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IMPACT OF CIGARETTE SMOKING ON THE ANTHROPOMETRIC PARAMETERS AND ACADEMIC PERFORMANCE OF UNDERGRADUATE STUDENTS OF RIVERS STATE UNIVERSITY

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ABSTRACT: *Background to the study: Cigarette smoking is a known lifestyle factor that contributes to the pathogenesis of certain diseases. The aim of the present study was to examine the effect of cigarette smoking and anthropometric parameters on the academic performance of undergraduate students at Rivers State University. Methodology: This descriptive cross-sectional study involved 400 undergraduate students who were selected by the simple random sampling method. Data were collected using structured self-administered questionnaires to assess lifestyle behaviors and academic performance. Academic performance was assessed by self-reported CGPA and academic behaviors (class attendance, completion of assignments, number of failed courses in the last session, average studying hours and review of lecture materials before exams). Anthropometric parameters (weight, height, waist circumference and hip circumference) were measured using standard methods. Body mass index (BMI) and waist-to-hip ratio were calculated using their respective formulae. Results: The prevalence of cigarette smoking amongst undergraduate students was 8.3%. Smokers had a significantly lower mean BMI (20.88 ± 2.70 kg/m²) than non-smokers (23.02 ± 4.26 kg/m²) ($p < 0.05$). However, there was no significant difference between the cumulative grade point average (CGPA) of smokers and non-smokers ($p>0.05$), even though more smokers (18.2%) rated themselves below average than non-smokers (10.1%). Smokers exhibited poorer academic behaviors than non-smokers, such as a higher course failure rate (54.5% vs. 46.0%), fewer study hours, lower class attendance and less consistent assignment completion. However, more of the smokers (48.5%) could always review their lecture materials shortly before examinations as opposed to non-smokers (43.9%). The BMI of smokers was significantly reduced compared to non-smokers, but smoking status did not have any significant effect on the waist and hip circumferences as well as the waist-to-hip ratio (WHR) of respondents. Conclusion: These findings suggest that while cigarette smoking may not directly impair academic grades, it could negatively affect study habits and overall academic engagement. Therefore, targeted health education and behavioral interventions are recommended to discourage smoking and promote healthier lifestyles among university students.*

KEYWORDS: Cigarette smoking, anthropometric parameters, academic performance, undergraduate students.

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INTRODUCTION

Undergraduate life is often viewed as a shift from the closely supervised world of parents and teachers to the attainment of personal independence by young people. This period is often influenced by several factors ranging from social media exposure, peer pressure, and other personal and environmental factors. Lifestyle choices arising from these factors can shape a student's academic performance, well-being and overall university experience. Academic performance is a significant component of university education that reflects a student's knowledge of the course content and ability to meet academic standards. Academic grades are commonly measured using the Cumulative Grade Point Average (CGPA), which serves as a vital indicator of students' learning outcomes and a possible determinant of future opportunities. Study habits and other academic engagements are also essential tools in the overall assessment of academic performance.

Cigarette smoking is a known lifestyle factor that contributes to the pathogenesis of certain diseases and a leading cause of preventable death (1, 2). Cigarette smoking refers to the act of inhaling smoke produced by the burning of tobacco products. Globally, this represents the commonest form of tobacco consumption, accounting for about 92% of all tobacco product sales (3). Nicotine, the primary psychoactive compound in tobacco, stimulates neurotransmitter release, reinforcing dependence. Previous studies have shown that nicotine can restrict weight gain because it causes increased physical activity while reducing food consumption (4, 5). The nicotine in is also known to have a significant effect on attention and memory (6, 7, 8, 9).

