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RESEARCH ARTICLE

Impact of a Structured School-Based Tobacco Awareness Program on Knowledge and Perception Among High School Students in Tamil Nadu: A Pre-Post Intervention Study

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Abstract: Tobacco use among high school students remains a critical public health issue, necessitating targeted intervention and awareness programs. The National Tobacco Control Program (NTCP) addresses this challenge through comprehensive strategies aimed at reducing tobacco consumption, particularly among adolescents who are at a higher risk of initiating use. This study evaluated the effectiveness of a tobacco awareness program among 275 high school students in the Chengalpattu district, using a structured pre- and post-intervention assessment. The results indicated a significant improvement in students' knowledge regarding the harmful effects of tobacco following the awareness module. The positive shift in awareness underscores the importance of continuous educational interventions in schools. Expanding such awareness-based assessments can contribute to sustaining improved health literacy and promoting long-term behavioral change among students.

Keywords: Tobacco, Health Education, Adolescents, Awareness, School Students.

INTRODUCTION

Tobacco use among school students represents a significant public health concern on a global scale. The initiation of tobacco consumption, including smoking and smokeless forms, often begins during adolescence, an age marked by experimentation and vulnerability. Early exposure can lead to long-term addiction and a wide range of serious health consequences. This study reviews the prevalence, contributing factors, health impacts, and preventive strategies related to tobacco use among school-going adolescents [1]. Globally, the prevalence of tobacco use among adolescents varies considerably, influenced by regional cultural norms, socioeconomic conditions, and the rigor of tobacco control policies. According to the World Health Organization (WHO), approximately 1 in 5 school-aged students have tried tobacco products before the age of 18. In certain regions, the prevalence is notably higher due to lenient regulations, greater accessibility, and the normalization of smoking behavior [2, 3].

Multiple factors contribute to the initiation and continued use of tobacco among adolescents. Peer influence plays a crucial role; students are more likely to try tobacco if their friends or classmates do. Parental smoking habits also significantly influence adolescent behavior, with children of smokers more likely to adopt similar habits. Additionally, media portrayals, particularly in movies and on social media platforms, often glamorize smoking, reinforcing its desirability [4–6]. Emotional factors such as stress, anxiety, and depression further push adolescents towards tobacco use as a perceived coping mechanism. The health consequences of tobacco use among adolescents are profound and often long-lasting. Exposure to tobacco at a young age can lead to chronic bronchitis, asthma, and other respiratory disorders. Nicotine, a highly addictive substance, reinforces long-term dependency when use begins early. Furthermore, tobacco use has been associated with decreased academic performance and increased absenteeism among school students. To mitigate these impacts, educational institutions need to implement stringent tobacco monitoring and awareness programs [7–12].

Beyond respiratory and cognitive impairments, tobacco use significantly increases the risk of cardiovascular diseases such as heart attacks and strokes, as well as various cancers, particularly lung cancer [13]. Adolescents who engage in tobacco use often experience reduced cognitive function and memory retention, negatively impacting their academic performance. The time spent seeking, consuming, and recovering from the effects of tobacco can also detract from meaningful educational engagement. High school students often begin experimenting with tobacco under peer pressure or in response to perceived stress relief, with the risk of progression to regular use. The transition to college may further increase tobacco usage due to increased autonomy, stress, and social environments that may normalize or even encourage smoking behavior [14].

In light of these concerns, the present study aimed to assess the effectiveness of a tobacco awareness

intervention among high school students in Chengalpattu district. A quasi-experimental design was used to evaluate the impact of an awareness module on students' knowledge and attitudes toward tobacco use. The findings are intended to inform strategies for effective tobacco education and prevention programs within the school setting.

MATERIALS AND METHODS

2.1 Study Design and Population

A quasi-experimental cross-sectional study was conducted among schoolchildren aged 13 to 15 years at the Government Higher Secondary School in Chengalpattu District, Tamil Nadu. The study aimed to evaluate the impact of a tobacco awareness intervention on students' knowledge and attitudes using a structured questionnaire.

2.2 Official Permission and Ethical Clearance

The SIMATS Human Ethics Committee approved the study protocol before its commencement. Official permission was obtained from the school administration. Informed consent was acquired from both the participating students and their parents, ensuring ethical compliance and voluntary participation.

