CROSS-SECTIONAL STUDY TO ASSESS THE KNOWLEDGE OF UNDERGRADUATE ADOLESCENTS REGARDING THE EFFECTS OF SMOKING AND RELATED TOBACCO PRODUCTS IN GOVERNMENT DEGREE COLLEGE, JAMMU, J&K.

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Abstract: **Background:** Tobacco use among adolescents remains a pressing public health concern in India, particularly in semi-urban and rural regions where awareness is limited. Despite national campaigns and legislative efforts, young individuals continue to experiment with smoking and smokeless tobacco products, often unaware of their long-term health consequences. **Objectives:** This study aimed to assess the knowledge of undergraduate adolescents regarding the effects of smoking and related tobacco products, and to identify demographic variables associated with knowledge levels. **Materials and Method:** A descriptive cross-sectional study was conducted from February 01st to 28th, 2017, among 100 undergraduate students enrolled in Government degree college in Jammu, Jammu and Kashmir. A structured knowledge questionnaire and demographic data sheet were administered. Data were analysed using descriptive statistics and Chi-square tests to identify associations between knowledge levels and variables such as Age, gender, residence, stream of education, exposure to anti-tobacco campaign etc. **Results:** Only 18% of participants demonstrated adequate knowledge, while 42% had moderate and 40% had inadequate knowledge. Significant associations were found between knowledge level and gender ($p = 0.009$), father's education ($p = 0.030$), family history of smoking ($p = 0.001$), exposure to campaigns ($p = 0.002$), and stream of education ($p = 0.019$). Science stream and BSc students showed higher awareness compared to the Arts stream and Commerce steam students. **Conclusion:** The study highlights critical gaps in adolescent knowledge regarding tobacco-related health risks, particularly among non-science students. Targeted educational interventions, integrated curricula, and sustained awareness campaigns are recommended to address these disparities and promote informed decision-making among youth. **Keywords:** Adolescent Health, Tobacco Awareness, Smoking Effects, Undergraduate students, Cross Sectional, Descriptive study, Public Health Education, Knowledge Assessment, Tobacco Control.

I. INTRODUCTION

Tobacco use remains one of the most significant preventable causes of morbidity and mortality worldwide. According to the World Health Organization (WHO), tobacco kills more than 05 million people annually, a figure projected to rise to 10 million by 2030, with 70% of these deaths occurring in developing countries [1]. In India, tobacco-related deaths exceed 01 million per year [2], and the country ranks second globally in tobacco production and consumption [3].

Tobacco Use Among Adolescents:

Adolescents are particularly vulnerable to tobacco initiation due to peer pressure, media influence, and lack of awareness. The Global Youth Tobacco Survey (GYTS) 2003 reported that 9.5% of Indian students aged 13–15 had tried smoking [4]. A study by Mishra et al. (2016) revealed that cigarette smoking among Indian males aged 15–29 increased fourfold between 1998 and 2010.[2] Smokeless tobacco products such as gutka, khaini, and betel quid are also widely consumed, often perceived as less harmful despite their carcinogenic potential.[3,5]

Table 01: Common Tobacco Products in India.[6]

Product	Description	Health Risks
Cigarettes 	Manufactured tobacco rolled in paper, often with filters	Lung cancer, heart disease

Bidis 	Hand-rolled tobacco in tendu leaves, cheaper and more accessible	Higher tar and nicotine levels
Gutka 	Mixture of tobacco, areca nut, lime, and flavourings	Oral cancer, submucous fibrosis
Khaini 	Tobacco mixed with slaked lime, chewed	Oesophageal and oral cancers
Betel Quid 	Areca nut, betel leaf, and tobacco	Oral cancer, cardiovascular disease
***Pictorial warnings were mandated to cover 40% of packaging by 2013.[7]**		

II. OBJECTIVES

- ♣ To assess the knowledge of undergraduate adolescents regarding the health effects of smoking and tobacco products.
- ♣ To compare knowledge levels across demographic subgroups (Stream of Education).
- ♣ To establish the association between knowledge and selected demographic variables.

III. RESEARCH METHODOLOGY

Study Design:
Descriptive cross-sectional study conducted from February 01st to 28th, 2017.
Population and Sample:

- Target group: Undergraduate adolescent students aged 17–21yrs.
- Sample size: 100 undergraduate adolescent students.
- Setting: Government Degree college in Jammu, J&K.
- Sampling technique: Non-probability, purposive sampling

Method of Data Collection: The data was collected for a period of one month from 01st to 28th February 2017, using Self-administered knowledge questionnaire. Formal permissions were obtained from the authorities and an Informed consent was obtained from samples prior to the data collection procedure. Full confidentiality was ensured throughout the research.

