

Smoking Trends and Their Short Term Complications in Young Adults

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ABSTRACT

Background: Cigarette smoking is a reversible cause of cardiopulmonary diseases that may, in other cases, cause short-term and long-term complications, including declined aerobic capacity in adolescents. This study aimed to identify the most common smoking trends, associated short-term complications and the effect on aerobic endurance among young adults.

Methodology: An analytical cross-sectional study was conducted in Rawalpindi & Islamabad, recruiting 140 participants (88 males, 52 females). Smokers and non-smokers aged 16 to 26 years were selected through non-probability convenience sampling over 5 months (February-June 2019). The Basic Smoking Assessment Questionnaire (BSAQ), the Modified Borg Scale, and the Progressive Aerobic Cardiovascular Endurance Run (PACER) test were used for data collection purposes. The Kolmogorov-Smirnov test was used to assess the normality of the data.

Results: Cigarette smoking is the most common mode of smoking (25%), while halitosis (bad breath) was the most frequently occurring short-term complication (8.6%). The VO₂ max evaluated via Progressive Aerobic Cardiovascular Endurance Run (PACER) showed a significant difference ($p < 0.001$) in endurance between smokers and non-smokers. Non-smokers had greater cardiovascular endurance than smokers.

Conclusion: Smoking is highly prevalent among young adults and is associated with early short-term adverse effects and reduced cardiorespiratory fitness. Also, smoking among young adults was predominantly cigarette-based, with a considerable proportion engaging in multiple forms of tobacco use. The findings highlight the need for targeted tobacco control strategies and early interventions to reduce smoking-related short-term health complications in this population.

Keywords: Smoking, aerobic capacity, short-term complications, cardiorespiratory fitness, dyspnea.

INTRODUCTION

The act of inhaling and exhaling tobacco or narcotic smoke is known as smoking. People who smoke or have smoked at least 100 cigarettes throughout their lives are considered smokers.¹ Non-smokers are those who have never smoked cigarettes or who have smoked fewer than 100 cigarettes in their lifetime. According to an international study, 15.2% of people are smokers (28.6% men and 3.4% women).² The highest prevalence was reported in men aged 40 to 49 years. In Pakistan, the majority of smokers are middle-aged men, with two out of every three smokers, there are multiple factors such as gender, culture, socio-

economic status, age, education, and geography all have a substantial impact on prevalence, which emphasizes the need for ethnically sensitive tobacco control programs and improved literacy initiatives.³

Smoking prevalence in Pakistan varies by location, with national rates are 14.2% in people aged 8 and older and 19% for aged 15 and older. Khyber Pakhtunkhwa has the lowest rate (7.1%), while Sindh has the highest (16.2%). It is highly gendered (25.4% males vs 3.5% females; $p < 0.001$), more common in urban areas except in Sindh (reverse pattern), and peaks among males aged 25–44, with a post-44 decline that varies by province.⁴ Smoking prevalence is also high in rural Sindh, with approximately 55% of males initiating smoking by the age of 20 years. Despite widespread awareness of its detrimental effects on pulmonary and cardiovascular health, increased age and higher income have been positively associated with smoking prevalence.⁵ Despite cigarettes having the highest tar/nicotine content in the world and a 5% yearly industry increase, Pakistan lacks effective tobacco control.⁶ Smoking is a major preventable cause of death worldwide, accounting for 24% of deaths in men and 7% in women in developed countries. Smokers lose an average of 8 years of life. Since 1955, non-smoking-related mortality has decreased to 65% in nations

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that are members of the Organization for Economic Co-operation and Development (OECD).⁷ Although nicotine dependency affects public smoking behaviors, both genders exhibit similar quit intentions. Social dynamics further increase gender inequalities, with women experiencing greater societal pressure to quit, often from children, while men experience it from peers. Education plays a protective role, with college graduates more likely to quit, smoke fewer cigarettes, and choose low-nicotine brands compared to those with only a high school education.⁸ Economic factors may affect prevalence; for example, a 10% increase in cigarette prices in Pakistan led to a 4.8% decline in consumption.⁹ Adult cigarette consumption has increased somewhat globally by 7.1%, but it continues to rise in underdeveloped countries while declining in developed countries. In men under 65, smoking is the primary cause of 25% of ischemic heart disease, 75% of chronic bronchitis/emphysema, 90% of lung malignancies, and significant respiratory morbidity in children from smoking families.¹⁰ Early cardiovascular consequences include arterial stiffness following a single cigarette, prothrombotic states, acute myocardial infarction risk even at moderate exposure, endothelial dysfunction in young smokers, and elevated sympathetic activity.^{11,12} Reduced cardiac, respiratory, and muscular endurance, increased heart rate and blood pressure, and compromised exercise physiology are additional short-term effects.^{13,14} E-cigarettes and water pipes are other forms that have similar autonomic effects. Passive smoking accelerates lung functional decline, especially in young female athletes.¹⁵

