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**Caffeine intake, influences and experiences: the development
of CaffCo - a New Zealand caffeine consumption habits
questionnaire.**

A thesis presented in partial fulfilment of the requirements for the degree of

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Abstract

Background: Caffeine is one of the most widely used psychoactive substances worldwide, and can be found in a wide variety of food and beverages. It is regularly used for mental and physical stimulation; however its use has also been linked to adverse effects such as uncontrollable tremors, headaches, hospitalisation and even death. The caffeine intake of New Zealanders is unknown. There is currently no comprehensive tool available to assess caffeine intake patterns, influences, and adverse experiences in the New Zealand adult population.

Aim: To develop a questionnaire that accurately evaluates caffeine intake patterns, influences on consumption, and positive and negative experiences across a range of caffeinated products in New Zealand adults aged 15 years and over.

Method: The caffeine consumption habits questionnaire (CaffCo) was developed in two stages. Firstly, seven focus groups (n=43) were conducted across a range of demographic groups to explore factors influencing the consumption of tea, coffee, chocolate, kola drinks, energy drinks, caffeinated alcoholic premixed beverage (RTDs), caffeinated sports supplements, and caffeine tablets. Focus groups were audio recorded and then transcribed. NVivo software was used for qualitative analysis of the transcripts. Sections of text were coded by inductive analysis into 4 key themes, each with their own set of theme descriptors. Findings from the thematic analysis were then used to develop a draft of the online CaffCo using Qualtrics online survey software. Online pilot testing of CaffCo was then undertaken among focus group participants, academic staff and community members (n=227). The pilot test participants provided feedback on the comprehensibility and ease of use of the questionnaire.

Results: From thematic analysis of the focus group transcripts four main themes which influenced caffeinated product intake were identified. These were social drivers, environmental opportunity, functional expectations and individual experiences. The questionnaire items were derived from associations of products with theme descriptors.

Conclusion: The caffeine consumption habits questionnaire CaffCo was successfully developed as a result of this study. CaffCo has the potential to be used in New Zealand-wide studies of adults aged 15 years and over, or adapted for use in different population groups / countries to identify potentially harmful patterns of caffeine consumption across a range of caffeinated products. Pilot testing of CaffCo demonstrated an accurate reflection of influences of caffeinated product consumption, and identified three additional influences on consumption. Pilot testing of the resultant questionnaire enabled demonstration of content validity, construct validity and inter-rater reliability. Further testing of the CaffCo to determine test-retest reliability is warranted.

Key words: focus groups, survey, stimulant, patterns

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List of Abbreviations

AMP	Adenosine monophosphate
AR	Adenosine receptor
ATP	Adenosine triphosphate
CaffCo	Caffeine consumption habits questionnaire
CaffEQ	Caffeine expectancy questionnaire
cAMP	Cyclic AMP
CNS	Central nervous system
DSM-5	Diagnostic and statistical manual of mental disorders
EFSA	European Food Safety Authority
FFQ	Food frequency questionnaire
FSANZ	Food Standards Australia New Zealand
IDC-10	International Classification of Diseases
MELAA	Middle Eastern, Latin American and African
NZ	New Zealand
PNS	Peripheral nervous system
RTD	Ready to drink (alcoholic premixed drink)
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation

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