2.3 Data Collection Procedure

The survey was carried out over a period of five days, from January 8th to January 12th, 2024. A total of 275 high school students participated in the study. A pre-tested and validated questionnaire was administered before and after the awareness session to assess knowledge levels related to tobacco usage and its health implications. The awareness module consisted of interactive lectures, visual presentations, and educational discussions tailored to adolescent comprehension levels. The pre- and post-intervention responses were collected, scored, and analyzed to evaluate the effectiveness of the awareness program in enhancing student knowledge regarding tobacco-related risks

2.4 Statistical Analysis

The collected data were entered and analyzed using SPSS software (version 9.0). Descriptive statistics were used to summarize the demographic data and awareness scores. One-way analysis of Variance (One-Way ANOVA) was applied to determine the statistical significance of the differences in pre- and post-test scores. A p-value of less than 0.05 ($p < 0.05$) was considered statistically significant.

RESULTS

A total of 275 high school students aged between 15 and 16 years participated in this awareness-based intervention study. The primary objective was to assess the level of knowledge and awareness regarding the health consequences of tobacco use before and after the implementation of an educational awareness module. Data were collected using a structured questionnaire, and the responses were analyzed to identify changes in awareness levels.

3.1 Pre-Awareness Assessment

Before the awareness program, a baseline questionnaire revealed a substantial lack of knowledge among students regarding the health impacts of tobacco use. Approximately 95% of participants showed misconceptions or incorrect responses across key health domains. Notably, 87.3% did not associate tobacco with heart attacks or lung cancer, 76.7% were unaware of its link to asthma, and over 80% failed to connect tobacco with gastritis, oral cancers, or headaches. Furthermore, 85.8% were unaware of the risks associated with secondhand smoke. These findings, as detailed in Table 1, underscore a critical gap in tobacco-related health literacy among adolescents.

Table 1: Tobacco awareness based on pre-test

Question	Students output	Number of students
Whether heart attack is caused by tobacco consumption?	No	240
Whether asthma is induced by tobacco consumption?	No	211
Gastritis induced by tobacco?	No	229
Lung cancer induced by tobacco usage?	No	240
Mouth cancer caused by tobacco usage?	No	248
Migraine/headache frequent with tobacco consumption?	No	219
Person of vicinity in tobacco consumption will be affected?	No	236

3.2 Implementation of the Awareness Program

The awareness program was conducted using WHO-approved educational materials, including PowerPoint slides, visual aids, and oral presentations. The sessions focused on the physiological impacts of tobacco, its addictive nature, associated

diseases, and the risks of both active and passive smoking. Interactive teaching methods were adopted to maximize student engagement and retention of knowledge.

3.3 Post-Awareness Assessment

After the educational intervention, post-test results showed a marked improvement in students' awareness of tobacco-related health risks. A significant majority correctly recognized tobacco as a cause of heart attacks (90.9%), asthma (92.4%), gastritis (93.1%), lung cancer (94.5%), and oral cancers (94.9%). Additionally, 97.8% linked tobacco use to frequent headaches, and 98.1% acknowledged the dangers of secondhand smoke. These findings, summarized in Table 2, reflect a statistically significant increase in knowledge, confirming the effectiveness of the awareness module in enhancing tobacco-related health literacy among adolescents.

Table 2: Tobacco awareness based on the post-test

Question	Responses	Number of students
Whether heart attack is caused by tobacco consumption?	Yes	250
Whether asthma is induced by tobacco consumption?	Yes	254
Gastritis induced by tobacco?	Yes	256
Lung cancer induced by tobacco usage?	Yes	260
Mouth cancer caused by tobacco usage?	Yes	261
Migraine/headaches are frequent with tobacco consumption?	Yes	269
Person of vicinity in tobacco consumption will be affected?	Yes	270

3.4 Comparative Analysis of Pre- and Post-Test Results

A comparative evaluation of pre- and post-test responses revealed an overall increase of more than 85% in accurate knowledge across all items. The most notable improvements were observed in the recognition of second-hand smoke hazards, which rose from 14.2% to 98.1%, and in the awareness of tobacco-induced migraines, which increased from 20.4% to 97.8%. These outcomes highlight the effectiveness of the intervention in enhancing both direct and indirect health risk awareness related to tobacco use among adolescents. The detailed comparison of pre- and post-intervention responses is presented in Table 3.