Young adulthood represents a critical window for smoking initiation and escalation, with one-fifth of smokers trying their first cigarette after age 18 and intensity increasing thereafter.¹⁶ College students smoke to boost their self-esteem, relieve boredom, or control their emotions¹⁷; sportsmen use water pipes more frequently.¹⁸ The risk of early menopause, estrogen insufficiency, and osteoporotic fractures increases manifold in women.^{19, 20} Compared to active non-smokers, sedentary smokers have a nine times greater fatal myocardial infarction rate.²¹ In the next few years, increasing tobacco use will result in one billion deaths if no measures are introduced to control the trend.²² Taxation, labelling, education, and restrictions are examples of effective policies that can significantly impact future mortality and cut young-adult usage in half.^{23, 24}

While there is enough evidence of the long-term health risks associated with smoking, there is a scarcity of literature reporting the early physiological alterations in young adults particular to tobacco use and its different forms. According to the current body of literature, no previous research has specifically evaluated cardiovascular endurance using the Progressive Aerobic Cardiovascular Endurance Run (PACER) test in young smokers and non-

smokers. Therefore, this study was undertaken to address this evidence gap, generating gender-specific insight and improving awareness of the immediate health consequences of tobacco use along with its various forms to support early smoking prevention and cessation strategies.

METHODOLOGY

An analytical cross-sectional study was conducted in Rawalpindi and Islamabad over a period of five months (February 2019 to June 2019). The study was approved by Ethical Review Committee of Foundation University Medical College (Reference No. FF/FUMC/215-1Phy/19). A written informed consent was obtained from all the participants. Confidentiality was ensured through the anonymization of all data collection forms, with no personal identifiers recorded or linked to the study dataset.

A total of 140 healthy young adults (aged 16 to 26 years) were recruited through non-probability purposive sampling. Participants included both smoking and non-smoking residents of Rawalpindi and Islamabad. Young adults having any kind of cardiopulmonary, congenital, hereditary, or neuromuscular disorder or having any type of acute injury were excluded from this study. A self-structured questionnaire was used to collect data on demographics and general information regarding short-term complications and family awareness. Cardiovascular endurance was assessed by calculating VO_2max using the PACER test, a 20-metre shuttle run in which participants completed increasing numbers of laps (starting at 7 laps) according to their aerobic capacity.²⁵ Rating of perceived exertion (RPE) levels were also measured using the Modified Borg scale (MBS). During the PACER test, participants were asked how they would rate the levels of dyspnea (shortness of breath), with 1 as no exertion at all and 10 as maximum exertion levels. Perceived exertion was assessed using a modified Borg scale while performing a 20-metre run test. The Basic Smoking Assessment Questionnaire (BSAQ) was used to evaluate the trends of smoking among young adults. Both smokers and non-smokers participants from Rawalpindi and Islamabad were recruited using the non-probability Purposive sampling technique. Written informed consent was obtained from all the participants after a detailed explanation of the objectives, procedures and voluntary participation. A printed self-structured questionnaire was provided to participants along with the BSAQ. The BSAQ form was completed only by smokers, while the PACER test was performed by all the participants, including non-smokers. Participants performed the PACER test willingly, and no injuries or adverse events occurred during data collection.

Data were analyzed using IBM SPSS version 20. Descriptive statistics were presented as mean $\pm$ standard

deviation (SD) for continuous variables and as frequencies and percentages for categorical variables. The normality of distribution was assessed for VO₂max values and Modified Borg Scale scores in both smokers and non-smokers using the Kolmogorov–Smirnov test. A p-value of less than or equal to 0.05 was considered statistically significant.

RESULTS

A total of 140 young adults (aged 16–26 years) participated in this analytical cross-sectional study. The mean age of the participants was 20.93 ± 2.486 years. The age distribution is presented in Table 1. Of the 140 participants, 88 (65.7%) were males, and 52 (34.3%) were females. The study included young adults divided into two groups: smokers (n = 91) and non-smokers (n = 49).