The anthropometric parameters (waist circumference, hip circumference, weight and height) are commonly used to evaluate body composition and related health risks (9) and may also influence physical activity and academic performance. The duo of sedentary lifestyle and poor dietary habits has increased the prevalence of overweight and obesity amongst the adult population (10). The aim of the present study was to examine the effect of cigarette smoking and anthropometric parameters on the academic performance of undergraduate students at Rivers State University.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted at Rivers State University in July/August 2025. Ethical approval was obtained from the Faculty of Basic Medical Sciences Research Ethics Committee with approval number RSU/FBMS/REC/25/427. The study sample involved a total of 400 apparently healthy undergraduate students who were selected by the simple random sampling method. Eligible students recruited for the study included those who have spent at least one academic session in school and gave consent to participate. Data were collected using structured self-administered questionnaires to assess socio-demographic characteristics of respondents as well as lifestyle behaviors and academic performance. Academic performance and academic behaviors were assessed using self-reported CGPA, class attendance, completion of assignments, number of failed courses in the last session, average studying hours and review of lecture materials before exams. Anthropometric parameters (weight, height, waist circumference and hip circumference) were measured using standard methods. Body mass index (BMI) and waist-to-hip ratio were calculated using their respective formulae.

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Statistical analysis was done using SPSS software version 25.0. Results were presented in tables and graphs. Continuous variables were expressed as mean ± Standard deviation (SD) and discrete variables presented in percentages. Statistical difference was determined using analysis of variance (ANOVA) at $p < 0.05$.

RESULTS AND DISCUSSION

Table 1: Anthropometric indices of smokers and non-smokers

Parameters	Smokers	Non-smokers	*p-value*
Body weight (kg)	62.81 ± 10.13	65.71 ± 13.67	0.508
Waist circumference (cm)	77.92 ±7.79	77.73 ±11.68	0.927
Hip circumference (cm)	92.53 ±9.61	96.84 ±35.46	0.487
BMI (kg/m^2)	20.88 ±2.70	23.02 ±4.26*	0.005
Waist-to-hip ratio	0.85 ± 0.10	0.82 ± 0.12	0.941

* Significantly different compared to control.

Table 2: Gender differences in anthropometric parameters of respondents

Parameter	Male	Female	*p-value*
Weight (kg)	67.68 ± 14.55	64.12 ± 12.53	0.000*
Waist circumference (cm)	79.77 ± 10.96	76.50 ± 11.50	0.005*
Hip circumference (cm)	96.37 ± 53.08	96.55 ± 12.42	0.959
BMI (kg/m^2)	21.91 ± 3.75	23.42 ± 4.36	0.000*
Waist-to-hip ratio	0.85 ± 0.10	0.82 ± 0.12	0.941

Values are mean ± standard deviation. * Significant difference ($p < 0.05$)

Table 3: Academic behaviours of respondents

Parameter	Class attendance (%)		Completion of assignments (%)		Review of lecture materials before exams (%)	
	Smokers	Non-smokers	Smokers	Non-smokers	Smokers	Non-smokers
Rarely	3.0	2.7	15.2	7.4	0.0	3.0
Sometimes	21.2	14.2	30.3	25.1	33.3	26.2
Often	42.4	43.1	24.2	34.2	18.2	27.0
Always	33.3	40.1	30.3	33.0	48.5	43.9

Values are in percentages

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Fig. 1: Smoking status of respondents

