

Is Coffee a Social Drug ? A Survey on the Impacts and Awareness of Caffeine among Consumers.

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How to cite this article: Annie Vimala D, Abirami T, Veroneka.S.P Lourdes Antoinette Shalini, Subha Balamurugan, Johnknox T (2024). Is Coffee a Social Drug ? A Survey on the Impacts and Awareness of Caffeine among Consumers.. *Library Progress International*, 44(3), 10588-10593.

ABSTRACT

Caffeine is a chemical stimulant that is naturally present in tea, coffee, chocolates, soft drinks, energy drinks and beverages which is largely consumed across the world. Caffeine intake is larger in countries like India which is a very big market for retailers to earn money out of a drug through beverages. Caffeine is present in many food items and out of all these, Coffee is considered the most highly consumed form of caffeine. Caffeine, the primary psychoactive component of coffee, is globally consumed for its stimulating effects on the central nervous system. People in India unconsciously become addicted to this drug which is in disguise leading to caffeine dependence. Caffeine dependency is one of the major and unrealized issues that is to be addressed in the present society and so the present research is framed to highlight the same through data collection method. The present research article examines the multifaceted impacts of caffeine on human health, encompassing both its benefits and potential risks. Moderate caffeine intake has been associated with improved cognitive function, enhanced physical performance, and reduced risk of certain diseases such as Parkinson's and Alzheimer's. This study examines the perception of coffee addiction and average consumption among coffee consumers in and around Chennai, Tamil Nadu, India.

Is Coffee a Social Drug ? A Survey on the Impacts and Awareness of Caffeine among Consumers.

Caffeine, the primary psychoactive component of coffee, is globally consumed for its stimulating effects on the central nervous system. This article examines the multifaceted impacts of caffeine on human health, encompassing both its benefits and potential risks. Moderate caffeine intake has been associated with improved cognitive function, enhanced physical performance, and reduced risk of certain diseases such as Parkinson's and Alzheimer's. Conversely, excessive consumption can lead to adverse effects including insomnia, anxiety, cardiovascular issues, and dependency. The present research aims to identify the thin transparent veil that differentiates the coffee consumers and coffee addictions in our society, especially in Southern India. The article also explores caffeine's influence on metabolic processes, highlighting its role in weight management and glycemic control. Through a comprehensive analysis of current research, this article aims to provide a balanced perspective on caffeine's role in promoting and impairing health, guiding informed consumption practices from

the previous study. The study includes a survey to understand the mentality and physical health condition of coffee consumers.

“Coffee, a beverage brewed from the roasted and ground seeds of the tropical evergreen coffee plants of African origin. Coffee is one of the three most popular beverages in the world (alongside water and tea)” (Myhrvold) According to Britanica, coffee was first found in Ethiopia around the 15th century. Another legendary story says that the initial discovery of coffee occurred approximately in 850 AD by a goat herder named Khaldi in Abyssinia, which is now known as Upper Egypt. According to legend, one night his typically dependable goats failed to come back home.

On the next morning, he discovered the animals engaged in a lively dance around a glossy, evergreen shrub adorned with crimson berries. He consumed a small amount of the berries and, as the narrative goes, participated in the dance. Therefore, the coffee bush was found. Khaldi divulged his findings to a group of nearby monks who proceeded to conduct experiments on the berries, by throwing them onto a fire and subsequently immersing them in boiling water. The beverage proved to be delectable, and consuming it enabled the monks to remain awake throughout extended prayer periods. Consequently, the beverage known as coffee originated and disseminated, moving from one monastery to another, from one region to another, and from one continent to another. Thus, the wild bean was domesticated and began its journey of transformation across the world in different names. This bean was used to make different delicacies like cake, cookies, cold coffees and hot drinks to enhance the taste and induce creativity in culinary skills. This wild bean has a lot of chemical components which energize humans when consumed in limited quantities.

There are numerous additional compounds found in coffee, and it would be quite extraordinary if caffeine was the sole pharmacologically active molecule. The chemical composition of coffee includes chlorogenic acid, reducing sugars, other carbohydrates, peptides, and potassium. Chlorogenic acid is more abundant than caffeine. Caffeine, an alkaloid belonging to the methylxanthine family, is a naturally occurring compound present in the leaves, seeds, or fruits of more than 63 plant species found globally. Common sources of caffeine include coffee, cocoa beans, cola nuts, and tea leaves.