Table 3: Comparative Analysis of Pre- and Post-Test Awareness

Health Condition	Pre-Test Awareness n (%)	Post-Test Awareness n (%)	% Increase
Heart Attack	35 (12.7%)	250 (90.9%)	+78.2%
Asthma	64 (23.3%)	254 (92.4%)	+69.1%
Gastritis	46 (16.7%)	256 (93.1%)	+76.4%
Lung Cancer	35 (12.7%)	260 (94.5%)	+81.8%
Mouth Cancer	27 (9.8%)	261 (94.9%)	+85.1%
Migraine/Headaches	56 (20.4%)	269 (97.8%)	+77.4%
Secondhand Smoke	39 (14.2%)	270 (98.1%)	+83.9%

DISCUSSION

Tobacco use among adolescents is a global public health challenge. The initiation of tobacco during adolescence can lead to long-term addiction and increased risk for chronic illnesses such as cardiovascular disease, respiratory disorders, and various cancers. In the present study, the pre-test results indicated that almost 95% of the students lacked adequate knowledge regarding the harmful effects of tobacco. This is consistent with previous findings, where studies in Western countries reported that 60% to 70% of college students were unaware of tobacco's adverse health impacts [15]. The post-awareness results revealed a significant improvement in student knowledge, with nearly 98–99% of participants correctly identifying tobacco-related health risks. This suggests that structured awareness programs are effective in enhancing students' understanding of the dangers associated with tobacco use, particularly regarding its links to cancer, asthma, and cardiovascular diseases.

Peer pressure remains a critical factor influencing adolescent tobacco use [16]. Students often imitate their peers or older individuals in their environment. Family influences, especially if parents or siblings smoke, further normalize the behavior and increase the

likelihood of initiation. A lack of formal health education and insufficient parental guidance also contribute to the problem [17]. Schools that lack comprehensive health education programs generally report higher tobacco usage among students.

Parental involvement and modeling healthy behavior are essential preventive measures. Educating parents about the risks of tobacco and encouraging open communication with children can reduce the likelihood of tobacco initiation [18, 19]. Moreover, community-based interventions involving health departments and NGOs can provide additional resources and support for students. Effective prevention requires a multi-layered approach. Implementing structured educational programs in schools, covering health risks, social consequences, and strategies to resist peer pressure, can significantly reduce tobacco initiation [20–23]. Support services such as counseling, cognitive-behavioral therapy, and motivational interviewing have also proven effective in helping students quit tobacco use [24].

CONCLUSION

Tobacco use among adolescents remains a critical public health concern, necessitating early and effective preventive strategies. This study highlights the significant impact of structured awareness programs in enhancing students' knowledge about the harmful effects of tobacco and its associated health risks. The comparative analysis of pre- and post-intervention responses revealed a substantial improvement in awareness across all assessed domains, particularly concerning second-hand smoke and tobacco-related health conditions. These findings underscore the importance of school-based educational initiatives, supported by parental and community involvement, in shaping positive health behaviors. By fostering informed attitudes during formative years, such interventions serve as a foundational step toward reducing tobacco initiation, preventing lifelong addiction, and promoting a healthier future generation. Sustained efforts in awareness and education are therefore essential components of a comprehensive tobacco control strategy.

