DOI: https://doi.org/10.54393/pbmj.v6i01.788

PAKISTAN BIOMEDICAL JOURNAL

https://www.pakistanbmj.com/journal/index.php/pbmj/index

Volume 6, Issue 1 (January 2023)

Original Article

Trigger Factors of Consuming Tea and Coffee in University Students

Hafiza Madiha Jaffar[1*], Bahisht Rizwan[1], Al Noor Naseem[1], Umm-e-Habiba Asghar[1], Zabreen Ghalib[1], Iram Tariq[1], Gull-e-Raana Najeeb[1], Tania Arshad[1], Aisha Ahmed[1], Maryam Munir[1] and Anum Azhar[1]

[1]University Institute of Diet and Nutritional Sciences, The University of Lahore, Lahore, Pakistan

ARTICLE INFO

Key Words:

Iron Deficiency Anemia (IDA), Dietary Supplement, Triggering Factors

How to Cite:

Madiha Jaffar, H. ., Rizwan, B. ., Naseem, A. N. ., Asghar, U. e H. ., Ghalib, Z. ., Tariq, I. ., Najeeb, G. e R. ., Arshad, T. ., Ahmed, A. ., Munir, M. ., & Azhar, A. . (2023). Trigger Factors of Consuming Tea and Coffee in University Students: Trigger Factors of Consuming Tea and Coffee. Pakistan BioMedical Journal, 6(01). https://doi.org/10.54393/pbmj.v6i01.788

***Corresponding Author:**

Hafiza Madiha Jaffar

University Institute of Diet and Nutritional Sciences, The University of Lahore, Lahore, Pakistan

madihajaffar06@gmail.com

Received Date: 26th August, 2022

Acceptance Date: 18th January, 2023

Published Date: 31st January, 2023

ABSTRACT

Consuming excessive amounts of tea and coffee can have negative effects on your health, including increased anxiety, disrupted sleep patterns, and digestive issues. **Objective:** The objective of this study was to assess trigger factors after consuming tea or coffee. **Methods:** A random sample of 150 female students from the University of Lahore willingly participated in a survey aimed at evaluating the link between tea consumption and its trigger factors. Data was collected using questionnaires comprising questions related to excessive tea or coffee consumption. **Results:** Results showed that participants felt anxiety, insomnia, digestive issues, caffeine addiction, rapid heart rate, fatigue, headache and other symptoms after excessive tea or coffee consumption. There was an association between excessive consumption of tea or coffee as the chi-square value is significant (p= 0.025) whereas irregular menstrual cycle also shows a significant association with excessive consumption of tea or coffee (p=0.000). **Conclusions:** The findings show a significant association between excessive tea or coffee consumption and the trigger factors studied, including irregular menstrual cycles. This study could be used to inform public health campaigns aimed at promoting healthy beverage consumption habits.

INTRODUCTION

Iron deficiency is a major public health concern worldwide, affecting approximately 1.6 billion people, particularly women of reproductive age [1]. It is a leading cause of anemia, which is associated with a range of negative health outcomes, including impaired cognitive function, reduced work productivity, and increased morbidity and mortality [2]. One potential cause of iron deficiency is excessive consumption of tea and coffee, which are known to contain compounds that can inhibit the absorption of iron in the body [3]. Tea and coffee are popular beverages consumed worldwide, with estimated global consumption of tea and coffee at 273 billion liters and 162 billion liters, respectively [4, 5]. Despite the widespread consumption of these beverages, there is a paucity of research on the potential link between tea and coffee consumption and iron deficiency. To address this gap in the literature, a population-based cross-sectional study was conducted on the association of iron deficiency caused by tea and coffee consumption among 150 female students at the University of Lahore. A purposive sampling technique was used to recruit participants who met specific inclusion criteria, and data were collected using questionnaires comprising questions related to excessive tea or coffee consumption. The study aims to investigate the factors that trigger excessive consumption of these beverages. The findings of this study could have important implications for public health, particularly in the prevention and management of iron deficiency anemia. Previous research has shown that excessive consumption of tea and coffee can impair the absorption of iron in the body, leading to iron deficiency

DOI: https://doi.org/10.54393/pbmj.v6i01.788

anemia [6, 7]. Studies have also suggested that caffeine, the primary active ingredient in tea and coffee, can have a range of negative health consequences, including increased anxiety, disrupted sleep patterns, and digestive issues [8, 9]. Additionally, research has found that tea and coffee consumption may be associated with irregular menstrual cycles in women [10, 11]. Efforts have been made to promote healthy dietary habits among university students, as they are a vulnerable population due to their busy schedules and reliance on convenience foods [12, 13]. There is a need for further research to explore the potential link between tea and coffee consumption and iron deficiency, as well as the mechanisms underlying this association. Additionally, further studies are warranted to explore the relationship between tea and coffee consumption and menstrual irregularities in women. In this context, the present study aims to contribute to the existing literature on the potential health risks associated with excessive tea and coffee consumption. The findings of this study could inform the development of interventions aimed at promoting healthy dietary habits among university students and reducing the burden of iron deficiency anemia.