Caffeine is present in ground coffee in amounts ranging between 0.75 and 1.5 percent by weight. The average cup of coffee thus contains about 100 mg (0.003 ounce) of caffeine...Caffeine has a stimulating effect on the central nervous system, heart, blood vessels, and kidneys. It also acts as a mild diuretic. Caffeine's potent stimulatory action makes it a valuable antidote to respiratory depression induced by drug overdose (e.g., from morphine or barbiturates). The positive effects that have been described in people who use caffeine include improved motor performance, decreased fatigue, enhanced sensory activity, and increased alertness. (Da Vinci)

The present research paper aims to focus on the impacts of caffeine present in coffee on the human body. Study reveals that caffeine has been addictive throughout history in spite of its side effects. People are careless about the side effects of caffeine as it was not detrimental to our health like any other addictive drug used by mankind. To narrow down the limitations of research, the present study focuses only on coffee and not tea as the caffeine present in tea is lower than coffee.

Many researchers have made experiments with coffee and tea to find out the caffeine quantity present in tea and coffee that are available in the market. “When compared to previous studies, the caffeine concentration (per oz) in brewed teas tended to be lower than in specialty coffees and energy drinks, but similar or higher than carbonated sodas” (Chin 704)

There were considerable differences between tea and coffee samples and between samples of coffee prepared by different methods. The median caffeine concentration of non decaffeinated coffee samples was 2.5 times that of tea samples, and the median estimated caffeine content of the cups of non decaffeinated coffee was 2.74 times that of the cups of tea. (Gilbert 113)

Aaron Shephard and Sean P Barrett in their experimental research titled “The impacts of caffeine

administration, expectancies, and related stimuli on coffee craving, withdrawal, and self-administration” conducted an experiment on 65 daily coffee consumers and concluded that “the present findings represent the first demonstration that coffee-specific cues can elicit subjective and physiological craving responses in coffee users” (Shephard & Barrett 383)

By reviewing the literary articles, the research proves that moderate consumption of coffee provides the prevention against diabetes, Parkinson disease and colorectal disease while increased consumption of coffee have associations of developing heart diseases, stroke, cardiac arrhythmias, hypertension, miscarriages and stillbirth. (Ashan 4). On analyzing the health benefits of coffee drinking, the study proves that limited consumption of coffee boosts our physical performance, burn fat, reduces risk of stroke, liver, prostate and colorectal cancer by 20%, risk of Parkinson’s disease by 25%, lower risk of Type II diabetes, reduces risk of dementia and protects our mind, brightens our mood, helps us to fight depression and minimize risk of suicide by 50%. Moreover, coffee consumers have less risk of heart disease, with strongly integrated DNA, reduced risk of heart attack death. (Wachamo 5)

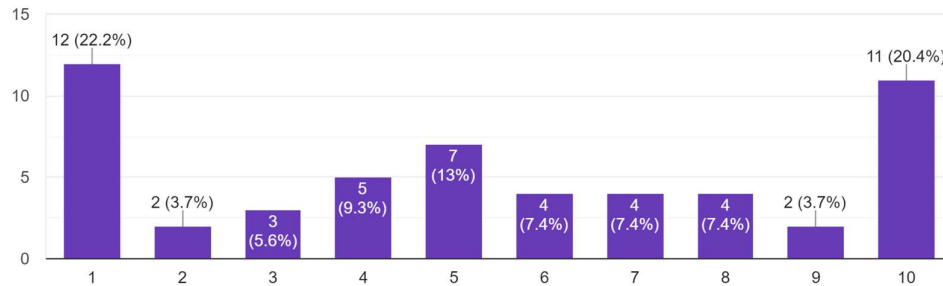
In conclusion, it is essential to dismantle the myths surrounding coffee, particularly the misconception that its high caffeine content poses significant health risks. Although caffeine is a significant constituent of coffee, multiple studies have shown that consuming modest amounts of regular coffee does not have any detrimental effects on health. The caffeine levels present in a standard cup of coffee are generally considered to be safe for the majority of people. Effective moderation is crucial as it enables consumers to savor coffee without encountering negative consequences like anxiety, sleeplessness, or heightened heart rate, commonly linked to excessive use of caffeine.