Fig. 2: Monthly allowance (naira) of respondents

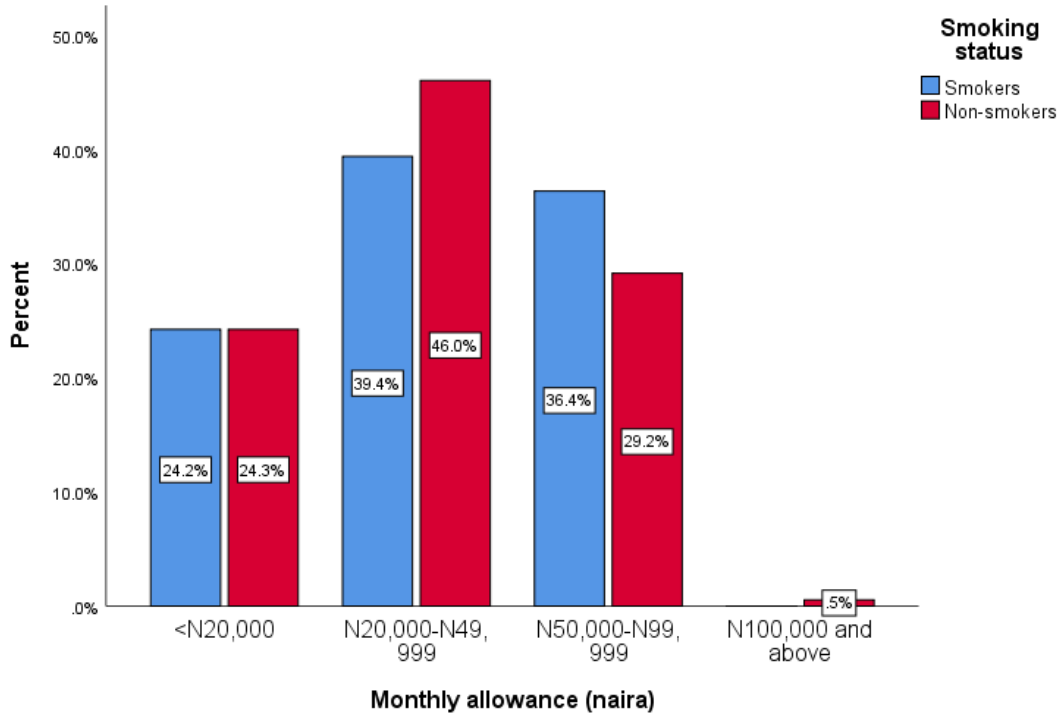

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Fig. 3: Distribution of self-reported CGPA of respondents