METHODS

This study investigated the relationship between iron deficiency and the consumption of tea and coffee among 150 female students at the University of Lahore, using a population-based cross-sectional design and purposive sampling technique. To be eligible for inclusion, participants had to be between 18-30 years of age and consume at least 2-3 cups of tea or coffee, while those under 18 or over 30, those who did not consume tea or coffee, and those with any pre-existing medical conditions were excluded. The administered questionnaire consisted of 43 questions, divided into 2 main parts. The first part included questions concerning demographic characteristics such as age, gender, marital status, educational level, BMI, residential status, and residential level. The second part consisted of questions related to trigger factors after the consumption of tea or coffee such as insomnia, anxiety, dehydration, rapid heart rate, disturbance in the menstrual cycle, headache, digestive issues, addiction, and fatigue. Written informed consent was obtained from all participants. Data was analyzed using descriptive and inferential statistics and the chi-square test was used to assess associations between variables. Participants' confidentiality was maintained throughout the study. The findings of this study may shed light on the impact of tea and coffee consumption on iron deficiency, as well as other negative health consequences, and may inform efforts to promote healthy dietary habits among university students.

RESULTS

To summarize the information presented in Figure 1, out of the 150 participants, the majority (141) were between the ages of 18-24, while the remaining 9 were between 25-30. In terms of BMI, 89 participants had a normal BMI, 27 were overweight, 31 were underweight, and 3 were obese. In terms of marital status, 145 participants were unmarried and 5 were married. With respect to education level, 126 were pursuing a graduate degree, 15 were in pre-graduate studies, and 9 were in post-graduate studies. In terms of socio-economic status, 109 were middle-class, 32 were upper-class, and 9 were lower-class. Finally, 122 participants lived in urban areas, while 28 lived in rural areas.

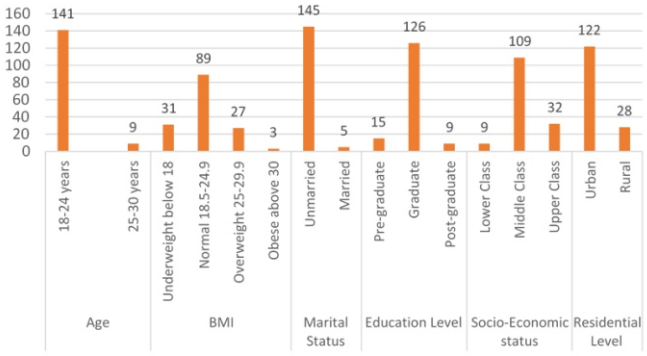

Figure 1: Demographic characteristics of the participants

According to Figure 2, results showed that after the consumption of tea or coffee between 150 participants, 107 participants felt anxiety, 122 participants felt insomnia, 80 participants experienced digestive issues, 79 participants were caffeine addicted, 127 participants experienced rapid heart rate, 52 participants felt fatigued, 60 participants experienced headache, 76 participants felt dehydration, and 147 participants experienced an irregular menstrual cycle.

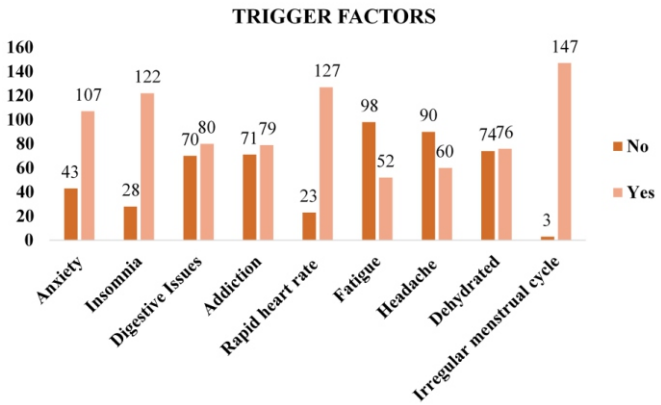

Figure 2: Trigger factors after consuming tea or coffee

Results showed that there was an association between excessive consumption of tea or coffee and anxiety among

DOI: https://doi.org/10.54393/pbmj.v6i01.788

university students as the chi-square value is significant (p= 0.025) whereas irregular menstrual cycle also shows a significant association with excessive consumption of tea or coffee among university students as the shown by chi-square value (p= 0.000)(Table 1).