In order to add fuel to the research, a survey was conducted through random sampling method to prove the impact of caffeine intake, the amount of caffeine present in coffee and the health condition of human beings. This survey was conducted through online google forms. Special attention is given to populations like pregnant women and individuals with preexisting health conditions, where caffeine consumption needs careful moderation and therefore they are excluded from the sample group. Around 54 participants responded, in which around 63 % the majority belongs to the age group of 20-29 while the least age group is 40-49 with 1.9 %. The samples are collected from the people in Tamilnadu, India, however their nature of residence such as urban(68.4%), suburban(11.1%) and rural(21.1%) is collected through the survey. A survey conducted in 2023 on Tamil Nadu's entire population, reported that 48.40% reside in urban regions, and about 51.60% live in rural villages. Among these 55.5 % were women, 40.7 were men and 3.7% preferred not to reveal their gender identity. There are 38.49 million males and 38.67 million females in Tamil Nadu. Further, they are classified according to their work, 44.4% are students, 40.7% are working, 9.3% are home makers, 3.7% are into business and 1.9 % are retired. Therefore this small sample cannot be considered as the representation of the whole population as the survey is limited only to individuals dwelling in and around Chennai.

Around 63% of the respondents said that they intake coffee regularly. The amount of coffee consumed everyday in the measure of cups was also surveyed in which only 5 respondents were taking coffee 4-5 cups every day and 2 respondents were taking more than 5 cups. According to the FDA and EFSA, the recommended amount of caffeine for an adult is 400 mg which is roughly 4 cups of coffee per day.

On a scale of 1- 10, how will you rate yourself as an coffee addict ?

54 responses



The respondents were asked to scale themselves from 1-10 as coffee addicts and 11 participants out of 54 rated themselves with 10 but only 5 respondents drink 4-5 cups of coffee and only 2 respondents drink more than 5 cups of coffee. All participants consider themselves addicted to coffee, with an average self-rated addiction level of 8.86 on a scale of 1-10. The age groups represented are '20-29', '50 and plus', '30-39', and '15-19'. The individuals reside in either 'Urban' or 'SubUrban' areas. The occupations vary among 'Student', 'Working', 'Retired', and 'Home maker'. The dataset provided indicates that three students and one working individual consume 4-5 cups of coffee per day. In contrast, no students and one working individual consume more than 5 cups of coffee daily.

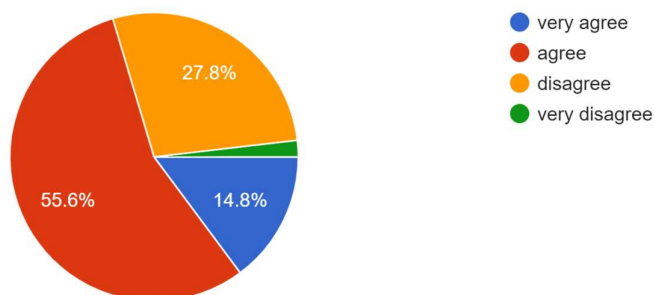
And 70.9 % of the respondents do not know about the chemical composition of coffee powder. And 92.7 % of the respondents never check the caffeine content and its percentage. Within the provided data, there is one individual who checks the caffeine percentage every time they drink coffee. This individual is a Male in the '30-39' age group, lives in an 'Urban' area, and is 'Working'. He consumes more than 5 cups of coffee daily and prefers his coffee without sugar and milk. He is aware of the recommended amount of caffeine intake and believes that coffee has health benefits.

A student (20-29 years old) struggled with insomnia, finding it difficult to fall asleep. And another male (30-39 years old) working professional experienced stomach upset and acid reflux because of the caffeine present in the coffee.

Research also proves that there is considerable variation in the caffeine levels among different types of coffee brews. Several factors can affect the taste of coffee, including the brewing method such as brewing time, coffee and water ratios, water type, cup size, brewing temperature, and pressure, as well as the kind, and the degree of roasting or grinding. However, ICMR (The Indian Council of Medical Research), recommends only 300 mg of caffeine per day for adults. It also cautioned against “excessive consumption, adding that caffeine in tea and coffee stimulates our body's central nervous system and leads to physiological dependence.” (Pallavi year)

Do you think coffee has adverse health effect ?

