maybe. Overall, only 23 students in 99 felt that their concentration was not affected by the consumption of caffeine and this was further studied in a few interviews.

On understanding the various effects that caffeine consumption may have caused to the students' questions regarding their fitness and sleeping pattern were considered. The data that was collected was such as given below.

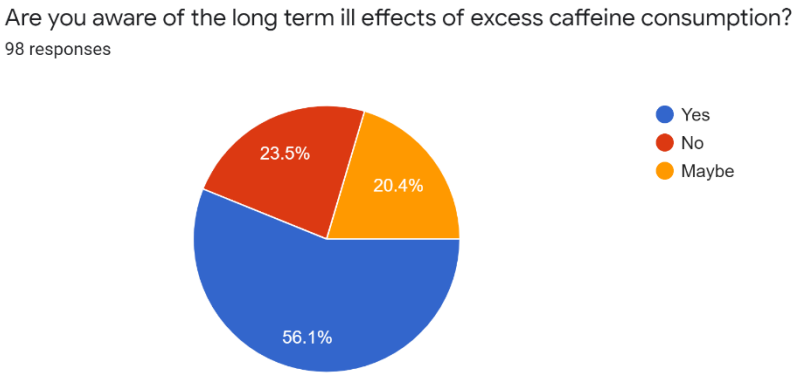


By taking the majority by just a single percent, the number of students that felt their sleeping patterns were affected by their caffeine consumption were found to be 50 out of 99. Morever, 33 students or 33.7% of the total felt that their might be chances that their sleeping pattern was affected due to caffeine. On the contrary, 15 students felt no changes. On filtering this data, the 15 students who did not see a change in their sleeping pattern were observed to have consumed caffeine in less amounts, i.e., less than 90mg. Their caffeine consumption was limited to once a day and controlled. Further studying the harmful effects due to caffeine consumption if they had any were also considered. It is claimed by experts that more of caffeine consumption people may suffer from addiction or dependence on caffeine consumption, hypertension, anxiety, insomnia, etc. The following results were hence observed.



Out of the 99 students more than 50% had some symptoms or another. The symptom seen in maximum students was anxiety. The big number constitutes of 56.1% of the students that had visible symptoms. The data showed that 32 out of the 57 responses suffered from anxiety. Moreover, the next common symptom seen was Sleepless Nights or Insomnia in 23 students which is again 40.4%. Many a times students use caffeine to stay up and work for their projects or college assignments and thus ruin their sleep cycle. While these two symptoms topped the charts, addiction was no less. Nineteen students among these also had checked the option of being addicted to caffeine. Other symptoms also observed were cases of Hypertension or high blood pressure and Palpitations. These included 13 and 11 students respectively. These problems were to seen in the older age groups but are also now seen in the younger circle due to their habits.

Even though a group of students have been experiencing these problems or symptoms with increased caffeine consumptions the data was also collected to understand the knowledge of the approached caffeine consumers. The data was collected to understand whether they are aware or not of the long-term problems that may be associated with the consumption of caffeine. The results so found are given in the graph below. It shows as per statistics that 56.1% of the population is well aware of the long-term ill effects that caffeine may have. Whereas 20.4% people were uncertain on their knowledge and 23.5% were not aware at all which yet again is a big number to see from 99 responses.



2. Interviews

To further study the detailed pattern of caffeine consumption in a few candidates a personal interview was conducted. The interview aimed at understanding their own caffeine consumption while considering their responses in the questionnaire. The questions aimed at understanding the

reasons behind their consumption including taste, increasing concentration, etc. Changes in consumption pattern if any and the reasons behind it. What all changes they have seen and what is their personal understanding on the effects of caffeine.

- Interview Details(I): Age: 19, Education: BSc. Aviation & Trainee Pilot.