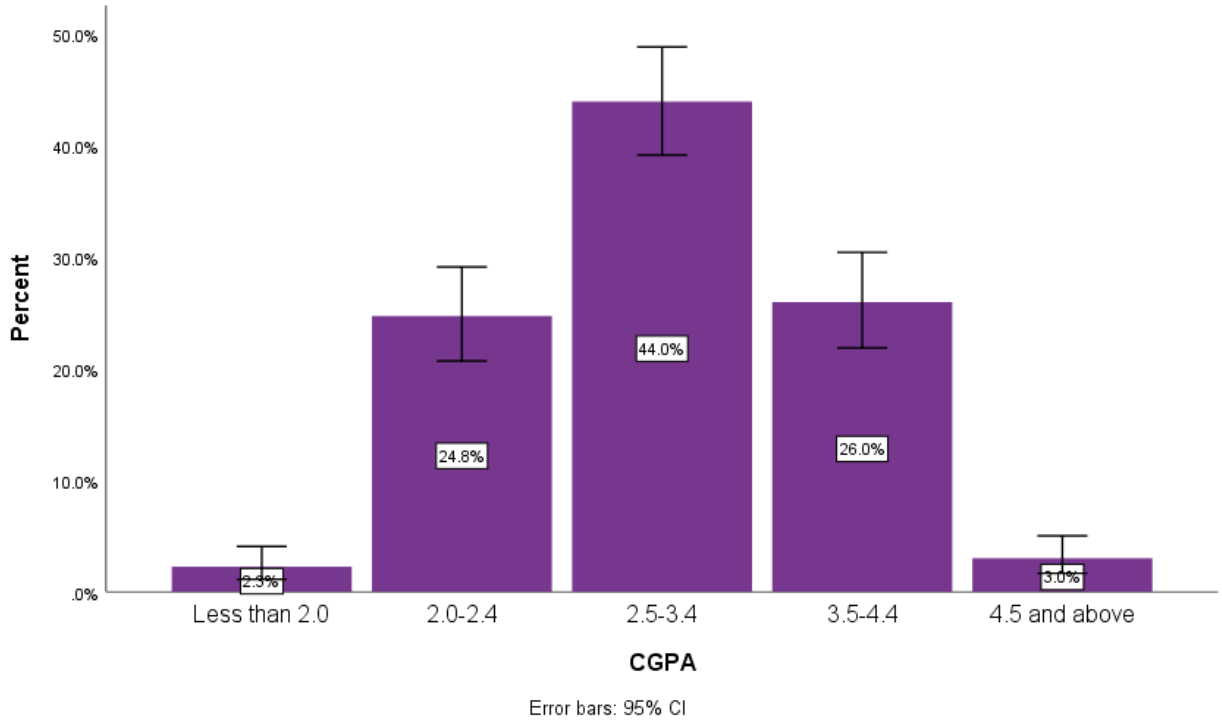

Fig.4: Comparing the distribution of CGPA of smokers and non-smokers

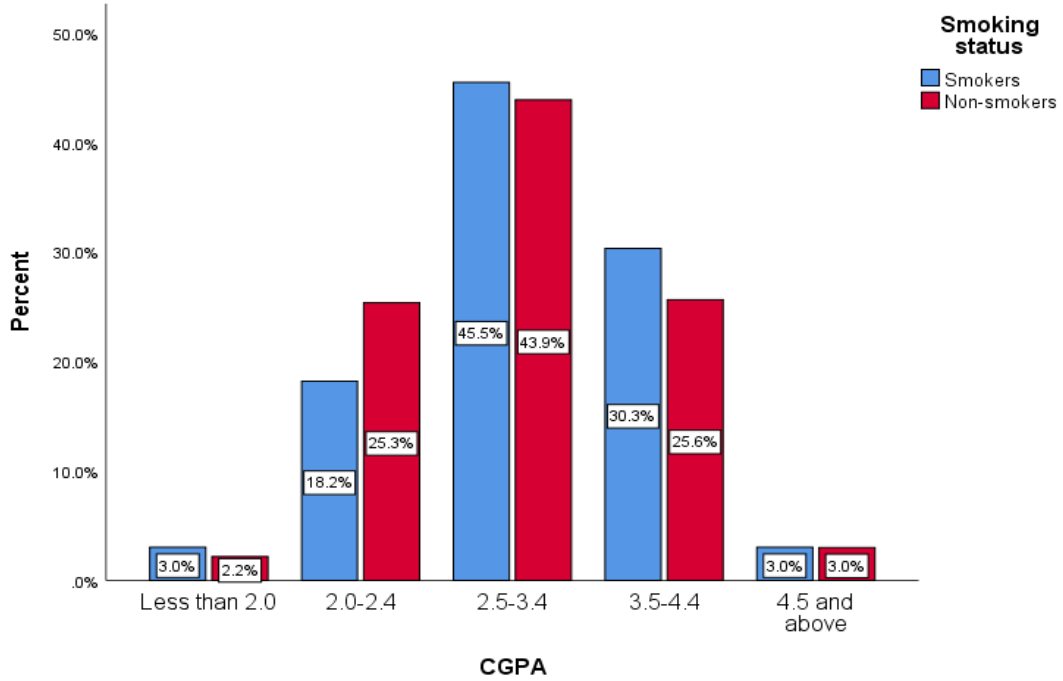

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Fig.5: Self-rated overall academic performance of smokers and non-smokers