54 responses



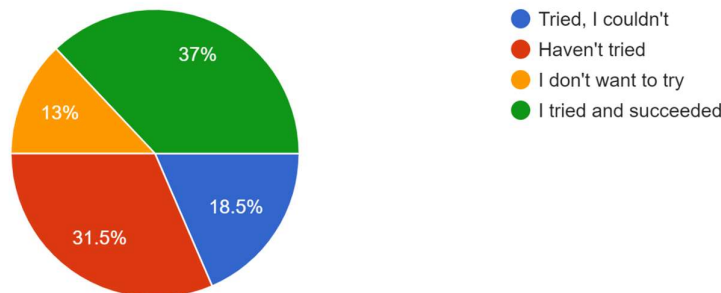
The sum of individuals who 'agree' and 'very agree' that coffee has adverse health effects is 38 (30 'agree' + 8 'very agree'). A total of 16 individuals either 'disagree' or 'very disagree' with the statement (15 'disagree' + 1 'very disagree'). 20 individuals believe that coffee has health benefits. There are 18 individuals who do not believe in the health benefits and 16 who are unsure. The Mean Belief Value is 2.83 on a scale where a higher value likely indicates stronger agreement with the adverse effects of coffee. There is a higher number of individuals who believe in the adverse effects of coffee compared to those who don't. The belief in the beneficial effects of coffee is slightly higher than the disbelief or uncertainty regarding its benefits. The mean belief value suggests a moderate agreement with the adverse effects of coffee among the surveyed individuals.

The data suggests a mixed perception regarding coffee's health implications. A comprehensive conclusion on whether coffee consumption is beneficial or adverse cannot be definitively determined from the data provided alone. Additional context, such as the nature of the health benefits or adverse effects, would be necessary for a conclusive statement. "The ICMR recommends a daily caffeine intake limit of 300 mg." (Pallavi) Number of Individuals Consuming More Than 3 Cups of Coffee Daily is 7 out of 54 surveyed individuals. This represents approximately 12.96% of the surveyed population.

A small minority of the surveyed group drinks more than 4 cups of coffee per day. This is less than 1 in 8 people (approximately 1 in 7.7). Considering guidelines from health authorities like the FDA, which suggests up to 400 mg of caffeine per day (roughly equivalent to 4 cups of coffee), these 7 individuals are exceeding the recommended limit. Potential risks for these individuals could include insomnia, nervousness, restlessness, stomach irritation, nausea, increased heart rate, and other symptoms of excessive caffeine consumption. This highlights areas for further research into the reasons behind their consumption habits and awareness of associated health risks.

Will you be able to avoid coffee completely and switch to some other drink ?

54 responses



It is evident that a significant proportion of the respondents, specifically 20 out of 54 individuals surveyed, have successfully avoided coffee altogether. This suggests that for a considerable number of people, eliminating coffee from their diet or daily routine is a viable and achievable goal. This could be due to various reasons such as health concerns, personal preferences, or specific dietary choices. The fact that nearly 37% of the respondents have managed to completely avoid coffee indicates that it is feasible for many individuals to make such dietary changes if they choose to do so.

The statistic that only 18% of the respondents reported being unable to avoid coffee provides insight into the challenges associated with eliminating coffee from one's routine. While a majority of respondents have successfully reduced or eliminated coffee consumption, a notable minority continues to find it difficult to abstain from coffee. This could imply that for some individuals, coffee consumption may be ingrained in daily habits, or

they may face social or psychological barriers that hinder their ability to avoid it completely. Overall, these findings highlight both the feasibility of avoiding coffee for a significant portion of the population and the persistent challenges faced by others in doing so.

The findings indicate that moderate coffee consumption, adhering to recommended guidelines, can be part of a healthy lifestyle, providing various health benefits while minimizing risks. It is crucial for consumers to practice moderation, informed by empirical data and health recommendations, to enjoy the benefits of coffee without encountering its negative effects. Further research is essential to understand the varying impacts of caffeine across different demographics and to develop targeted guidelines for safe consumption.

Ultimately, shifting the perception of coffee from a cautious perspective to an appreciative one involves debunking myths and prioritizing evidence-based information. By doing so, consumers can confidently enjoy their daily coffee, recognizing its potential to contribute positively to both physical and mental well-being.

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Appendix A

The link to the questionnaire is <https://forms.gle/3enbJNh9ZWToH9tb9>

Appendix B

Answers collected are attached to the paper as an excel sheet.