Pattern and factors affecting caffeine consumption among students in a Medical University in Ajman, UAE

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ABSTRACT
Objective: To evaluate the rate of caffeine consumption amongst students studying in Gulf Medical University and to assess the factors that affect caffeine intake. Also, to assess the perceived health effects of caffeine consumption and to estimate students’ knowledge about caffeine and its health effects.

Materials and Methods: This cross-sectional study was conducted in Gulf Medical University in Ajman on students of all colleges including: MBBS, Pharm D, BPT, and DMD. A self-administered questionnaire was used to collect the data and was analyzed using the SPSS programs. Data was collected from 303 students. Chi square test was used to test associations between the year of study and the gender with the caffeine consumption in students.

Results: The study population comprised of 66.30% females and 33.20% males. 86.60% of the participants were consumers of caffeinated beverages while the rest were non-users. 73.80% students did not have a perceived addiction to caffeine while 26.20% said they have a perceived addiction to caffeine. The most common reason for caffeine intake was seeing others take caffeinated beverages made them crave for caffeine. And other reasons were observed to be taking caffeine as a morning habit, as a preference for their taste, help to deal with anxiety and help to feel alert. 69.30% participants said that they consumed caffeine the most during tests and examination while only 30.70% consumed caffeine in a normal day. 62.30% agreed that caffeine is addictive and only 9.90% of participants agreed that drinking caffeinated beverages decreases the risk of getting Parkinson’s disease.

Conclusion: A very high percentage of people were found to consume caffeine in the form of beverages and the most common reasons for caffeine consumption were due to craving. About 1/3rd of the participants experienced increased urination as the most common side-effect upon consumption of caffeine following with restlessness, insomnia and stomach irritation. More than 2/3rd of the participants had a perceived addiction to caffeine. A very few percentage of participants had the knowledge about the benefits of caffeine on the body.

Keywords: caffeine, benefits, health risks, students, Gulf Medical University

INTRODUCTION
More than 80% of the world’s population uses caffeine as a part of their daily diet, making it the most commonly used drug¹. Caffeine is a stimulant drug that belongs to the xanthine group². It is contained in coffee, decaffeinated coffee, tea, caffeinated soft drinks, energy drinks, chocolates, non-beverage food items, and medications. The association of caffeine is related to increased self-reported alertness, improved performance of vigilance tasks and fewer lapses of attention, improved long-term memory and faster loco motor speed³⁴. Caffeine affects all body systems but the effect varies from person to person depending on body size and degree of tolerance. It takes less than an hour for caffeine to begin affecting the body and a mild dose wears off in three-four hours⁵. Its symptoms may include restlessness, fidgetiness, nervousness, excitement, euphoria, insomnia, flushing of the face, increased urination, gastrointestinal disturbance, muscle twitching, a rambling flow of thought and speech, irritability, irregular or rapid heartbeat, and psychomotor agitation⁶. If consumed in larger quantities, its symptoms may include mania, depression, lapses in judgment, disorientation, disinhibition,
The inclusion criteria was students from the 1st year up to the 5th year from the college of medicine, college of dentistry, college of pharmacy, and college of allied health sciences. Our sampling strategy was convenience sampling. Data was collected after getting the approval from the Deans of the respective colleges. The questionnaire included variables such as: demographic profile, consumption of caffeinated beverages, preference of the form of caffeine, amount of caffeine per study session (students self study time), the reasons for caffeine consumption, perceived caffeine addiction, symptoms experienced upon consumption of caffeine, knowledge of students’ about the benefits of caffeine on the body, and the consumption of caffeine the most during the time of the year. Data collection was done only after the ethical committee approval and confidentiality were maintained. Data was then analyzed through the SPSS program and the results were mainly presented as percentages. Associations were done using Chi-square test.

RESULTS
66.8% were females and 33.2% were males. 54.8% of the participants were aged between 19 and 25. All the four colleges participated: M.B.B.S., DMD, Pharm D, and BPT at Gulf Medical University in Ajman. Similar studies have been done on medical students and university students in various countries around the world, but there is no specific study done on students in the medical field studying in a university in Ajman, United Arab Emirates. The aim of the present study is to evaluate the rate of caffeine consumption, to assess the factors responsible for caffeine consumption and to assess the knowledge of students’ about the health risks and benefits of caffeine.

MATERIALS AND METHODS
A cross sectional study was done using self-administered questionnaires. The study population included the university students with about 303 participants. Sample size was calculated using the formula $n = \frac{z^2pq}{L^2}$. The estimated sample size was 384 out of which informed consent was obtained from 303 participants.
Only 26.2% said that they had a perceived addiction to caffeine. Also, it was found that the most common symptom experienced upon consumption of caffeine was increased urination (29.9%) following restlessness (13.2%), insomnia (12.8%), stomach irritation (9.76%) and drowsiness being the least with only 5.7% participants agreeing to the experience.

