International Journal of Community Medicine and Public Health
Mehta SR et al. Int J Community Med Public Health. 2018 Nov;5(11):4783-4786
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20184569

Original Research Article

Is caffeine consumption amongst students on the rise? Comparison between medical and engineering students: a pilot study

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Received: 19 July 2018
Accepted: 22 August 2018

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ABSTRACT

Background: Caffeine consumption has significantly increased over the last decade and is largely attributed to the lifestyle changes. Adverse effects of excess caffeine consumption vary from sleep disorders to dependence and withdrawal symptoms. Only a few studies are available in India regarding caffeine intake and its effects.
Methods: This was a cross sectional study conducted on students of medical and engineering college students of a private university during the period from 1st October 2016 – 30th April 2017 (Seven months). Semi open ended questionnaire was administered using an online tool. The data was entered into IBM SPSS 20 USA. Percentages were calculated and chi square test was applied to find out association between Medical and Engineering student's caffeine consumption frequency and reasons. P value <0.05 was considered significant.
Results: Of 200 participants, 90 (45%) were medical students. Mean age of the participants was 20.25±1.65 years. Twelve (13.3%) medical and 17 (15.5%) engineering students consumed coffee two-three times/day. Nineteen (21.1%) medical and 19 (17.3%) and engineering students respectively consume soft drinks two-three times a week. Thirty two (35.5%) medical and 35 (29.09%) engineering students drink coffee to remain alert. Nine (10%) medical and 11 (13.8%) engineering students have unsuccessfully tried to quit coffee. Fourteen (12.7%) engineering students showed withdrawal symptoms like anxiety, restlessness and nervousness.
Conclusions: Engineering students were found to be consuming more caffeine stating reason as social pastime or to increase concentration. Withdrawal symptoms like caffeine cravings, nervousness and anxiety were observed more in engineering students.

Keywords: Caffeine consumption, Students, Withdrawal symptoms

INTRODUCTION

Caffeine is the key ingredient in the most widely consumed edible foods and beverages in the world such as coffee, tea, some carbonated drinks and even ice creams.[1] Caffeine consumption from soft drinks has dramatically increased over the last few decades.[2]

Caffeine causes psychological alterations like caffeine intoxication, withdrawal, dependence and caffeine induced anxiety disorder.[2] Regular consumption of more than 500 mg daily is needed to keep addicts awake and alert.[3] Changing pattern of lifestyle has a primary contribution to amplify caffeine consumption over the past few years. Combating stress and staying alert are few major reasons for consumption of caffeinated products in addition to it being used as a social pastime.

As of yet, very few studies are available regarding caffeine consumption patterns in India.[6-8] So there is need

for providing more emphasis on ill- effects of caffeine on health. Thus, the study was undertaken to compare caffeine consumption patterns in students and to increase awareness regarding hazards of caffeine containing products.

Objectives

- To compare frequency of caffeine consumption amongst medical and engineering students.
- To study reasons for caffeine consumption amongst students.
- To study effects of caffeine withdrawal.

METHODS

***Study design*:** Cross sectional study.

***Study population*:** Second year students of a medical and engineering college in Pune city.

***Study tool*:** Pre-designed, pre-validated, self-administered semi open ended questionnaire.

Duration: 1st October 2016–30th April 2017 (Seven months).

Students in the second year of the medical and engineering colleges were selected as the study population. One of the reasons for considering medical and engineering students was that these two courses are very stressful and demanding. In addition to this, the selected colleges in the city have a social as well as geographical diversity of student population. This will help to study factors attributed to urbanisation such as peer pressure which are well known contributors to dietary habits of students. Second year students were selected as we wanted to visualise the impact of the social influences regarding caffeine consumption after a year in college.

The study was approved by Institutional Ethics Committee. Permission to conduct the study was obtained from principals of both the colleges.

