Caffeine Consumption Habits, Motivations, and Experiences of New Zealand Tertiary Students

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Abstract

Background: Caffeine-related health incidents in New Zealand have escalated over the last two decades. Research suggests that in order to reduce the risk of substance-related harm, it is important to understand the consumers' motivations for its use, especially in tertiary students who are presumed to be at a higher risk due to seeking out caffeine's well-known cognitive benefits. The public health consequences of caffeine consumption can only be determined once data is available on the amount of caffeine currently being consumed by New Zealanders, and New Zealand-based studies that have examined caffeine consumption are limited.

Aim: The aim of this study was to examine the caffeine consumption habits of tertiary students in New Zealand; their motivations for use, and experiences across a broad range of caffeine products.

Method: A previously designed caffeine consumption habits questionnaire (CaffCo) was administered to 317 tertiary students via the online survey software, Qualtrics.

Results: Of the total dataset, 99.1% (n= 314), consumed at least one source of caffeine in their diet. The caffeine sources with the highest prevalence of use were chocolate (81.7% of participants), coffee (76.3%) and tea (71.6%). Motivations for consumption appear to differ between various caffeine sources. In caffeine consumers, the median estimated daily caffeine consumption was 146.73 $mg \cdot day^{-1}$ (n= 314), or 2.25 $mg \cdot kgbw^{-1} \cdot day^{-1}$ (n= 281), with coffee contributing 61.4% to the total daily caffeine consumption. An estimated 14.3% (n= 45) of caffeine consumers exceeded a suggested 'safe limit' of 400 $mg \cdot day^{-1}$, where cigarette smoking was the only participant demographic/characteristic which increased the likelihood of exceeding this level. Caffeine was co-ingested with alcohol by 38.5% (n= 122) of the participants, and those with paid employment or those who smoked cigarettes were more likely to do so. The

majority of caffeine consumers (84.7%, n= 265) reported experiencing at least one adverse symptom post caffeine consumption, 64.2% reported being dependent on at least one caffeine source, and 47.3% (n= 152) of total participants reported experiencing at least one withdrawal symptom in the past.

Conclusions: These findings provide critical information for implementing caffeine-related risk-reduction strategies for New Zealand tertiary students.

Key words: consumer, harm, energy drinks, coffee, health-risk

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ADORA2A	Adenosine 2a receptor gene
AmED	Alcohol mixed with Energy Drinks
AMP	Adenosine monophosphate
ATP	Adenosine triphosphate
BMI	Body Mass Index
CaffCo	Caffeine consumption habits questionnaire
CHD	Coronary Heart Disease
CNS	Central Nervous System
CVD	Cardiovascular disease
CYP1A2	Cytochrome p450 1A2 enzyme gene
DSANZ	Distilled Spirits Association of New Zealand
DSM-5	Diagnostic and Statistical Manual of Mental Disorders (Fifth edition)
ECF	Extra Cellular Fluid
EEG	Electroencephalogram
EFSA	European Food Safety Authority
FDA	Food and Drug Administration
FSA	United Kingdom Food Safety Authority
FSANZ	Food Standards Australia New Zealand
GRAS	Generally Recognised as Safe
ICD-10	International Classification of Diseases (Tenth edition)
MI	Myocardial Infarction
NIP	Nutrition Information Panel
NNS	National Nutrition Survey
NPC	National Poisons Centre

NSAIDs	Nonsteriodal anti-inflammatory drugs
NZJBA	New Zealand Juice and Beverage Association
NZMPI	New Zealand Ministry for Primary Industries
RTD	Ready to drink alcoholic beverage
SES	Socioeconomic status
SNP	Single Nucleotide Polymorphism
SSB	Sugar-sweetened Beverage
UK	United Kingdom
UL	Upper Limit of intake
USA	United States of America
WADA	World Anti-Doping Agency
WHO	World Health Organisation

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