For the assessment of smokers, the Basic Smoking Assessment Questionnaire (BSAQ) was used to assess the smoking habits of smokers and the history of smoking in their families. Among different modes, which included various types of questions regarding smoking, 35 (25%) young adults used cigarettes, and 22 (15.7%) used a combination of cigarettes (e.g., shisha and hookah).

Table 2 shows that among young smokers, 25.0% reported using tobacco products other than cigarettes 1–3 times per week, while 9.3% used these products 4–6 times/week. Additionally, 7.1% reported using these tobacco products more than six times per week.

Fig 2 shows that Halitosis (bad breath) was the most frequently reported short-term complication of smoking (8.6%), followed by cough, shortness of breath, and fatigue. Family awareness regarding participants' smoking

habits was low, with 68.6% of smokers reporting that their families were unaware.

Figure 3 illustrates the reasons reported by young adults for attempting smoking cessation. Overall, 50 (35.7%) participants had never attempted to quit smoking, whereas 41 (29.3%) reported at least one quit attempt. Among smokers, 21 participants reported inhaling smoke into the mouth only, while 63 reported inhaling it into the chest (lungs).

Table 3 demonstrates that the Cardiovascular endurance was assessed using the Progressive Aerobic Cardiovascular Endurance Run (PACER) test, and maximal oxygen uptake (VO₂max) was estimated accordingly. The Kolmogorov–Smirnov test indicated that the VO₂max data were not normally distributed; therefore, comparisons between smokers and non-smokers were performed using the Mann–Whitney U test. Smokers demonstrated significantly lower estimated VO₂max values than non-smokers ($Z = -8.085$, $p < 0.001$), indicating reduced cardiorespiratory fitness among smokers (Table 3). The majority of young smokers were classified as “poor” in terms of aerobic fitness (Figure 4).

Table 1: Demographic characteristics of the participants

Category	n	%
Age (Mean $\pm$ SD, years)	20.93 $\pm$ 2.49	
Gender		
Males	88	62.9
Females	52	37.1
Smoking Status		
Smokers	91	65.0
Non-smokers	49	35.0

Table 2: Frequencies of different types of smoking common among young adults

Type of Tobacco Use	Frequency (n)	Percentage (%)
Cigarettes only	35	38.5
Cigarette + Shisha + Hookah	22	24.2
Shisha + Hookah only	12	13.2
Cigarette + Cigar + Pipe + Shisha/Hookah + Chewing Tobacco + E-cigarette	9	9.9
Cigarette + Shisha + E-cigarette	8	8.8
Pipe only	1	1.1
Cigarette + Naswar	2	2.2
Cigarette + Shisha + Naswar	2	2.2
Total tobacco users	91	100.0

*Chewing tobacco and Naswar were classified as smokeless tobacco products.

*Percentages were calculated using the total number of tobacco users (n = 91) as the denominator.

*Percentages are calculated out of the total study sample (N = 140).

*The remaining 41 participants (29.2%) were non-smokers and therefore did not report any smoking mode.

Table 3: VO₂MAX of smokers and non-smokers

Variable	Smokers, Mean $\pm$ SD (n = 91)	Non-smokers, Mean $\pm$ SD (n = 49)	Z-value	p-value
VO ₂ max (mL·kg ⁻¹ ·min ⁻¹)	26.83 $\pm$ 5.22	38.41 $\pm$ 6.73	-8.085	<0.001

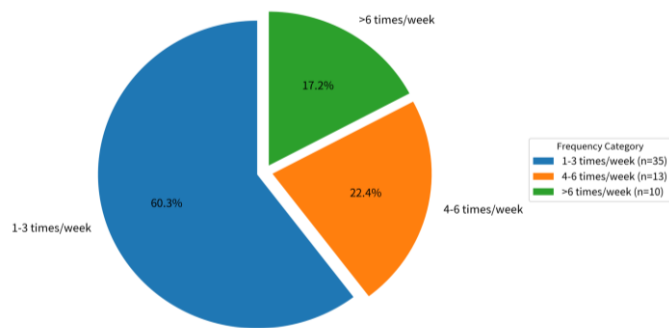


Figure 1: Frequency of using Smoking Modes other than cigarettes among young adults