REFERENCES

1. Mishra GA, Pimple SA, Shastri SS. An overview of the tobacco problem in India. Indian Journal of Medical and Paediatric Oncology. 2012 Jul;33(03):139-45.
2. Kumar S. WHO intensifies war against tobacco in developing countries. The Lancet. 2000 Jan 15;355(9199):210.
3. Jha P, Jacob B, Gajalakshmi V, Gupta PC, Dhingra N, Kumar R, Sinha DN, Dikshit RP, Parida DK, Kamadod R, Boreham J. A nationally representative case–control study of smoking and death in India. New England journal of medicine. 2008 Mar 13;358(11):1137-47.
4. Parkar S, Patel A, Trivedi S, Sharma A. A profile of adolescents tobacco users attending public schools of Ahmedabad City, Gujarat, India. Journal of Dental Research and Scientific Development. 2015 Jul 1;2(2):26-.
5. Goyal A, Sharma A, Agarwal S, Bhansali S, Chhabra KG, Chhabra C. Determinants of tobacco use among children of a rural village in India: An exploratory qualitative study. Asian Pacific Journal of Cancer Prevention: APJCP. 2020;21(1):81.
6. Bagchi NR, Ganguly S, Pal S, Chatterjee S. A study on smoking and associated psychosocial factors among adolescent students in Kolkata, India. Indian journal of public health. 2014 Jan 1;58(1):50-3.
7. Basakhetre U, Jaiswal A, Deolia S, Sen S, Dawngliani M, Jaiswal A. Prevelance of tobacco use among school children reporting to dental hospital for treatment. Journal of Datta Meghe Institute of Medical Sciences University. 2017 Oct 1;12(4):242-5.
8. Goswami A, Reddaiah VP, Kapoor SK, Singh B, Dwivedi SN, Kumar G. Tobacco and alcohol use in rural elderly Indian population. Indian journal of psychiatry. 2005 Oct 1;47(4):192-7.
9. Pal R, Tsering D. Tobacco use in Indian high-school students. International Journal of Green Pharmacy (IJGP). 2009;3(4).
10. Sakore DN, Parande MA, Tapare VS, Bhattacharya S. Knowledge, attitude and practice of tobacco consumption among male college students of a rural area of Pune, Maharashtra. International Journal of Community Medicine and Public Health. 2017 Sep;4(9):3455.
11. Baruah M, Baruah KK, Ojah J, Baruah R. Prevalence of tobacco use among school going adolescents of Guwahati city, Assam. Indian J Basic Appl Med Res. 2016;5:92-8.
12. Gadiyar A, Ankola A, Rajpurohit L. Awareness of anti-tobacco advertisements and its influence on attitude toward tobacco use among 16 to 18-year-old students in Belgaum city: A Cross-sectional study. Journal of Education and Health Promotion. 2018 Jan 1;7(1):85.
13. Rameshwar S, Pednekar Mangesh S, Rehman AU, Rakesh G. Tobacco use among school personnel in Rajasthan, India. Indian journal of cancer. 2004 Oct;41(4):162.
14. Choudhury BK, Sushmita KL, Subudhi S, Mohapatra S, Mishra N. Tobacco and Indian Youth: A Review. Indian Journal of Forensic Medicine & Toxicology. 2020 Oct 1;14(4).
15. Tom A, Gadhiraju T, Jalihal S, Ankola AV, Khot AJ. Assessment Of The Knowledge And Attitude Regarding Tobacco And Its Use Among Students In Belagavi City: A Cross-Sectional Study. Journal of Positive School Psychology. 2022 Jul 3:4382-8.

16. Dhandoria R, Paliwal A. Prevalence of Tobacco Products Abuse among School Going Adolescents in the Field Practice Area of Mahatma Gandhi Medical College and Hospital, Jaipur. Journal of Advanced Medical and Dental Sciences Research. 2019 Jul 1;7(7):94-8.
17. Sarin A, Chaturvedi P, Mehrotra R, Ranjan P, Seth S, Janardhanan R. Evaluating the role of media in implementation of 85% graphic warnings on tobacco products in India. Indian Journal of Medical and Paediatric Oncology. 2020 Nov;41(06):879-84.
18. Jesha MM, Sameera KK, Sujith EU. Tobacco abuse among adolescent students in rural areas of Malapuram District. Medico Research Chronicles. 2016;3(1):124-32
19. Prasad N, Singh M, Pal RK, Joseph J. Tobacco use among health care workers of tertiary care center of Faridabad, Haryana, India. Clinical Epidemiology and Global Health. 2020 Jun 1;8(2):394-8.
20. Sidhu AK, Kumar S, Wipfli H, Arora M, Valente TW. International approaches to tobacco prevention and cessation programming and policy among adolescents in India. Current Addiction Reports. 2018 Mar;5:10-21.
21. Machado Neto AS, Cruz ÁA. Smoking among school adolescents in Salvador (BA). Jornal de Pneumologia. 2003;29:264-72.
22. Billalli SF, Paramesh GM, Prasannakumar DR. A study to assess the knowledge regarding drug abuse and its ill effects among first year degree students at DRM Science College in Davangere. International Journal of Advances in Nursing Management. 2017;5(1):70-2.
23. Bate SL, Stigler MH, Thompson MS, MacKinnon DP, Arora M, Perry CL, Reddy KS. A qualitative mediation study to evaluate a school-based tobacco prevention program in India (Project MYTRI). Field Methods. 2012 May;24(2):194-215.
24. Rosilawati Y, Rafique Z, Sudiwijaya E. Tobacco use among in-school young adolescents in Indonesia: Exploring availability, affordability, and accessibility. Plos one. 2024 Mar 28;19(3):e0301291.