  The student interviewed had their consumption levels of caffeine restricted to about 90mg on a daily basis. The main source of caffeine was via coffee and rarely carbonated/ energy drinks. The student was well aware of the negative impacts of caffeine on the body and thus limited their consumption. The main driving force behind caffeine consumption was its taste or sometimes as company to their peers. If at all there is a change in the academic pattern their caffeine consumption might change but that has not affected their concentration levels or sleeping pattern.

- Interview Details (II): Age:20, Education: BBA.

  The student interviewed had their caffeine consumptions more than 210gms a day. They had coffee as a kick start to their day and the main source was via coffee. Their coffee consumption increased over the past years due to the increased academic pressure and in order to stay up late in night to cope with the academic pressure. The continuous caffeine consumption due to the decrease in concentration levels after a while of consuming caffeine. The initial habit of the student's caffeine consumption started due to its taste but with time it became a necessity and now an addiction and the student is now finally dependent on coffee for any basic work during the day. These habits in turn have resulted in a poor sleeping pattern with increased levels of stress and anxiety. Moreover, the student had basic awareness about the ill effects of the same.

- Interview Details (III): Age: 23, Education: B.Tech.

  The student is a final year engineering student and consumes about 90-150gms of caffeine in a day with its main source being coffee and energy drinks. A change in consumption pattern is observed during college exams and submissions. Caffeine helps then concentrate better and work for longer durations, however, causes trouble in sleeping. The student's consumption was affected from about less than 30mg to sometimes more than 210mg after coming to college. With their regular consumption they feel that it helps them kick start the day fresher and then continue it the same way.

- Interview Details (IV): Age: 19, Education: BBA

  The student interviewed is a second-year student with their caffeine consumption of min 150mg only via coffee with additional 30gs few days via carbonated drinks etc. The change in consumption is seen during the changes in academic calendar including submissions and exams. It may vary up to 210gms. Even though the caffeine consumption isn't alarming, the student suffers from headaches on missing their regular cup of coffee in a day. Caffeine is the kickstart to their day and despite of knowing the harmful affects the student chooses to continue its consumption mainly due to taste and now turning into necessity.

3. Experimental study

The subject considered for the experiment was of a student who's daily consumption was more than 210gms a day. The aim was to understand the difference in behaviour without their daily consumption of caffeine. The table below was filled in by the subject of the study.

Day 1: Regular caffeine consumption

Time	Caffeine Consumed	Observed Changes
0900	90mg	Fresh start to the day.
1130	50mg	Habitual cup of coffee before lectures. Increase in concentration for one lecture.
1700	90mg	Regular cup of coffee. No changes observed.
0030	90mg	Increased concentration for studies and helpful to stay awake for longer time to meet deadlines

Day 2: No caffeine consumption

Time	Caffeine consumed	Observed Changes
0900	0mg	Feeling sleepy and lethargic.
1130	0mg	Extremely low concentration during lectures and extreme tiredness.
1700	0mg	Severe headache and tiredness, no concentration in lectures.
0000	120mg	Headache severity reduced with help in concentration for working on project.

Data Interpretation

Caffeine acts as a stimulant drug which is present in coffee, tea, energy drinks etc. It Is also the most frequently used psychoactive drug. The data collected shows that 90% of the student population of college students surveyed in the Delhi NCR region is dependent on caffeine consumption. A similar research conducted in the adolescents by Mridul Gera, Swati Kalra and Piyush Gupta also showed that 97% of the students consumed caffeine out of which 98% consumed more than 120mg of caffeine daily.

The US National Academies of Science (NAS) and Health Canada state that for a healthy adult it is suitable to consume 400gm or caffeine on a daily basis, however, its consumption near to the bedtime may cause disturbances in the sleep cycle. Most of the students seem to have a consumption of about 150gm on a daily basis but its prolonged consumption has made them face certain symptoms which might be alarming in the longer run. The data collected also shows that the consumption of caffeine gradually increases due to its flavour and the momentary stimulation feeling, however, its flavour and constant use makes the nervous system dependent and thus has also shown signs of addiction in a few cases. The habits start by consuming bed-tea or bed-coffee not realising that the people have been getting used to in.

