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Original Research Article

PROPORTION OF TOBACCO USERS IN EXERCISING YOUNG ADULTS VERSUS SEDENTARY YOUNG ADULTS: AN ANALYTICAL CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Tobacco use remains a major preventable cause of morbidity and mortality worldwide, with many individuals initiating the habit during adolescence and early adulthood. Lifestyle behaviours such as physical activity and sedentary habits may influence tobacco use patterns among young adults. Understanding this relationship may help in developing effective health promotion strategies. The objective is to estimate the proportion of tobacco users among young adults who engage in regular physical exercise and to compare it with the proportion of tobacco users among sedentary young adults.

Materials and Methods: An analytical cross-sectional study was conducted among young adults residing in the urban field practice area of a tertiary care teaching institution in Visakhapatnam, Andhra Pradesh, from October to November 2025. A total of 143 participants were selected using stratified random sampling. Data were collected using a structured questionnaire through face-to-face interviews. Descriptive statistics were presented as frequencies and percentages. Strength of association was estimated using prevalence ratios (PR) with 95% confidence intervals (CI).

Results: Among the participants, 49.7% engaged in regular physical activity while 50.3% were sedentary. Tobacco use was reported by 11.9% of participants. Tobacco use was considerably higher among sedentary individuals (22.2%) compared with regular exercisers (1.4%). The association between tobacco use and physical activity was statistically significant, with sedentary individuals showing a strong association with tobacco use (PR = 9.44; 95% CI: 1.36–65.6).

Conclusion: Sedentary behaviour among young adults was associated with a higher prevalence of tobacco use and alcohol consumption. Promoting regular physical activity may help reduce unhealthy lifestyle behaviours and improve overall health among young adults.

Keywords: Physical activity, tobacco use, sedentary behaviour, young adults, prevalence ratio.

INTRODUCTION

Tobacco use is one of the most important preventable causes of morbidity and mortality worldwide. According to the World Health Organization, tobacco consumption is responsible for more than eight million deaths each year and continues to be a major public health problem in both developed and developing countries. A large proportion of tobacco users begin the habit during adolescence and early adulthood, making young people a particularly vulnerable group for initiation and long-term dependence.[1,2]

In India, tobacco is consumed in different forms including cigarettes, bidis, and smokeless tobacco products such as gutkha and khaini. Data from the

Global Adult Tobacco Survey have shown that tobacco use remains common among young adults and contributes significantly to the burden of non-communicable diseases in the country.[3,4] Early initiation of tobacco use increases the risk of cardiovascular diseases, chronic respiratory diseases, and cancers later in life. Apart from these long-term consequences, tobacco consumption in young individuals has also been associated with reduced physical fitness, impaired lung function, and decreased exercise tolerance.[5]

Lifestyle behaviours such as physical activity and sedentary habits have gained increasing attention in recent years due to their role in influencing health outcomes. Regular physical activity is known to improve cardiovascular health, mental well-being, and overall quality of life. The World Health Organization recommends that young adults should engage in at least 150 minutes of moderate-intensity physical activity per week to maintain good health.[6] However, due to increasing screen time, academic pressures, and changing lifestyle patterns, sedentary behaviour has become more common among young adults.[7]

Several studies have suggested that physical activity may have a protective effect against tobacco use. Adolescents and young adults who participate in sports or regular exercise tend to report lower rates of smoking and other substance use compared with those who lead sedentary lifestyles.[8,9] Exercise may reduce the likelihood of tobacco use through multiple mechanisms. It improves mood, reduces stress, and enhances self-regulation, which may decrease the tendency to engage in unhealthy behaviours such as smoking.[10] In addition, individuals who are physically active may avoid tobacco because of its negative impact on respiratory capacity and athletic performance.

Although the relationship between physical activity and tobacco use has been examined in several international studies, there is limited evidence from Indian settings, particularly among young adults living in urban or semi-urban areas. Understanding this association is important for developing effective health promotion strategies that encourage healthy lifestyles and reduce tobacco use among youth. Therefore, the present study was conducted to assess the proportion of tobacco users among exercising young adults compared with sedentary young adults in an urban field practice area.

