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Research Article

Adolescent Attitudes and Beliefs Regarding Caffeine and the Consumption of Caffeinated Beverages

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ABSTRACT

Objectives: To explore adolescents' attitudes and beliefs toward the consumption of caffeinated beverages and factors influencing their caffeinated beverage choice and consumption patterns.

Design: Twenty focus groups were conducted with grades 9 to 12 secondary school students.

Setting: Two secondary schools in London, Ontario, Canada.

Participants: This study included 166 adolescents, 42% of whom were male and 72% of whom were in grades 9 and 10.

Phenomenon of Interest: Adolescent views regarding caffeine and caffeinated beverages.

Analysis: Three researchers independently conducted inductive content analysis on the data using the principles of the immersion-crystallization method.

Results: Awareness levels regarding types of caffeinated beverages and their negative health effects were high in adolescents whereas awareness of other aspects of caffeine itself and recommended consumption levels were low. Adolescents also identified reasons for caffeine use, including providing energy, taste, accessibility, and image enhancement. Influences for caffeine use most noted by participants included parental role modeling, media and advertising, and social norms.

Conclusions and Implications: Further education is needed to correct the misconceptions adolescents have regarding certain aspects of caffeine. By gaining a deeper understanding of adolescents' caffeine use, effective educational strategies may be developed to reduce its use and mitigate potential harms.

Key Words: adolescents, caffeine, caffeinated beverages, attitudes, focus groups (*J Nutr Educ Behav*. 2016;48:181-189.)

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INTRODUCTION

Caffeine is the most available and widely used psychoactive substance in the world. It is also the only drug that is legally accessible and socially acceptable for consumption by children and adolescents.[1] Currently, adolescents are the fastest-growing population of caffeine users, with caffeinated beverage consumption rates increasing considerably over the past decade.[2] Recent studies have determined that 83.2% of adolescents consume caffeinated beverages regularly and at least 96% consume them occasionally.[3,4] For adolescents who consume caffeine, their estimated intake ranges from 60 to 800 mg/d, which suggests that a percentage of this population may be overconsuming the substance.[1,5] Mitchell et al[3] indicated that adolescents in the 90th percentile consume an average of 2.9 mg/kg body weight per day of caffeine, which exceeds Health Canada's[6] current recommendation of 2.5 mg/kg body weight per day for this age group.

Because adolescents are consuming more caffeine, and more caffeinated products are available in the marketplace, there is reason to be concerned about the potential negative health effects of its use. Indeed, caffeine overconsumption and caffeine intoxication have resulted in serious health effects.[7] Symptoms of caffeine intoxication include nervousness, anxiety, restlessness, insomnia, gastrointestinal upset, tremors, tachycardia, and in rare instances, death.[8,9] The extent to which caffeine intoxication occurs in adolescents is currently unknown; however, even moderate doses of caffeine (100–400 mg) can result in nervousness and jitteriness in children and adolescents.[10-12]

To date, the majority of published research regarding caffeine has been conducted with adults, not adolescents.[1] Furthermore, in-depth research has not been done to discover adolescents' perceptions and understanding. Although Ludden and Wolfson[13] investigated caffeine use, reasons for use, and expectancies in adolescents, they used a survey with predetermined

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responses, and therefore did not allow adolescents to freely express themselves. Bunting et al[14] explored adolescents' perceptions of caffeinated drinks through focus group discussions; however, they focused only on caffeinated energy drinks, not caffeine itself. This limits their findings to only 1 source of caffeine. Because only 10% of adolescents consume caffeinated energy drinks on a regular basis,[3] a broader understanding of caffeine in general, from all sources, is warranted. Therefore, the aims of this study were to investigate (1) adolescents' attitudes and beliefs toward caffeinated beverages, and (2) factors influencing their caffeinated beverage choice and consumption patterns.

