

Impact of a Learning Package on Caffeine Overconsumption and Associated Hazards Among Adolescents in Selected Colleges at Bangalore, Karnataka

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Abstract— Caffeine is a psychoactive substance that is widely available, frequently utilised, legally permissible, and socially endorsed. It is accessible to individuals of all ages and is gaining popularity, particularly among the youth. Data reveals that adolescents are the most rapidly expanding cohort of caffeine users. Research indicates that 83.2% of teenagers routinely drink caffeinated beverages, whilst at least 96% do so sometimes. Notwithstanding media focus on caffeinated energy beverages, hardly 1 percent of caffeine use among adolescents is derived from these products. Coffee is a recognised source of caffeine; nevertheless, many adolescents are unaware that tea, particularly iced tea, and carbonated soft drinks can also contain substantial quantities of caffeine. This study has heightened awareness of the assessment of the Education Package's efficacy on excessive caffeine usage and its related risks among teenagers. Objectives: a) To assess the level of knowledge regarding caffeine over consumption and its hazards among adolescents. b) To find out the effectiveness of Learning Package regarding caffeine over consumption and its hazards among adolescents. c) To find out the association between the pre-test knowledge regarding caffeine over consumption and its hazards with selected socio demographic variables Design: Quasi Experimental design (One group Pretest and Posttest design). Subjects: 60 adolescents. Sampling Technique: A purposive sampling technique was used to select the sample for study. Data Collection Tool: A structured questionnaire was used to collect data from the subjects. Data Analysis: The obtained data was analyzed using descriptive and inferential statistics and interpreted in terms of objectives and hypothesis of the study. The level of significance was set at 0.05 levels. Results: Before treatment 80% of the subjects had inadequate level of knowledge and the remaining 20% had moderate level of knowledge. However, after treatment the subjects' level of knowledge improved significantly. 46.7% of the subjects, after treatment, showed adequate level of knowledge and the remaining 53.3% showed moderate knowledge. Conclusion: This study shows Positive correlation between knowledge of caffeine over consumption and its hazards and adolescents. It could find out that caffeine over

consumption and its hazards, positively proportional to knowledge level of adolescents.

Index Terms- Impact, Caffeine consumption, Learning Package, Caffeine hazards, Adolescents

I. INTRODUCTION

Caffeine is classified as a methylxanthine and serves as a central nervous system (CNS) stimulant¹. It is the most often taken psychoactive drug globally. In contrast to several other psychoactive drugs, it remains unregulated and lawful in nearly all areas globally. Multiple well-defined mechanisms of action elucidate the effects of caffeine. The primary impact is the reversible inhibition of adenosine's activity on its receptor, therefore averting the beginning of adenosine-induced torpor. Caffeine further stimulates certain areas of the autonomic nervous system.

Caffeine has positive as well as negative health effects. It can cure and prevent respiratory problems, bronchopulmonary dysplasia, and apnoea in preterm infants. Caffeine citrate is listed in the World Health Organization's Model List of Essential Medicines. It may have a little preventive benefit against some disorders, including Parkinson's disease. Some individuals have anxiety or sleep disruptions as a result of coffee use, whilst others suffer little interruptions. The research regarding danger during pregnancy is inconclusive; some authorities recommend that pregnant women restrict their intake to no more than two cups of coffee daily. Caffeine can elicit a mild dependency, manifested by withdrawal symptoms including irritability, headache, and sleepiness upon cessation of use. Caffeine intake with extended daily use. Prolonged usage results in the establishment of tolerance to the autonomic effects of

elevated blood pressure and heart rate, along with augmented urine production.¹

Caffeine is a psychoactive chemical that can elicit varying reactions in individuals, similar to other drugs. Consumers must comprehend the interaction of caffeine with their bodies about their own health histories. The food and beverage sector allocates millions, if not billions, of dollars globally to finance research and advocate for caffeinated goods as safe or potentially beneficial to health. Caffeine is extensively researched, providing unbiased data from which credible information may be derived. Although most published studies suggest the safety and potential advantages of moderate caffeine consumption, certain study investigations emphasise its possible detrimental consequences. Awareness of your daily caffeine use reduces the dangers associated with its adverse effects. Awareness of any pre-existing medical disorders that may exacerbate the adverse effects of coffee is also crucial.²

The debate about the health implications of caffeine use has persisted for many years. Individuals ingest caffeine-containing items to enhance energy levels, boost alertness, elevate mood, and sustain prolonged work shifts. Despite the various advantages of coffee for the human body, much research has been conducted to examine its effects, revealing some adverse consequences, including anxiety, insomnia, uneasiness, cardiac arrhythmia, and hypertension. A prior cross-sectional study indicated that individuals ingested caffeine for many reasons: academic objectives, social engagement, and flavour preference. Additionally, among these subjects, some have heat flushes, while others exhibit aggression owing to high coffee use. Some have asserted that coffee use may extend lifespan. A prior research in North America indicated that coffee and tea are the primary sources of caffeine in adults' diets, but caffeinated soft drinks and chocolate serve as the main sources for youngsters.³