Tools:

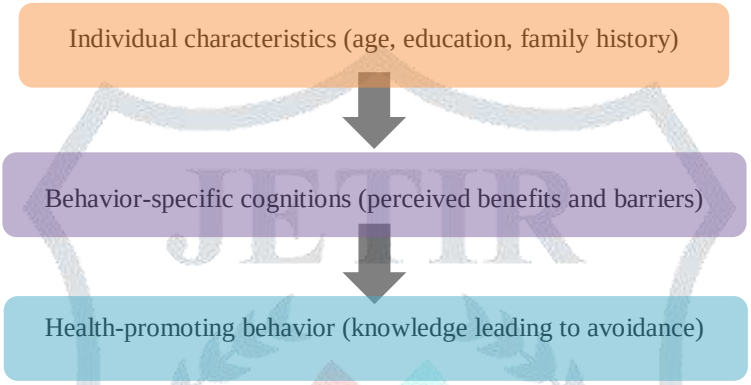
- Tool A: Demographic Data Sheet
- Tool B: Structured Knowledge Questionnaire (validated by experts; reliability coefficient r = 0.82).

Table 02: Knowledge Scoring

Parameter	Category	Scores
Knowledge levels	Adequate knowledge	≥75%
	Moderate knowledge	50–74%
	Inadequate knowledge	<50%

Theoretical framework

Diagram 01: *Schematic representation of conceptual framework based on Pender's Health Promotion Model.*



IV. STATISTICAL ANALYSIS

Descriptive Statistics

Section I: Demographic Profile of Participants

Table 03: Frequency and % distribution of sample characteristics. (N=100)

Variables	Categories	Frequency	Percentage
Age	17–18 yrs.	30	30%
	19–20 yrs.	50	50%
	More than 21 yrs.	20	20%
Gender	Male	60	60%
	Female	40	40%
Residence	Urban	55	55%
	Rural	45	45%
Father's Education	Illiterate	10	10%
	Primary	20	20%
	Secondary	40	40%
	UG and above	30	30%
Mother's Education	Illiterate	25	25%
	Primary	30	30%
	Secondary	30	30%
	UG and above	15	15%
Family History of Smoking	Yes	40	40%
	No	60	60%
Source of Information	Media	35	35%
	School	25	25%
	Family	20	20%
	Peers	20	20%
Tobacco Use History	Never	70	70%
	Tried Once	20	20%
	Regular	10	10%

Awareness of Laws	Yes	45	45%
	No	55	55%
Exposure to Campaigns	Yes	30	30%
	No	70	70%
Stream of Education	Arts /BA	40	40%
	Science /BSc	30	30%
	Commerce/BCom	30	30%

Section II: level of knowledge of undergraduate adolescent Students

Table 04: Knowledge levels of undergraduate adolescent students regarding health effects of smoking and related tobacco products. (N=100)

Knowledge Level	Frequency	Percentage
Adequate	18	18%
Moderate	42	42%
Inadequate	40	40%

Inferential Statistics

Section III: Sub Group Comparison of Knowledge Scores.

Table 05: Comparison of mean knowledge score among Arts Science and commerce stream undergraduate students. (N=100)

Stream of Education	f	Mean ± SD	F test Value	df	p value
Arts/BA	40	52.3±12.4	**10.87****	(02, 97)	0.0001
Science/BSc	30	64.7±10.8			
Commerce/BCom	30	56.1±11.6			

**** Significant at p<0.01 levels. Interpretation:** The F-value of 10.87 and p-value of 0.0001 indicate a statistically significant difference in mean knowledge scores across the three streams. Science stream students had the highest mean score (64.7%), suggesting greater awareness—possibly due to curriculum exposure to biological and health sciences.

Table 06: Table 4: Chi-square Analysis of Knowledge Level by Demographic Variables (N=100)

Variable	χ^2 Value	df	p-value	Significant (p < 0.05)
Age	4.62	2	0.099	No
Gender	6.78**	1	0.009	Yes
Residence	2.34	1	0.126	No
Father's Education	8.91*	3	0.030	Yes
Mother's Education	7.45	3	0.058	No
Family History of Smoking	10.12**	1	0.001	Yes
Source of Information	12.67**	3	0.005	Yes
Exposure to Campaigns	9.88**	1	0.002	Yes
Stream of Education	7.92**	2	0.019	Yes

**** Significant at p<0.01 levels; *Significant at 0.05 levels. Interpretation: "**Significant associations were observed between knowledge level and gender (p = 0.009), father's education (p = 0.030), family history of smoking (p = 0.001), source of information (p = 0.005), exposure to campaigns (p = 0.002), and stream of education (p = 0.019). These findings suggest that targeted interventions should consider educational background and exposure sources to improve adolescent tobacco awareness."

IV. RESULTS AND DISCUSSION

The findings reveal that only 18% of adolescents had adequate knowledge about the health effects of smoking. This aligns with studies by Frank & Pushpam (2015) [3] and Priya Sengupta (2014) [4], which showed high prevalence of inadequate knowledge among adolescents. Notably, students with educated parents and prior exposure to anti-tobacco campaigns scored significantly higher. Similar trends were observed in Punjab and Chennai based studies.[5,8]

V. ETHICAL CONSIDERATIONS

- All formal permissions were obtained and an Informed consent was taken from the study participants.
- Anonymity and confidentiality maintained throughout the study.

VI. LIMITATIONS

- Restricted to a limited geographical area/single setting in Jammu.
- Non-probability sampling limits generalizability.
- Self-reported data may introduce bias.

VII. ACKNOWLEDGMENT

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VIII. CONFLICT OF INTEREST

None declared.

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