METHODS

Research Design

A qualitative study design using focus groups as a means of data collection provided the framework for this study. The researchers also chose the PRECEDE-PROCEED model for Health Promotion Planning and Evaluation to guide this study because it includes a comprehensive diagnosis of the problem (PRECEDE; ie, social and environmental factors), while being mindful of collecting information for the future implementation and evaluation of programming (PROCEED).[15] The authors obtained ethics approval from the research ethics boards at both Brescia University College and Western University.

Sampling Methods and Recruitment

Upon the researchers receiving permission from the local school board, 2 local high schools from different areas of the city were contacted by school board personnel. Because income level was not an area of interest in this study, these schools were selected randomly from the representative pool of schools contained within middle-income neighborhoods. The investigators then contacted health and physical education teachers (n = 5) at these schools, at which time the purpose of the study was explained. All teachers agreed to help recruit students from their respective classes and to aid in the logistics of conducting the focus groups. Investigators then attended these classes to explain the study to all eligible participants. Recruitment packages were handed out to all students (n = 230) with instructions to obtain informed, written parental consent and, when appropriate, students' assent for those interested in participating in the study. Students were eligible to participate if they were in grades 9–12, currently enrolled in a health class, and aged 13–18 years. In total, 177 students agreed to participate in the study, which gave a response rate of 77%. Because focus groups were conducted during a designated date and time, all students absent from their designated session (n = 11) were removed from the study, which left a total of 166 participants.

Focus Group Protocol and Data Collection

Focus group sessions took place during a regularly scheduled class on a day predetermined by the classroom teacher. Each focus group was conducted by a trained moderator and an assistant moderator or note taker. Graduate students with an interest in adolescent health were chosen to assist with this study, because moderators who enjoy interacting with adolescents increase the success of focus groups.[16] The moderator guided the focus group discussions using a guide developed by the researchers. Taking into consideration the population group, questions were short, unambiguous, and open-ended.[17] The semi-structured nature of the interview guide ensured consistency and flexibility as the discussion unfolded within each focus group.[18] After the first day of focus groups (n = 4), the moderators and researchers met to discuss the guide and modifications were made to improve clarity. The final guide consisted of 8 questions. Four questions focused on adolescents' thoughts on caffeine: "What comes to mind when you hear the word caffeine?" "What effects does caffeine have on the body?" "Why do you think students your age use caffeine?" and "What do you think influences students your age to use caffeine?" Two questions explored their knowledge regarding which beverages contained caffeine and how much caffeine is recommended each day. The final 2 questions were: "What advice would you give your peers and younger siblings about caffeine?" and "Where would you go to get reliable information about caffeine?" Focus groups were stratified by sex and grade level to capture potential differences. For logistical reasons, 2 focus groups included both males and females. Focus groups ranged from 15 to 60 minutes in duration. Although the intent was to conduct focus groups until saturation was reached (12 focus groups), at the request of the schools, all students enrolled in a health and physical education class who wished to participate in the study (and had provided consent or assent) could do so (20 focus groups in total).

All transcripts were audio recorded and transcribed verbatim by a professional transcriber to ensure that all data were captured. To improve the trustworthiness of the data, a detailed journal was completed by the moderator after each set of focus groups, to serve as an audit trail. Member checking was conducted throughout the focus group discussions to ensure that participant responses were understood and clarification was obtained as needed. Debriefing sessions also were conducted at the end of each focus group to discuss overall impressions and any concerns with the session. These data provided the researchers with the context for each focus group. A brief demographic questionnaire with questions about age, sex, grade level, caffeinated beverage consumption patterns, and smoking habits was administered to participants upon completion of the focus group session. Because a detailed assessment of caffeine intake was not the purpose of this study, a comprehensive validated questionnaire was not used; rather, questions were asked only to obtain a general understanding of the frequency and types of caffeinated beverages consumed. Participants received a $10 iTunes gift card for participation and participating classes received a 90-minute interactive, educational lesson on caffeine, delivered by the researchers after the focus groups were completed.

Data Analysis

Using the principles of the immersion-crystallization method,[19] the researchers used inductive content