University students experience academic stress as a result of their everyday academic workload. Students often resort to eating caffeinated beverages to manage their excessive tension. The scarcity of data regarding caffeine consumption among young adults, especially university students in developing nations, prompted us to examine the intake of caffeinated beverages among

local university students in northern Lebanon, the sources of caffeine consumption, and the potential correlation with academic levels. Elevated stress levels and heightened intake of caffeinated drinks.⁴

OBJECTIVES:

- To assess the level of knowledge regarding caffeine over consumption and its hazards among adolescents.
- To find out the effectiveness of Learning Package regarding caffeine over consumption and its hazards among adolescents.
- To find out the association between the pre-test knowledge regarding caffeine over consumption and its hazards with selected socio demographic variables.

HYPOTHESIS

H1 - There will be significant difference between pretest and posttest level of knowledge among adolescents regarding caffeine over consumption and its hazards among adolescents.

H2 - There will be significant association between the selected demographical variables and knowledge of adolescents regarding caffeine over consumption and its hazards.

II. METHODOLOGY

The research design used for this study Quasi-experimental (one group pretest- posttest) design was adopted among 60 adolescents.

Setting of the study

The study conduct at selected degree colleges Anupama group of institutions in Bangalore.

Variables

Independent Variable: Learning Package on caffeine over consumption and its hazards

Dependent Variable: knowledge level of adolescents in selected colleges.

Population

In this study population refers to adolescents in selected colleges

Sample

In this study, the samples were Adolescents in selected colleges who fulfilled the inclusion criteria.

Sample Size: 60 adolescents were assigned.

Sampling Technique: purposive sampling technique was used for this study.

Criteria for Sample Selection

Inclusion Criteria

In this study, the following adolescents were included, who are

- available during data collection.
- consume caffeinated beverages (e.g., coffee, tea, energy drinks) at least twice a week.
- willing to participate.

Exclusion Criteria

The study excludes adolescents, who are

- read and understand English
- not present at data collection.
- currently undergoing treatment for caffeine addiction or other substance abuse issues.

Development of Data Collection Instruments

Section I: Socio Demographic Variable Proforma

The sociodemographic variable variables of the respondents such as age, gender, Type of family, Religion, qualification and any form of information received regarding caffeine over consumption and its hazards.

Section II: Self structured Questionnaire

It consists of 25 items pertaining to Information about caffeine over consumption and its hazards. Each correct response was assigned a score of one and a wrong response a score of zero.

Data Collection Procedure

- Formal permission was obtained from the Principal of Anupama P U College, Bangalore, to conduct the study.
- The data collection took place over a period of 4 weeks during the months of August and September. The pre-test, implementation of the Learning Package, and post-test were all conducted by the investigator within this time frame.

- A pre-test was conducted using a structured questionnaire to assess the knowledge of 60 adolescents at Anupama P.U College regarding caffeine overconsumption and its hazards.
- The Learning Package, which focused on caffeine overconsumption and its associated risks, was implemented during the same week as the pre-test. The educational session lasted for one hour and involved all 60 adolescents.
- The post-test was conducted on the 8th day after the implementation of the Learning Package using the same questionnaire to assess any improvement in the adolescents' knowledge about caffeine overconsumption and its hazards.

Plan for Data Analysis

- Frequencies and percentages will be used to analyze the demographic data of the participants.
- The mean and standard deviation of the pre-test and post-test knowledge scores will be calculated to assess the overall change in knowledge regarding caffeine overconsumption and its hazards.
- A paired t-test will be applied to determine if there is a statistically significant difference between the mean pre-test and post-test knowledge scores. This will be tested at a 5% level of significance ($p < 0.05$).

The Chi-square test will be used to measure the association between the pre-test and post-test knowledge scores and various demographic variables, identifying any significant relationships.

III. RESULTS

Table I- Frequency and percentage distribution of Demographic variables

Sl No	Demographic variables	No	%
1	Age (in Years)		
	a) 15years	7	11.67
	b) 16 years	18	30
	c) 17years	30	50
	d) 18 years	4	6.667

	e) 19	1	1.667
2	Gender		
	a) Male	28	46.67
	b) Female	32	53.33
3	Type of family		
	a) Nuclear	42	70
	b) Joint	12	20
	c) Extended	6	10
4	Religion		
	a) Hindu	21	35
	b) Muslim	12	20
	c) Christian	24	40
	d) Any Other	3	5
5	Family income		
	a) below 10000	12	20
	b) 10001-20000	26	43.33
	c) 20001-30000	12	20
	d) 30001 and above	10	16.67
6	Any form of information received regarding caffeine over consumption and its hazards		
	yes	7	11.67
	no	53	88.33

Above table shows the demographic information of adolescents those who are participated in the study.