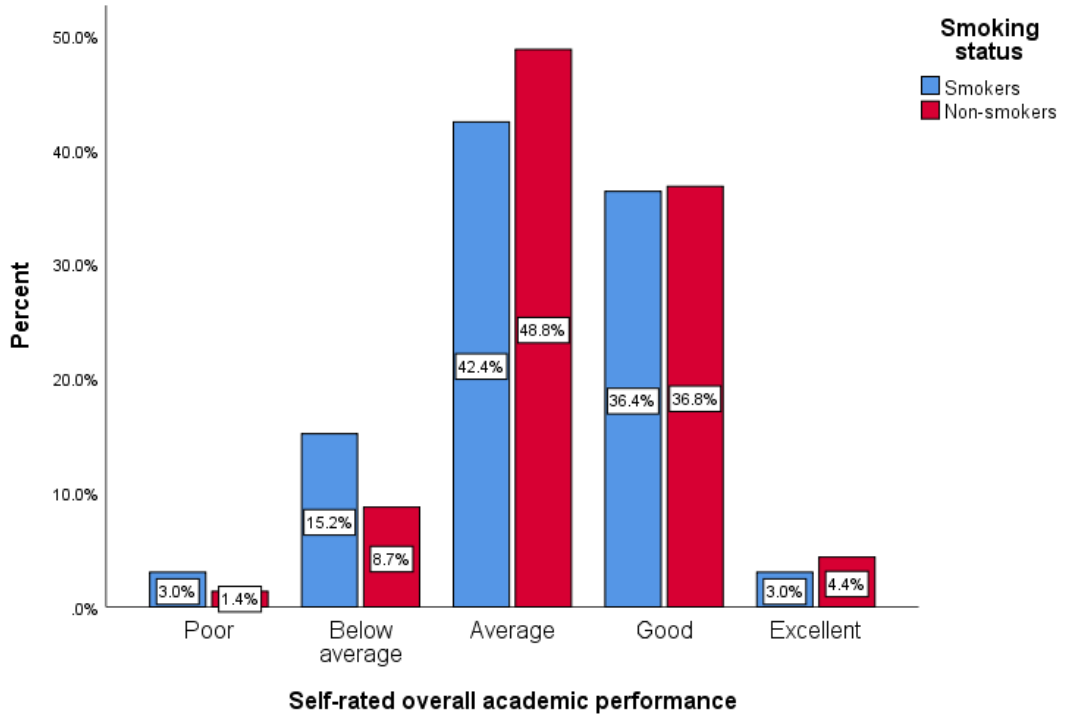

Fig. 6: Distribution of BMI status of respondents

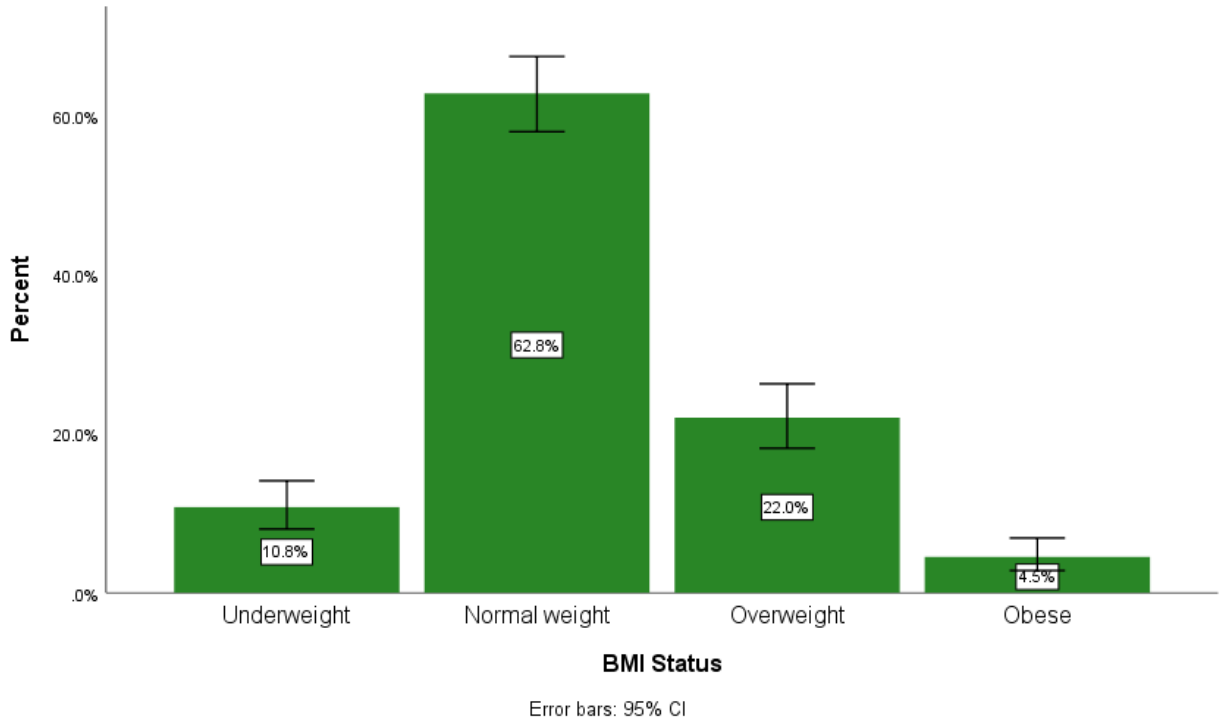

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Fig.7: Average daily study hours by smokers and non-smokers.