MATERIALS AND METHODS

Study Design: The present study was conducted as an analytical cross-sectional study to examine the relationship between physical activity patterns and tobacco use among young adults.

Study Period: The study was carried out over a period of two months from October 2025 to November 2025. During this period, data were collected from eligible participants residing in the selected field practice area.

Study Setting: The study was conducted in the field practice area attached to the Department of Community Medicine of a tertiary care teaching institution GVP IHC & MT in Visakhapatnam, Andhra Pradesh.

Study Population: The study population consisted of young adults who were residing in the selected field practice area during the study period. This age group was chosen because adolescence and early adulthood are considered critical stages for the initiation of tobacco use as well as the development of lifestyle behaviours such as physical activity and sedentary habits. Individuals who were available at the time of the survey and were willing to participate in the study were considered eligible.

Inclusion and Exclusion Criteria:

Young adults who were willing to participate in the study and able to provide informed consent were included. Individuals who had physical disabilities that restricted their ability to engage in physical exercise were excluded from the study. In addition, individuals with a known history of alcohol or psychoactive substance dependence other than tobacco were not included in the study in order to minimise potential confounding factors related to substance use behaviour.

Sample Size: The sample size for the study was calculated using the standard formula for comparison of two proportions. The calculation assumed a difference of twenty percent in the prevalence of tobacco use between sedentary young adults and those who engaged in regular physical exercise. A confidence level of 95 percent and a statistical power of 80 percent were considered for the estimation. Based on these assumptions, the required sample size was calculated to be 136 participants. After accounting for a possible non-response rate of five percent, the final sample size was increased to 143 participants to ensure adequate representation of the study population.

Sampling Technique: A stratified random sampling technique was adopted for the selection of participants. Initially, the eligible population was classified into two groups based on their level of physical activity. One group consisted of individuals who engaged in regular physical exercise, while the other group included individuals who were considered sedentary according to the predefined criteria. After stratification, participants from each group were selected using simple random sampling until the required number of participants was obtained. This approach ensured representation of both exercising and sedentary individuals for comparison.

Data Collection Procedure: Data were collected using a structured and pre-tested questionnaire. The questionnaire was administered through face-to-face interviews conducted by trained investigators. The instrument included questions related to demographic characteristics, patterns of physical activity, tobacco

use history, alcohol consumption, and the presence of chronic illnesses. Information regarding physical activity included the type of exercise performed, the duration of exercise sessions, and the number of days per week the participant engaged in exercise. Tobacco use was assessed by asking participants whether they had used cigarettes, bidis, or smokeless tobacco products such as gutkha, khaini, or snuff during the previous thirty days. The questionnaire was initially pre-tested in a population with characteristics similar to those of the study population, and necessary modifications were made before the start of the study. During the data collection process, regular supervision was carried out and approximately ten percent of the completed questionnaires were cross-checked to ensure accuracy and completeness of the information obtained.

Operational Definitions: For the purpose of the present study, regular physical exercise was defined as engagement in moderate to vigorous physical activities such as running, cycling, aerobics, swimming, or strength training for at least 150 minutes per week, distributed across a minimum of five days. This definition was adopted in accordance with the World Health Organization recommendations for physical activity. Sedentary behaviour referred to individuals who did not meet the above criteria for regular exercise and who predominantly engaged in low-effort activities during their leisure time, such as sitting, watching television, using mobile phones, gaming, or reading. A tobacco user was defined as any participant who reported using cigarettes, bidis, or smokeless tobacco products on at least one day during the past thirty days.

Ethical Considerations: Prior to the commencement of the study, approval was obtained from the Institutional Ethics Committee of the institution. All participants were informed about the objectives and procedures of the study before the interview was conducted. Written informed consent was obtained from each participant. Participation in the study was voluntary, and confidentiality of the information provided by the participants was maintained throughout the study.