The purpose of the study was explained to the Medical and Engineering students by approaching them in their respective classrooms. A link (https://www.surveymonkey.com/r/K6NBK7F) was sent to them and they were asked to complete the online questionnaire. All the students present on that day and willing to participate were included in the study.

Inclusion criteria

Inclusion criteria were students present on the day when the investigators visited the colleges; students who have ever consumed caffeine containing products from the list shown to them during the introductory briefing of the study.

Sample size

Total 200 students participated in the study. The strength of engineering and medical second year batches was 130 and 150 respectively. Total 110 and 90 students from engineering and medical colleges respectively were present and willing to participate in the study on the day scheduled for interaction.

The questionnaire included the following:

- General information - age, gender.
- Frequency of consumption of various foods containing caffeine.
- Reasons for consuming caffeine (as a social pastime, for alertness or concentration, to combat stress, anxiety or depression).
- Withdrawal symptoms.

Statistical analysis

The data was entered into IBM SPSS 20 USA. Percentages were calculated and chi square test was applied to find out association between Medical and Engineering student's caffeine consumption habits and its ill-effects. $P<0.05$ was considered significant.

RESULTS

Out of the 200 participants, 90 (45%) were from medical college. Hundred and six (53%) were females. Mean age of the participants in years is 20.25±1.65. Twenty five (22.7%) engineering and 31 (34.4%) medical students have been consuming coffee for at least three years while only four (3.63%) engineering and one (1.11%) medical participants have been consuming coffee for more than six years.

Nineteen (17.27%) engineering and 21 (23.33%) medical students drink coffee once a day whereas Twenty nine (26.36%) engineering and 26 (28.88%) medical students drink tea once a day. Thirty six (32.7%) engineering students drink tea at least two-three times/day while 30 (33.3%) medical students drink tea rarely. The consumption of soft drinks was 15 (13.6%) by engineering and 12 (13.3%) by medical students once daily. The consumption of soft drinks was 19 (17.3%) by engineering and 19 (21.1%) by medical students two-three times/week. Forty nine (44.54%) engineering and 32 (35.5) medical students consumed other caffeine containing products like energy drinks, yogurt and coffee chocolates two-three times/week.

Table 1: Consumption of caffeine with regards to different caffeinated products (N=200).

Product	Medical/engineering students	2-3 times a day N (%)	2-3 times per week N (%)	Total
Coffee	Engineering	17 (15.5)	29 (26.4)	46
	Medical	12 (13.3)	22 (24.4)	34
Chocolate milk	Engineering	10 (9.1)	14 (12.7)	24
	Medical	5 (5.6)	11 (12.2)	16
Tea	Engineering	36 (32.7)	12 (10.9)	48
	Medical	11 (12.2)	11 (12.2)	22
Soft drinks	Engineering	2 (1.8)	19 (17.3)	21
	Medical	1 (1.1)	19 (21.1)	20

Multiple responses recorded. Medical (N=90) and Engineering (N=110).

Table 2: Reasons for consuming caffeinated products (N=200).

Sr. No.	Reasons	Engineering students (N=110)	Medical students (N=90)	Total (N=200)	P value
1.	To feel more alert/improve mood.	32 (29.09%)	32 (35.5%)	64	0.330
2.	As a social pastime (I like to hang out with friends in the café)	32 (29.09%)	28 (31.1%)	60	0.756
3.	Because I like the taste of caffeinated beverages.	24 (21.8%)	13 (14.4%)	37	0.182
4.	To help me concentrate/stay awake.	20 (18.18%)	18 (20%)	38	0.774
5.	To help me relax/calm down.	12 (10.90%)	4 (4.44%)	16	0.094
6.	To help deal with my stress/anxiety / depression.	12 (10.90%)	1 (1.1%)	13	0.886

Multiple responses recorded.

Table 3: Quitting of caffeinated products and withdrawal symptoms (n=200).