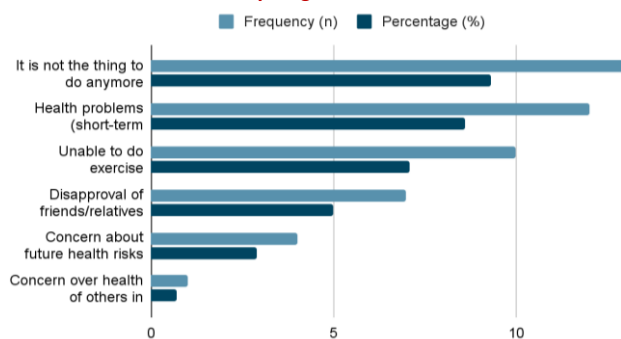


Figure 3: Reasons for quitting smoking

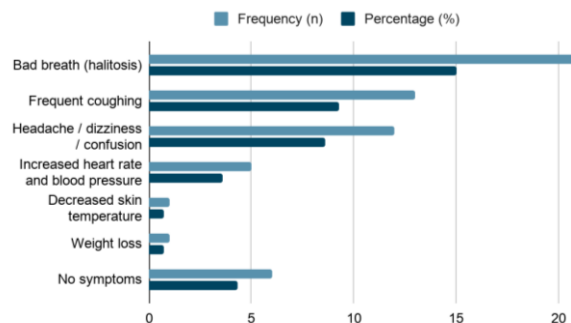


Figure 2: Frequency of short-term complications of smoking reported]

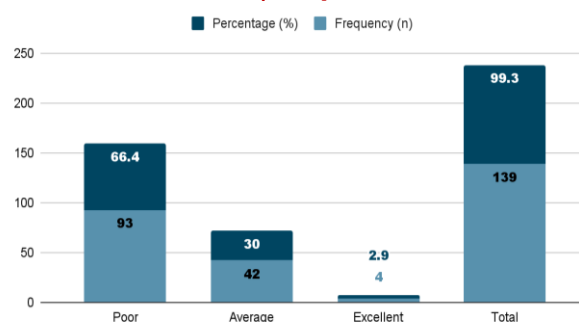


Figure 4: Frequencies of categories of the PACER Test

DISCUSSION

The current study explored cardiovascular endurance, smoking habits, and short-term health impacts among young adults (16–26 years old) in Rawalpindi and Islamabad. The results are clinically significant and consistent with emerging evidence that smoking's adverse consequences start early in life. According to earlier local and international reports, cigarettes were the most popular type of smoking.^{26, 27} similar to the findings of current study. Halitosis (15.0%) and frequent coughing (9.3%) were the most commonly reported short-term effects by participants of this study, followed by headache, lightheadedness, and disorientation. These findings support previous research indicating that the most common early complaint among young smokers, especially men, is halitosis.^{28, 29}

Smokers had considerably worse cardiovascular endurance ($VO_2\max$) than non-smokers ($p < 0.001$), but there was no significant difference in perceived exertion (Modified Borg Scale). This result is consistent with other earlier research showing that smoking reduces physical endurance and aerobic capacity even in young adults, regardless of subjective dyspnea.¹³ Mechanisms, including increased carbon monoxide levels, endothelial dysfunction, and early arterial stiffness documented in the literature, are consistent with the observed decrease in $VO_2\max$.^{30, 31} The current findings, along with recent reviews on water-pipe and electronic cigarette use, confirm that clinically significant

short-term complications and physiological impairments manifest within the first few years of smoking initiation³¹, although the majority of prior research has concentrated on long-term consequences. Additionally, the study emphasizes that electronic cigarettes weren't used as a cessation aid, supporting the idea that they are more frequently used as an alternate or supplementary supply of nicotine than as a tool for stopping.³² These findings have significant implications for public health. A critical but frequently overlooked window for smoking prevention and cessation strategies is young adulthood. Teaching adolescents and young adults about the immediate rather than just long-term negative effects of smoking, particularly decreased cardiovascular fitness and early problems, might help refute the common belief that harm only happens later in life.³³ Since sedentary smokers have a significantly higher risk of cardiovascular disease, encouraging regular physical exercise is equally important.

The study had several limitations, including a small sample size with a limited time span; data from a limited number of female smokers was obtained with great difficulty, and young adults were reluctant to perform the PACER test. It is recommended that further studies with a larger sample size should be conducted. It is advised to compare $VO_2\max$ values among male and female smokers. Additional work should be done on finding the mode of smoking more injurious to health.