Statistical Analysis: The collected data were entered into Microsoft Excel and analysed using IBM SPSS Statistics for Windows, Trial Version 21.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the characteristics of the study population. Categorical variables were presented as frequencies and percentages.

The association between physical activity and selected categorical variables was assessed using the Chi-square test. The Fisher's exact test was applied when expected count was <5. The strength of association between exposure variables and physical activity status was estimated using the Prevalence Ratio (PR) with 95% confidence intervals (CI) calculated. A p-value less than 0.05 was considered statistically significant for all statistical tests.

RESULTS

A total of 143 young adults participated in the study. Among them, 71 participants (49.7%) reported engaging in regular physical exercise, while 72 participants (50.3%) did not meet the criteria for regular physical activity and were classified as sedentary. The majority of participants belonged to the 19–21 year age group (51.0%), followed by those older than 21 years (43.4%). Only 5.6% of participants were younger than 18 years.

Females constituted a slightly higher proportion of the study population (56.6%) compared with males (43.4%). Among the individuals who engaged in regular physical exercise, most participants reported exercising for 30–60 minutes per session (52.1%), while 36.6% exercised for less than 30 minutes and 11.3% exercised for more than 60 minutes per session. In terms of weekly exercise frequency, 53.5% reported exercising on 3–4 days per week, 23.9% exercised on five or more days per week, and 22.5% exercised only 1–2 days per week.

Despite engaging in physical activity, prolonged sedentary behaviour was common among exercisers. More than half of the exercisers (50.7%) reported spending more than four hours per day in sitting activities such as television viewing, mobile phone use, gaming, or reading. Alcohol consumption was reported by 13.3% of the study population, while tobacco use was reported by 11.9% of participants [Table 1].

Table 1: Descriptive characteristics of the study participants (n = 143)

Variable	Category	Frequency	Percentage
Age group (years)	<18	8	5.6
	19–21	73	51
	>21	62	43.4
Gender	Female	81	56.6
	Male	62	43.4
Physical activity status	Regular exercise	71	49.7
	Sedentary	72	50.3
Exercise duration/session (n=71)	<30 minutes	26	36.6
	30–60 minutes	37	52.1
	>60 minutes	8	11.3
Exercise frequency/week (n=71)	1–2 days	16	22.5
	3–4 days	38	53.5
	≥5 days	17	23.9
Daily sitting time (n=71)	<2 hours	3	4.2

	2–4 hours	32	45.1
	>4 hours	36	50.7
Alcohol use	Yes	19	13.3
	No	124	86.7
Tobacco use	Yes	17	11.9
	No	126	88.1

Age and gender were not significantly associated with regular physical activity ($p > 0.05$). Participants aged 19–21 years showed a higher prevalence of regular exercise compared with those younger than 18 years (PR = 2.30; 95% CI: 0.68–7.78), although this association was not statistically significant.

Alcohol consumption showed a significant association with physical activity (Fisher exact $p = 0.012$). Participants who did not consume alcohol had 2.56 times higher prevalence of regular exercise compared with those who reported alcohol consumption, indicating a moderate association between alcohol use and sedentary behaviour.

Tobacco use demonstrated the strongest association with physical activity. Tobacco users were predominantly sedentary (94.1%), whereas only 5.9% of tobacco users engaged in regular exercise. The association was statistically significant (Fisher exact $p < 0.001$), indicating a strong inverse relationship between physical activity and tobacco use [Table 2].