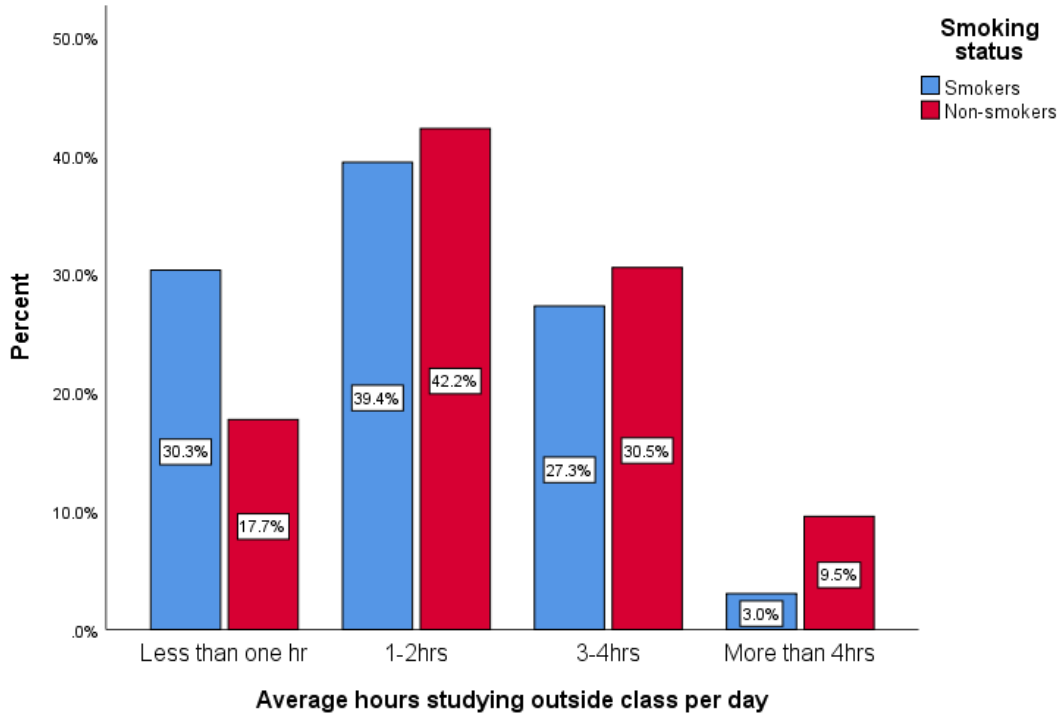
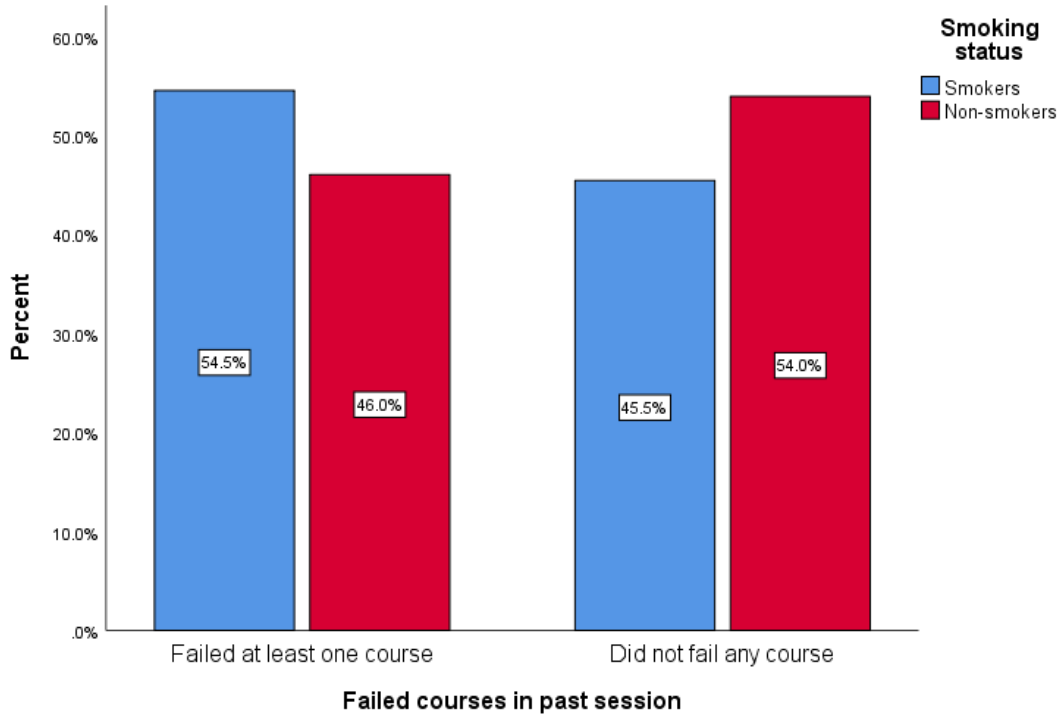