Sr. No.	Question	Engineering students (N=110) N (%)	Medical students (N=90) N (%)	Total (N=200) N (%)	P value
1.	Have you ever tried to quit consuming caffeine products, but couldn't or do you consume caffeinated products now because it is really hard to quit?	25 (22.7%)	17 (18.9%)	42	0.507
2.	Have you ever felt like you were ever addicted to caffeine or do you ever have strong cravings to consume caffeine?	34 (30.9%)	23 (25.5%)	57	0.404
3.	When you tried to stop consuming caffeine, did you –				
	a) Feel irritated?	19 (17.3%)	7 (7.8%)	26	0.047
	b) Feel nervous, restless or anxious?	14 (12.7%)	4 (4.4%)	18	0.042*
	c) Find it hard to concentrate?	10 (9.1%)	2 (2.2%)	12	0.042*
	d) Feel a strong need or urge to consume caffeine?	13 (11.8%)	8 (8.9%)	21	0.501
4.	Have you switched from drinking other beverages like tea/milk to coffee?	36 (32.7%)	28 (31.1%)	64	0.807

*is significant p-value (<0.05). Multiple responses recorded.

DISCUSSION

Our study found that 29 (26.4%) engineering students and 22 (24.4%) medical students consumed caffeine two-three times/week whereas in a study by Britta Anderson 79% of respondents reported using caffeine once a week.[4]

We found out that 32 (29.09%) engineering and 32 (35.5%) medical students stated the reason for consumption of caffeinated products was to feel more alert/ improve mood and this is similar to findings in Delhi by Sharma where the primary reason for intake of caffeine appears to be the need to keep alert and combat drowsiness.[5] This differed from the study of Demura et al

in Japan where no significant differences were found in the reasons for consumption of coffee.[6]

We observed that 78 (39%) of our participants consumed caffeine in the form of either coffee or tea while Gera, Mridul, Kalra, and Gupta had 50% of study subjects consuming the same. The rest was derived from cola beverages, chocolates, and energy drinks which is similar to our study.[7]

Twelve (10.09%) engineering and eight (8.9%) medical students found it hard to quit caffeine while 14 (12.7%) engineering and four (4.4%) medical students felt nervous/restless/anxious when trying to quit caffeine. The study by Bernstein in Ireland had 77.8% describing withdrawal symptoms after cessation or reduction of caffeine intake.[8] A similar study by Anderson (32.8%) had experienced caffeine withdrawal symptoms which interfered with their normal daily activities.[4]

CONCLUSION

There is a substantial rising trend in consumption of caffeinated products such as tea, coffee, soft drinks, chocolate milk etc. over the past few years. Urbanization and changing lifestyle are primary reasons for this rising trend. Engineering students were found to be consuming more caffeine as a social pastime or to maximize concentration. Withdrawal symptoms like caffeine cravings, nervousness and anxiety were observed more in engineering students. Coffee is most commonly used by medical students to stay awake and enhance their working capacity. Use of caffeinated beverages as a stress buster is becoming common. All these products have a detrimental effect on health of individuals in the form of dependence, and withdrawal symptoms such as anxiety and nervousness.

Awareness needs to be increased regarding detrimental effects of caffeine on health and specific programs should be established to assist in caffeine withdrawal. Caffeine consumption should be restricted to once or twice a week to prevent development of dependence. Alternative methods such as yoga, meditation, physical exercise should be used for reduction of stress. Proper sleep habits should be maintained to avoid use of caffeinated products for combating sleep.

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to my colleagues Mr. Zubin Mahajan and Miss. Tanvi Bafna and for their wonderful guidance and encouragement for this research project.

I would also like to thank Mr. Sane who helped me with the statistical analysis required for this project.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by Bharati Vidyapeeth Deemed University Medical College Pune Ethical Committee

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Cite this article as: Mehta SR, Pokale AB, Karmarkar MD. Is caffeine consumption amongst students on the rise? Comparison between medical and engineering students: a pilot study. Int J Community Med Public Health 2018;5:4783-6.