Table 2: Association between selected variables and regular physical activity (n = 143)

Variable	Category	Non-exercisers n (%)	Exercisers n (%)	PR	95% CI	p value	Strength of association
Age group	<18	6 (75.0)	2 (25.0)	Reference	–	0.09	–
	19–21	31 (42.5)	42 (57.5)	2.3	0.68–7.78		Weak
	>21	35 (56.5)	27 (43.5)	1.74	0.50–6.02		Weak
Gender	Male	34 (54.8)	28 (45.2)	Reference	–	0.4	–
	Female	38 (46.9)	43 (53.1)	1.18	0.84–1.65		Weak
Alcohol use	Yes	15 (78.9)	4 (21.1)	Reference	–	0.012	–
	No	57 (46.0)	67 (54.0)	2.56	1.05–6.25		Moderate
Tobacco use	Yes	16 (94.1)	1 (5.9)	Reference	–	<0.001	–
	No	56 (44.4)	70 (55.6)	9.44	1.36–65.6		Strong

DISCUSSION

The present analytical cross-sectional study assessed the relationship between physical activity and tobacco use among young adults. Nearly half of the participants (49.7%) were physically active, while 50.3% were sedentary, indicating a considerable burden of physical inactivity in this age group. Physical inactivity has been recognized as an important behavioural risk factor among young adults and is often associated with other unhealthy lifestyle practices [11]. In the present study, the majority of participants belonged to the 19–21 year age group (51.0%). Although a higher proportion of participants in this age group reported regular physical activity (57.5%) compared with those younger than 18 years (25.0%), the association between age and physical activity was not statistically significant, which is consistent with findings from previous studies where age alone was not a strong determinant of physical activity behaviour [12]. Similarly, females (53.1%) showed a slightly higher prevalence of physical activity compared with males (45.2%), but the association was not statistically significant. Earlier studies have also reported minimal gender differences in physical activity patterns among young adults in educational settings [13]. Despite engaging in regular exercise, a significant proportion of participants reported prolonged sedentary behaviour, with 50.7% spending more than four hours per day in sitting activities. This finding supports previous evidence that sedentary behaviour and physical activity can coexist, particularly due to increased screen time and academic demands [14].

Alcohol consumption was reported by 13.3% of participants and showed a significant association with physical activity status, with higher prevalence among sedentary individuals (20.8%) compared with regular exercisers (5.6%). This indicates clustering of behavioural risk factors among young adults, as reported in earlier studies [15]. Tobacco use was reported by 11.9% of participants and showed the strongest association with physical activity. Tobacco use was considerably higher among sedentary individuals (22.2%) compared with regular exercisers (1.4%), indicating a strong inverse relationship between physical activity and tobacco use. Similar findings have been reported in previous studies demonstrating that physically active individuals are less likely to engage in smoking behaviour [16]. This relationship may be explained by the fact that individuals who engage in regular exercise tend to avoid behaviours that negatively affect physical performance and respiratory function [17]. In addition, clustering of unhealthy behaviours such as tobacco use, alcohol consumption and physical inactivity has been widely documented, suggesting that these behaviours often occur together among young adults [18]. Overall, the findings of the present study highlight the importance of promoting regular physical activity as a potential strategy to

reduce tobacco use and other behavioural risk factors among young adults.

CONCLUSION

The present analytical cross-sectional study assessed the proportion of tobacco users among exercising and sedentary young adults. Nearly half of the participants were physically inactive, indicating the presence of sedentary behaviour among young adults in the study population. Tobacco use was considerably higher among sedentary individuals compared with those who engaged in regular physical activity, suggesting an inverse relationship between physical activity and tobacco use. Age and gender were not significantly associated with physical activity status, whereas alcohol consumption showed a significant association with sedentary behaviour, indicating clustering of lifestyle risk factors among young adults. These findings suggest that sedentary individuals may be more likely to engage in unhealthy behaviours such as tobacco and alcohol use. Promoting regular physical activity through health education and community-based interventions may therefore play an important role in encouraging healthier lifestyle practices and reducing the risk of tobacco use among young adults.

Limitations: First, the cross-sectional design of the study limits the ability to establish a causal relationship between physical activity and tobacco use, as both exposure and outcome were assessed at the same point in time. Second, the information on physical activity, tobacco use, and alcohol consumption was obtained through self-reported responses, which may be subject to recall bias or social desirability bias.

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