Fig. 8: Failed courses in the last academic session



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This study showed that the prevalence of cigarette smoking among undergraduate students of Rivers State University was 8.3%. This was relatively lower than the prevalence rates in some settings (11, 12), but within the range reported by Oyewole et al. (13) in a systematic study. In addition to the factors that increased the tendency for smoking identified in previous studies (14, 15), higher monthly financial allowance (≥N50,000) may also increase the likelihood of an undergraduate to engage in smoking. Our study showed that up to 36% of the smokers had a monthly financial allowance of N50,000 and above as against 29% of non-smokers. Given the addictive nature of cigarette smoking, continued engagement in the behavior necessitates regular financial expenditure.

Amongst the sample population, the distribution of body mass index (BMI) was skewed to the normal weight category, with only 4.5% of undergraduates being obese and up to 10.8% being underweight. A previous study at the University of Port Harcourt showed a slightly lower obesity prevalence of 3.3% (16). Female students exhibited a higher BMI than male students, whereas waist circumference was significantly greater among males. The BMI of smokers was significantly reduced compared to non-smokers, but smoking status did not have any significant effect on the waist and hip circumferences as well as the waist-to-hip ratio (WHR) of respondents. This is probably linked to the effects of nicotine on appetite and metabolism and possible lifestyle factors of smokers. The nicotine component of cigarettes has been reported to suppress appetite and also increase physical activity, thus restricting weight gain and lowering the BMI (4, 5).

The self-recorded CGPA distribution graph of students in Rivers State University was skewed towards the center in the 5-point grading system, with more students in the second class lower status. This is similar to that of students in other tertiary institutions (17). Although smoking was associated with a significantly lower mean BMI, it did not have a statistically significant effect on students' cumulative grade point average (CGPA). Concerning the self-rating of students, many of the smokers rated themselves below average. However, smokers demonstrated poorer academic-related behaviors compared to non-smokers; including higher rates of course failure, fewer study hours, reduced lecture attendance and delayed or non-completion of assignments. Academic-related behaviors directly predict a student's academic achievement and foster development of essential life skills, self-reliance and future career opportunities (18, 19, 20). Students who exhibit excellent study behaviors tend to perform better academically. Behaviours such as active participation may lead to closer engagement with material, improved critical thinking and better problem-solving skills, which are needed for the graduate to be employed in his chosen field of study without necessarily retraining him or her.

Conclusively, these findings suggest that while cigarette smoking may not directly impair academic grades, it could negatively affect study habits and overall academic engagement. Therefore, targeted health education and behavioral interventions are recommended to discourage smoking and promote healthier lifestyles among university students.

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