Sr No.	Past 4 weeks, excessive consumption of tea or coffee		No	Yes	p-value
1.	Anxiety	All of the time	41	107	0.025
		Some of the time	2	0	
2.	Irregular menstrual cycle	All of the time	2	146	0.000
		Some of the time	1	1	

Table 1: Comparison between excessive consumption of tea or coffee and anxiety & irregular menstrual cycle

DISCUSSION

The findings of this study suggest that there is a potential association between iron deficiency and tea and coffee consumption in female university students. In the current study, 71.3% of participants felt anxiety after consuming tea or coffee. In 2017, another study by Wachamo *et al.*, suggested that caffeine in coffee increases anxiety and depression in most women [11]. In the present study, 81.3% of participants have insomnia after consuming too much tea or coffee. A similar study conducted by Jin *et al.*, investigated that increased caffeine intake was linked with an increased rate of insomnia [14]. In a recent study, 53.3% of participants felt digestive issues due to the consumption of tea or coffee. In 2020, a similar study was conducted by Vieux *et al.*, who also reported that the consumption of coffee may increase the acidity in the stomach but doesn't seem to cause any digestive issues to most people [15]. In the current research, about 52.7% of participants are addicted to caffeine intake in the form of tea & coffee. In 2020, Zahra *et al.*, performed similar research on university students. He concluded that 75.5% of the participants are caffeine addicted. As his result showed that participants claimed that they drink coffee because it boosts their energy and increases alertness. They experienced caffeine depletion, without caffeine [16]. In the current study, most participants had headaches if they didn't consume tea or coffee. In 2019, the study related to this factor conducted by Alstadhaug *et al.*, explains it very well. The body depends on caffeine effects when tea or coffee is consumed regularly. Because of caffeine, blood vessels become narrow that are present surround the brain, when the consumption of tea or coffee stopped, blood vessels become large. This causes a high blood flow around the brain or high pressures surrounding the nerves. Thus, it can trigger what is known that caffeine withdrawal as a headache [17]. In recent research, 50.7% of participants believed that excessive consumption of tea or coffee causes dehydration. In 2017, a similar study by Seal *et al.*, concluded that caffeine intake (>6 mg/kg) in the form of coffee can induce a diuretic effect, increasing urinary osmotic excretion. Hence, there is an association between tea or coffee and dehydration [18]. In a recent study, 98% of participants have menstrual irregularity due to the excessive consumption of tea or coffee. In 2022, similar research was conducted by Indu *et al.*, and Joseph *et al.*, which stated that excessive consumption of coffee was associated with an irregular menstrual cycle in females [19, 20]. One interesting finding of this study was the significant association between irregular menstrual cycles and excessive tea and coffee consumption. This is a novel finding that warrants further investigation, as it may have important implications for women's health. The study has some limitations that should be considered. First, the sample size was relatively small, which may limit the generalizability of the findings. Second, the study relied on self-reported data, which may be subject to recall bias and may not be entirely accurate.

CONCLUSIONS

In conclusion, this study provides evidence that excessive consumption of tea and coffee can have negative effects on health and can trigger a variety of symptoms, including anxiety, insomnia, digestive issues, caffeine addiction, rapid heart rate, fatigue, headache, and others. The findings show a significant association between excessive tea or coffee consumption and the trigger factors studied, including irregular menstrual cycles. The results of this study highlight the importance of moderation in the consumption of tea and coffee, and suggest that individuals should be aware of the potential negative consequences associated with excessive consumption of these beverages. This study could be used to inform public health campaigns aimed at promoting healthy beverage consumption habits.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Garcia-Casal MN, Pasricha SR, Sharma AJ, Peña-Rosas JP. Use and interpretation of hemoglobin concentrations for assessing anemia status in individuals and populations: results from a WHO technical meeting. Annals of the New York Academy of Sciences. 2019 Aug; 1450(1): 5-14. doi: 10.1111/nyas.14090.

[2] Mantadakis E, Chatzimichael E, Zikidou P. Iron deficiency anemia in children residing in high and low-income countries: risk factors, prevention,

DOI: https://doi.org/10.54393/pbmj.v6i01.788

diagnosis and therapy. Mediterranean Journal of Hematology and Infectious Diseases. 2020 Jul; 12(1): e2020041. doi: 10.4084/MJHID.2020.041.

[3] Fan FS. Iron deficiency anemia due to excessive green tea drinking. Clinical Case Reports. 2016 Nov; 4(11): 1053. doi: 10.1002/ccr3.707.

[4] Sung ES, Choi CK, Kim NR, Kim SA, Shin MH. Association of coffee and tea with ferritin: data from the Korean National Health and Nutrition Examination Survey (IV and V). Chonnam Medical Journal. 2018 Sep; 54(3): 178-83. doi: 10.4068/cmj.2018.54.3.178.