Table 2: To assess the existing knowledge adolescents regarding caffeine over consumption and its hazards before implementing Learning Package.

n=60

Level of knowledge	Range	No of recipient	
		No	%
Adequate	75-100%	0	0
Moderate	51-74%	12	20
Inadequate	50% and below	48	80

Pre-test assessment of level of knowledge, as is shown in the graph, indicates that only one-fifth of the subjects were having a moderate amount of knowledge. Remaining 80% were having inadequate

level of knowledge. Surprisingly none was holding adequate knowledge.

Table 4: To assess the post-test knowledge of adolescents regarding caffeine over consumption and its hazards

n=60

Level of knowledge	Range	No of recipient	
		No	%
Adequate	75-100%	28	46.7
Moderate	51-74%	32	53.3
Inadequate	50% and below	0	0

The table shows the post-test level of knowledge. An impressive 46.6% of subjects demonstrated an adequate level of knowledge, while the remaining 53.3% showed a moderate level of knowledge. No subjects exhibited inadequate knowledge in the post-test

Table 6: To compare pre-test and Post-test level of knowledge of adolescents regarding caffeine over consumption and its hazards.

n=60

Domain	Pre-test		Post-test	
	No	%	No	%
Adequate	0	0	34	46.7
Moderate	12	20	26	53.3
Inadequate	48	80	0	0

The above table compares pretest and posttest levels of knowledge. Before treatment 80% of the subjects had inadequate level of knowledge and the remaining 20% had moderate level of knowledge. However, after treatment the subjects' level of knowledge improved significantly. 46.7% of the subjects, after treatment, showed adequate level of knowledge and the remaining 53.3% showed moderate knowledge.

Table 8: To evaluate effectiveness of Learning Package caffeine over consumption and its hazards

n=60

Domain	Pre-test		Post-test		Enhancement		t-test
	mean	Mean %	Mean	Mean %	mean	mean %	
Information regarding caffeine over consumption and its hazards	12.12	40.39	20.72	69.06	8.6	28.67	23.54*S

Information and its hazards							
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* S- Significant at 0.05 level (P<0.05 level)

A paired t-test was conducted to analyze the difference between pre-test and post-test knowledge scores of adolescents, which revealed a significant difference in the overall scores. Hence, the hypothesis (H1) is accepted, indicating that the observed difference in the mean scores between the pre-test and post-test is a true difference.

Table 9: To find out association between the level of knowledge with their selected socio- demographic variables

Sl No	Demographic variables	No	%	Level of knowledge				Chi-square
				Inadequate		Moderate		
				No	%	No	%	
1	Age (in years)							
	a) 15 years	7	11.67	5	10.42	2	16.67	
	b) 16 years	18	30	15	31.25	3	25	
	c) 17 years	30	50	24	50	6	50	0.759
	d) 18 years	4	6.667	3	6.25	1	8.333	
	e) 19 years	1	1.667	1	2.083	0	0	
2	Gender							
	a) Male	28	46.67	24	50	4	33.33	1.071
	b)Female	32	53.33	24	50	8	66.67	
6	Type of family							
	a) Nuclear	42	70	33	68.75	9	75	
	b) Joint	12	20	10	20.83	2	16.67	0.179
	c) Extended	6	10	5	10.42	1	8.333	
8	Religion							
	a) Hindu	21	35	17	35.42	4	33.33	
	b) Muslim	12	20	10	20.83	2	16.67	0.106
	c) Christian	24	40	19	39.58	5	41.67	
	d) Any Other	3	5	2	4.167	1	8.333	
12	Family income							
	a) 10000	26	43.33	20	41.67	6	50	
	b) 10001-20000	12	20	12	25	0	0	7.3*S
	c) 20001-30000	12	20	7	14.58	5	41.67	
	d) 30001 and above	10	16.67	9	18.75	1	8.333	
13	Any form of information received regarding caffeine over							

	consumption and its hazards							
	No	7	11.67	3	6.25	4	33.33	6.83*S
	Yes	53	88.33	45	93.75	8	66.67	

N.S- Not Significant

*S- Significant at P<0.05 level

The Chi-square test was conducted to determine the association between the knowledge scores of adolescents and their demographic variables. The findings of the study showed a significant association between knowledge scores and the variables of qualification and any form of information received regarding caffeine overconsumption and its hazards. However, no significant association was found with other selected demographic variables such as age, gender, type of family, and religion.

<https://www.caffeineinformer.com/harmful-effects-of-caffeine>

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CONCLUSION

The aim of the study was to evaluate the effectiveness of a Learning Package on caffeine overconsumption and its hazards among adolescents in selected colleges in Bangalore. Using a quasi-experimental approach including pretest and posttest measurements, the study revealed that teenagers possessed inadequate knowledge regarding excessive use of caffeine prior to the implementation of the Learning Package intervention. The posttest results clearly demonstrated a significant rise in knowledge following the session. The findings of the paired t-test indicated a statistically significant disparity in levels of knowledge (p<0.05). In addition, the study revealed a significant correlation between knowledge scores and the variables of qualification and previous knowledge on the health hazards associated with caffeine. The results highlight the need of educational programs in enhancing awareness of this subject among adolescents.

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