CONCLUSIONS

The findings of the study demonstrate that cigarette smoking still remains the main form of tobacco use with concurrent use of other tobacco products also being common among young adults. Young smokers exhibited reduced cardiorespiratory fitness and experienced several short-term adverse effects, particularly halitosis even during the early use of smoking. These findings accentuate the need for early smoking prevention, cessation interventions, and health promotion strategies to minimize the immediate and long-term health consequences of tobacco use.

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Author Contributions

NM: Conceptualization, Methodology, Writing – Review & Editing, Writing – Discussion, Validation, Supervision, Project Administration.

SB: Investigation, Data Curation, Formal Analysis, Writing – Review & Editing.

SSB & IT: Investigation, Data Curation, Writing – Original Draft.

AT: Data Curation, Formal Analysis, Writing – Original Draft.

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Artificial Intelligence (AI) Use Disclosure

ChatGPT (OpenAI) was used during the preparation of this manuscript for language editing and improvement of manuscript clarity. The AI tool was not used to generate or manipulate original research data, perform statistical analysis, or independently develop scientific conclusions or interpretations. All AI-assisted text and suggestions were critically reviewed, edited, and approved by the authors. The authors remain fully responsible for the accuracy, originality, integrity, scientific content, data interpretation, and conclusions of the manuscript.

REFERENCES

- Jarvik ME. The role of nicotine in the smoking habit. In: Learning mechanisms in smoking. London: Routledge; 2017. p.155-90.
- Kumar M. Assessment of prevalence and pattern of tobacco use among adult population in Bidadi: a cross-sectional survey [dissertation]. Bengaluru: Rajiv Gandhi University of Health Sciences; 2018.
- Malik ZI, Iqbal S, Zafar S, Anees M, Shah HBU, Farooq U, et al. Life-style-related determinants of noncommunicable diseases (NCDs) across various age groups in Pakistan. *Int J Nutr Pharmacol Neurol Dis.* 2024;14(2):177-84.
- Gilani SI, Leon DA. Prevalence and sociodemographic determinants of tobacco use among adults in Pakistan: findings of a nationwide survey conducted in 2012. *Popul Health Metr.* 2013;11(1):16.
- Khoso AR, Bhutto S, Jintu G, Suyuhan W. The impact of smoking on public health and economic stability in Sindh Province, Pakistan. *Zakariya J Soc Sci.* 2024;3(2):15-25.
- World Health Organization. WHO study group on tobacco product regulation: report on the scientific basis of tobacco product regulation: fifth report of a WHO study group. Geneva: World Health Organization; 2015.
- Reitsma MB, Kendrick PJ, Ababneh E, Abbafati C, Abbasi-Kangevari M, Abdoli A, et al. Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990-2019: a systematic analysis from the Global Burden of Disease Study 2019. *Lancet.* 2021;397(10292):2337-60.
- Smith PH, Bessette AJ, Weinberger AH, Sheffer CE, McKee SA. Sex/gender differences in smoking cessation: a review. *Prev Med.* 2016;92:135-40.
- Nayab D, Nasir M, Memon JA, Khalid M, Hussain A. Estimating the price elasticity for cigarette and chewed tobacco in Pakistan: evidence from microlevel data. *Tob Control.* 2020;29(Suppl 5):s104-s110. doi:10.1136/tobaccocontrol-2019-055232.
- Ng M, Freeman MK, Fleming TD, Robinson M, Dwyer-Lindgren L, Thomson B, et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. *JAMA.* 2014;311(2):183-92. doi:10.1001/jama.2013.284692.
- Roy A, Rawal I, Jabbour S, Prabhakaran D. Tobacco and cardiovascular disease: a summary of evidence. In: Prabhakaran D, Anand S, Gaziano TA, Mbanya JC, Wu Y, Nugent R, editors. Disease control priorities. 3rd ed. Washington (DC): World Bank; 2017. p.57-77.
- Conklin DJ, Schick S, Blaha MJ, Carll A, DeFilippis A, Ganz P, et al. Cardiovascular injury induced by tobacco products: assessment of risk factors and biomarkers of harm. A Tobacco Centers of Regulatory Science compilation. *Am J Physiol Heart Circ Physiol.* 2019;316(4):H801-27. doi:10.1152/ajpheart.00591.2018.
- Shandu NM, Mathunjwa ML, Shaw I, Shaw BS. Exercise effects on health-related quality of life (HRQOL), muscular function, cardiorespiratory function, and body composition in smokers: a narrative review. *Int J Environ Res Public Health.* 2023;20(19):6813.
- Lee CL, Chang WD. The effects of cigarette smoking on aerobic and anaerobic capacity and heart rate variability among female university students. *Int J Womens Health.* 2013;5:667-79.
- Bilici MF, Çelik M. Impact of smoking on respiratory function in young women. *Int J Sport Exerc Train Sci.* 2025;11(4):349-55.
- Jackson KM, Jackson K. A developmental perspective on substance involvement from adolescence to emerging adulthood. In: Oxford handbook of adolescent substance abuse. 2019. p.37.
- Mujidin M, Rustam HK, Rizqyanto M. The role of self-esteem and self-control on smoking behavior among men: case study among college students. *Int J Public Health Sci.* 2024;13(1):463.
- Primack BA, Fertman CI, Rice KR, Adachi-Mejia AM, Fine MJ. Waterpipe and cigarette smoking among college athletes in the United States. *J Adolesc Health.* 2010;46(1):45-51.
- Bhatnagar A, Kekatpure AL. Postmenopausal osteoporosis: a literature review. *Cureus.* 2022;14(9):e29367. doi:10.7759/cureus.29367.
- Jia FS, Zhu LM, editors. The osteoporosis' symptom, pathogenesis and treatment. In: Medicine and biopharmaceutical: proceedings of the 2015 International Conference. Singapore: World Scientific; 2016.
- Suriñach J, Alvarez L, Coll R, Carmona J, Sanclemente C, Aguilar E, et al. Differences in cardiovascular mortality in smokers, past-smokers and non-smokers: findings from the FRENA registry. *Eur J Intern Med.* 2009;20(5):522-6.
- Méndez D, Alshanqeety O, Warner KE. The potential impact of smoking control policies on future global smoking trends. *Tob Control.* 2013;22(1):46-51.
- Jha P, MacLennan M, Chaloupka FJ, Yurekli A, Ramasundarahettige C, Palipudi K, et al. Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes. In: Gelband H, Jha P, Sankaranarayanan R, Horton S, editors. Cancer: disease control priorities.