Majority of the participants, 69.3%, said that they consume caffeine the most, in any form, during tests and examinations. 62.3% perceived that caffeine is addictive, 43.6% knew that drinking caffeinated beverages increases the risk of developing blood pressure, 41.9% knew that low doses of caffeine show increased alertness and only 9.9% agreed that drinking caffeinated beverages decreases the risk of getting Parkinson’s disease.

A chi-square was also done to test the association between the gender and the consumption and showed insignificance. Another chi-square was done to test the association between the year of study and the consumption of caffeine and was also found to be insignificant.

### Table 1: summarizes the demographic profile of the study subjects.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Number</th>
<th>Percentages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;19</td>
<td>57</td>
<td>18.90</td>
</tr>
<tr>
<td>19-21</td>
<td>165</td>
<td>54.80</td>
</tr>
<tr>
<td>22-25</td>
<td>67</td>
<td>22.30</td>
</tr>
<tr>
<td>&gt;25</td>
<td>12</td>
<td>4.00</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>100</td>
<td>33.20</td>
</tr>
<tr>
<td>Females</td>
<td>201</td>
<td>66.80</td>
</tr>
<tr>
<td><strong>Nationality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African region</td>
<td>53</td>
<td>17.80</td>
</tr>
<tr>
<td>Eastern Mediterranean region</td>
<td>145</td>
<td>48.80</td>
</tr>
<tr>
<td>European region</td>
<td>6</td>
<td>2.00</td>
</tr>
<tr>
<td>American region</td>
<td>24</td>
<td>8.10</td>
</tr>
<tr>
<td>South East Asian region</td>
<td>60</td>
<td>20.20</td>
</tr>
<tr>
<td>Western Pacific region</td>
<td>3</td>
<td>1.00</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>2.00</td>
</tr>
</tbody>
</table>

*Non-response for Age is 2, Gender 2 and Nationality 6 participants*
said it helped them to feel more alert, and 47.3% said that consuming caffeine gave them an energy boost.

Although, a major percentage 73.8% of the participants in this research did not have a perceived addiction to caffeine whereas 26.2% did have a perceived addiction to caffeine. The Food and Drug Association noted that long-term ingestion of caffeine in higher doses can lead to habituation and is known to cause mild addiction\(^8\). Researchers have also found that caffeine is a stimulant of the Central Nervous System and causes mild physical dependence if used regularly\(^9\).

Approximately 90.91% of the students said that they do not experience heart palpitations upon caffeine intake whereas a study performed by the students of Sultan Qaboos University found that both the male and female (64.7% and 68% respectively) participants of their study believed that caffeine does increase the heart rate\(^1\).

Increased urination was the most common symptom with about 29.9% of the participants always experiencing it, 28.9% sometimes and 41.3% that never experienced it. The U.S. Food and Drug Association and the U.S. National Library of medicine categorized caffeine as a diuretic and stated that it makes you lose your

DISCUSSION

Our study was an attempt to evaluate the rate of caffeine consumption, to assess the factors that affect caffeine intake and to assess the perceived health effects of caffeine on the body. The use of caffeine is related to increased alertness, concentration, performance, improved long-term memory and faster loco-motor speed. In the present study it was found that 86.6% of the participants used were users of caffeinated beverages.

The university of Free-State found in their study that many of their participants used caffeine due to academic purposes (62.6%), social consumptions (70%) and preference for the taste (72.4%), substance to recover from a hangover (11%), increased vigilance while driving (10.7%), and to enhance the performance in sport (4.7%). It was also found that there were other reasons for the consumption, which included caffeine being a part of their daily routine, with food, to stay awake, because it is convenient, and for boredom\(^8\). In the present study, it was observed that 63.6% said that they consumed caffeine solely because seeing others take caffeine in any form made them crave for caffeine. 57.8% said that they consumed caffeine because it helped them stay awake at night, 53.5%
body water and promote dehydration\textsuperscript{11}. The Food and Drug Administration 2009 suggests that the consumption of not more than 250 mg of caffeine per day\textsuperscript{12}. This study cannot be generalized as the data is limited to only one university in Ajman. Also, caffeine may be perceived to be only contained within coffee and hence may lead to the reduction of accuracy.

**CONCLUSION**

86.6% of the participants were known users of caffeinated beverages while only 13.4% did not use caffeinated beverages. The most common factors responsible for caffeine consumption were found to be craving caffeine followed by, helping to stay awake, as an energy boost, to feel alert and lastly, to deal with anxiety. Increased urination was the most common health’s effect of taking caffeine. The second most common effect included restlessness followed by insomnia.

**REFERENCES**