The experiment conducted on one student was to understand changes observed if any if they drifted from their regular caffeine consumption and they were made to write it down on regular intervals for two consecutive days. The subject was used to a regular consumption of more than 300mg of caffeine. The subject was made to change their consumption and not consume it on their regular schedule. This showed

that the individual when did not consume caffeine at their regular early morning time felt lethargic, nauseous, had a severe headache and faced difficulty in the completion of their work and to concentrate for the same. The subject faced severe headaches which again indicates that they maybe addicted to consuming their regular caffeine. The consumption of caffeine has its side effects and the students were also seen to be aware of the same, however the data collected still shows that a big majority even though fully or partially aware continues to consume it for their respective reasons being just the taste, improved concentration results and better energy levels etc.

Discussion & Conclusion

The project aimed at collecting data using primary means. The responses received were of 110 students which helped in the understanding of the research objectives. The data states that 90% of the student population among college students consumes caffeine in various forms regularly. Their caffeine consumption varied in quantity but most of them were dependent on the same as a energetic start to their day. Indian households are known for their tea and coffee consumption early in the morning and this has been passing on from one generation to the other. However now with the availability of this stimulant drug in various forms has increased the frequency of its consumption and thus ed to a few harmful effects. The study was based on those 90% of the caffeine consumers i.e. 99 out of the 110 responses collected. The variation in their individual caffeine consumption was seen to be as a reason of their own personal preference or any changes in the academic schedule.

The consumption of caffeine varied directly to the academic pressure in most cases. Three out of the four subjects studied had seen an increase in their caffeine intake in times of academic pressure like examinations or submissions. They did so to halter their sleeping pattern in order to meet the deadlines. However, one of the subjects being well aware of the harmful affects changed the time of consumption instead of its increased quantities.

More than 50% of the students studied had already faced situations in which they felt that their caffeine consumption was the cause of feeling uncomfortable. Out of these a majority of them faced problems like anxiety or high blood pressure. Experts believe that prolonged consumption of caffeine has these effects as a side effect of the chemical or drug.

On studying the data, it was learnt that out of the 99 students consuming caffeine 72 of them were aware or partially aware of the ill effects that caffeine may have due to its consumption and they still chose to continue their consumption.

To conclude the research objectives, it can be concluded that the results show an increase in caffeine consumption with increase in academic pressure among the college students. The students also hamper their sleeping pattern by consuming extra amounts of caffeine which is mainly due to the college assignments. These regular habits have in turn affected their physical and mental health. The concentration levels do increase but it is a momentary stimulation and once the effect fades away it then instincts the student to consume more. 57% percent of the cases have seen a decline in their health.

This proves the research hypothesis stand true for more then 50% of the caffeine consumers in college students of the Delhi NCR region.

Limitations

With the current situation of a pandemic and restricted movement around the place certain restrictions were faced during the research. The questionnaire could be distributed only via online mode and through personal contacts and further connections. Otherwise the physical distribution of forms would have helped target a larger audience.

Moreover with a few time restrictions and unavailability of some students the interviews could not be conducted at length. The physical presence for an interview would give a better insight, however, the researcher made the most out of the time available with the interviewees and get the desired results. For conducting the experimental data not many students agreed to be a subject to the case as again the physical presence of researcher for observation would not be possible.

Fighting the limitations present, the research was yet very insightful and could meet its objectives with the data available.

Managerial Implications

The facts learnt from the research paper indicate that even though most of the students claim to be aware or partially aware about the harmful affects of caffeine do not realise it while their consumption and continue with the same. This research can be used further educate the students and also the organisations who distribute these products. This information could be used to understand that even though experts believe that a certain amount of caffeine consumption doesn't harma healthy body, those effects can still be seen in today's youth.

The organisation should look more into these statistics and be more informative about their caffeine content in respective products and educate their target market as to how and why they should limit their consumption.

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