[5] Islam T, Ahmed I, Ali G, Ahmer Z. Emerging trend of coffee cafe in Pakistan: factors affecting revisit intention. British Food Journal. 2019 Jul; 121(9): 2132-47. doi: 10.1108/BFJ-12-2018-0805.

[6] Naveed S and Hameed A. Consumption of Tea in Professionals and Non-professionals. SOJ Pharmacy & Pharmaceutical Sciences. 2014 Sep; 1(3): 1-4. doi: 10.15226/2374-6866/1/3/00116.

[7] Delimont NM, Haub MD, Lindshield BL. The impact of tannin consumption on iron bioavailability and status: A narrative review. Current Developments in Nutrition. 2017 Feb; 1(2): 1-2. doi: 10.3945/cdn.116.000042.

[8] Mazhar S, Bano M, Azam S, Abbas R. Periodontal Disease and Obesity: A Hospital Based Cross-Sectional Study. Pakistan Oral & Dental Journal. 2018 Nov; 38(3): 353-7.

[9] de Koning Gans JM, Uiterwaal CS, Van Der Schouw YT, Boer JM, Grobbee DE, Verschuren WM, et al. Tea and coffee consumption and cardiovascular morbidity and mortality. Arteriosclerosis, Thrombosis, and Vascular Biology. 2010 Aug; 30(8): 1665-71. doi: 10.1161/ATVBAHA.109.201939.

[10] Vibhute NA, Shah U, Belgaumi U, Kadashetti V, Bommanavar S, Kamate W. Prevalence and awareness of nutritional anemia among female medical students in Karad, Maharashtra, India: A cross-sectional study. Journal of Family Medicine and Primary Care. 2019 Jul; 8(7): 2369. doi: 10.4103/jfmpc.jfmpc_353_19.

[11] Wachamo HL. Review on health benefit and risk of coffee consumption. Medicinal & Aromatic Plants. 2017 Aug; 6(4): 1-2. doi: 10.4172/2155-9821.1000301.

[12] McLean E, Cogswell M, Egli I, Wojdyla D, De Benoist B. Worldwide prevalence of anaemia, WHO vitamin and mineral nutrition information system, 1993–2005. Public Health Nutrition. 2009 Apr; 12(4): 444-54. doi: 10.1017/S1368980008002401.

[13] Hallberg L, Rossander L, Skånberg AB. Phytates and the inhibitory effect of bran on iron absorption in man. The American Journal of Clinical Nutrition. 1987 May; 45(5): 988-96. doi: 10.1093/ajcn/45.5.988.

[14] Jin MJ, Yoon CH, Ko HJ, Kim HM, Kim AS, Moon HN, *et al*. The relationship of caffeine intake with depression, anxiety, stress, and sleep in Korean adolescents. Korean Journal of Family Medicine. 2016 Mar; 37(2): 111. doi: 10.4082/kjfm.2016.37.2.111.

[15] Vieux F, Privet L, Soler LG, Irz X, Ferrari M, Sette S, *et al*. More sustainable European diets based on self-selection do not require exclusion of entire categories of food. Journal of Cleaner Production. 2020 Mar; 248: 119298. doi: 10.1016/j.jclepro.2019.119298.

[16] Zahra R, Maqsood U, Latif MZ, Athar H, Shaikh GM, Hassan SB. Caffeine Consumption & Perception of Its Effects Amongst University Students. Proceedings. 2020 Oct; 34(4): 46-51. doi: 10.47489/p000s344z770mc.

[17] Alstadhaug KB and Andreou AP. Caffeine and Primary (Migraine) Headaches—Friend or Foe? Frontiers in Neurology. 2019 Dec; 10: 1275. doi: 10.3389/fneur.2019.01275.

[18] Seal AD, Bardis CN, Gavrieli A, Grigorakis P, Adams JD, Arnaoutis G, *et al*. Coffee with high but not low caffeine content augments fluid and electrolyte excretion at rest. Frontiers in Nutrition. 2017 Aug; 4: 40. doi: 10.3389/fnut.2017.00040.

[19] Indu V, Gaurika J, Dinesh S, RK S. Menstrual problems in undergraduate medical students: a cross-sectional study in a medical college of North India. Journal of South Asian Federation of Obstetrics and Gynaecology. 2020 Mar; 12(2): 85-90. doi: 10.5005/jp-journals-10006-1774.

[20] Joseph N, Alfiya A, Khurana M, Divya M, Gupta K, Thangavelu MR. Assessment of Pattern, Determinants and Treatment Practices of Menstrual Disorders Among Medical Undergraduate Students. Current Women's Health Reviews. 2022 Aug; 18(3): 128-37. doi: 10.2174/1573404817666211027094722.