- 3rd ed. Washington (DC): World Bank; 2015. Chapter 10. doi:10.1596/978-1-4648-0349-9_ch10.
24. DeCicca P, Kenkel D, Lovenheim MF. The economics of tobacco regulation: a comprehensive review. *J Econ Lit*. 2022;60(3):883-970.
 25. Mahar MT, Guerieri AM, Hanna MS, Kemble CD. Estimation of aerobic fitness from 20-m multistage shuttle run test performance. *Am J Prev Med*. 2011;41(4 Suppl 2):S117-23. doi:10.1016/j.amepre.2011.07.008.
 26. Castaldelli-Maia JM, Ventriglio A, Bhugra D. Tobacco smoking: from 'glamour' to 'stigma'. A comprehensive review. *Psychiatry Clin Neurosci*. 2016;70(1):24-33.
 27. Arisona A, Rahayuwati L, Prawesti A, Agustina HS. Smoking behavior and the use of cigarette types among university students. *J Educ Soc Res*. 2020;10(5):211-24.
 28. Kauss AR, Antunes M, Zanetti F, Hankins M, Hoeng J, Heremans A, et al. Influence of tobacco smoking on the development of halitosis. *Toxicol Rep*. 2022;9:316-22.
 29. Zanetti F, Zivkovic Semren T, Battey JN, Guy PA, Ivanov NV, van der Plas A, et al. A literature review and framework proposal for halitosis assessment in cigarette smokers and alternative nicotine-delivery products users. *Front Oral Health*. 2021;2:777442.
 30. Suadnyana IAA, Negara NLGAM, Wiraguna IW. The relationship between smoking dose with oxygen saturation and cardiorespiratory endurance on young adult men. *Phys Ther J Indones*. 2023;4(1):50-4.
 31. Imelsyi T, Widowati A, Anjanika Y. Literature review: VO2max in active smokers. *COMPETITOR*. 2025;17(3):2986-92.
 32. Notley C, Ward E, Dawkins L, Holland R. The unique contribution of e-cigarettes for tobacco harm reduction in supporting smoking relapse prevention. *Harm Reduct J*. 2018;15(1):31.
 33. Papathanasiou G, Mamali A, Papafloratos S, Zerva E. Effects of smoking on cardiovascular function: the role of nicotine and carbon monoxide. *Health Sci J*. 2014;8(2):274.