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Research Article

STUDENTS' SMOKING HABITS AND HEALTH IMPACT: A CASE STUDY OF JAGANNATH UNIVERSITY, DHAKA

Syeda Ishrat Najia*, Farhan Ahmed Rafid, and Md Tasim Ferdous

Department of Geography and Environment, Jagannath University, Dhaka-1100, Bangladesh

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ABSTRACT

The present research paper was an attempt to investigate smoking behavior and its impacts on the health of young adult students of Jagannath University in Dhaka. Therefore, the specific objectives were to explore the factors influencing smoking behaviors and its physical, psychological, and socio-economic consequences on the health of the students of Jagannath University. The study was exploratory in nature. Data were collected from a total of 388 respondents using a semi-structured questionnaire. The collected data were entered and coded using MS Excel and SPSS(v-25). The results were compiled and presented in MS Word and a GIS-based map (ArcGIS 10.8) was prepared to illustrate the study area. The study revealed important insights responsible for smoking habits and related health issues of the students. These findings would contribute to the understanding of smoking behavior of students as a serious public health concern among young adults' university students and subsequently guide some measures that might be implemented by the university authority and other relevant stakeholders to ensure smoking-free campus for all.

Keywords: *smoking habit, health impact, public health, university student, Jagannath University*

Introduction

Smoke is a complex suspension of airborne particles and gases generated through the processes of combustion or pyrolysis of a given substance (Kusma *et al.*, 2010). Both tobacco consumption and smoking rates are on rise in countries across in the South Asian countries (WHO, 1997). Another report of WHO (2002) revealed that tobacco smoking is a major public health concern due to its serious health risks as well as its prevalence round the world while approximately 250 million women and almost one billion men smoke daily. In developed countries, 35 percent of men smoke, and in developing countries, the smoking rate among men is 22 percent and 9 percent is women (Bennett *et al.*, 2017). Approximately four million people worldwide die annually to diseases associated with tobacco use (Ditre *et al.*, 2011). Sequentially, Bangladesh exhibits a high rate of tobacco consumption, with 21.2% of the population identified as daily smokers, 24.3% as smokeless tobacco users, and 36.3% as adult passive smokers (Azad *et al.*, 2011). Tobacco products, both smoking and non-smoking varieties, are used across all socio-economic groups. Moreover, the incidence of tobacco-related cases is escalating rapidly every day (Azad *et al.*, 2011). According to (Salaudeen et al., 2011) tobacco use among university students in

***Correspondence:** *ishratnajia@geography.jnu.ac.bd*

Bangladesh has emerged as an increasingly significant public health concern in recent years. Moreover, the consumption of smoked products among college students aged 17 to 25 is increasing at a rate of 4 percent (Azhar and Alsayed, 2012). This rising trend in tobacco use has large adverse effects on economy as well as public health in Bangladesh (Hussain *et al.,* 2020). (Haque *et al*., 2019) found, 22.1% of students in Bangladesh smoke due to anxiety, tension, and the desire to appear mature and often influenced by family environment.

Meijer *et al.* (1996) stated that smoking among university student has various socio-economic impacts on individuals, communities, and society at large. Smoking can contribute to economic disparities among students (Goldenberg *et al*., 2014), as those from low-income socio-economic backgrounds may have higher smoking rate, exacerbating economic inequality (Pomerleau *et.al.*, 1991). Smoking also causes public health costs, including expenses for treatment and anti-smoking campaigns which are often borne by society as a whole (Alomari *et al.*, 2006). The long-term economic impact of smoking habits among university students extends beyond their academic years including their earning potential, career paths, and retirement outcomes (Chaloupka and Warner, 2000). Moreover, non-smoking students may be exposed to secondhand smoke, impacting their health (Barnett *et al*., 2007). Smoking is not only a major risk factor for respiratory problems, including chronic obstructive pulmonary disease (COPD), cardiovascular disease, immune system damage, lung cancer, and long-term health issues but also responsible for mental stress and anxiety, depression, social withdrawal/social isolation, and financial stress. Therefore, university students who smoke may suffer from reduced lung function and increased susceptibility to respiratory infections (Ebirim *et al.*, 2014) and so on which may impacted the community, society and the nation as a whole. Therefore, the present study might be helpful to understand the context and consequences of the students of Jagannath University and the way forwards for the concern authorities.

Literature Review

Globally, tobacco use has reached pandemic levels. It was introduced to Europe by Christopher Columbus and other explorers (Barnett *et al.*, 2007). Despite opposition from medical, social, and religious sectors, smoking spread rapidly and is now highly prevalent worldwide (Klesges *et al*., 1989). The World Health Organization estimates that tobacco use currently causes over 3.5 million deaths annually, with projections indicating this figure may rise to 10 million by 2020–2030. Approximately one-third of the global adult population smokes; among them, 200 million are women, with a particularly high prevalence in European Union (EU) countries (Vakeflliu *et al.*, 2002). Globally, 47% of men and 12% of women are smokers (Doll, 1998).

Prevalence and Risk Factors of Tobacco Use Among Youth in Bangladesh

Research indicates that cigarette smokers, on average, die ten years earlier than non-smokers (Abolfotouh *et al*., 1998). Mayhew *et al*. (2000) report that exposure to smoking within the family significantly increases the likelihood of an individual adopting the habit. Similarly, Izumi *et al*. (2001) suggest that early initiation into smoking may lead to more severe health consequences for youth. Bangladesh ranks among the top countries globally for tobacco consumption (Salaudeen *et al.*, 2011). According to Azad *et al.* (2011), tobacco use among adolescents is a growing concern, with smoking rates among students aged 12 to 19 increasing by 4%. Tobacco use imposes significant health and economic burdens on Bangladesh, where more than 57,000 people die annually from tobacco-related illnesses (Humans *et al*., 2004). Furthermore, young adults aged 18

to 24 often lack adequate awareness of the long-term health effects of smoking (Naing *et al.*, 2004), which exacerbates the issue.

Health Impacts of Nicotine and Secondhand Smoke Exposure

Tobacco use is widely recognized as one of the leading causes of preventable deaths globally, largely due to nicotine addiction (Ebirim *et al.*, 2014). Naing *et al*. (2004) found that approximately half of the nicotine inhaled is absorbed into the bloodstream, reaching the brain within 10 seconds and circulating throughout the body within 20 seconds, depending on individual variables and the quantity consumed. Nicotine stimulates the adrenal glands, resulting in the release of epinephrine, which triggers various physiological changes (Klesges *et al*., 1989). These include temporary arterial constriction, increased blood pressure, elevated blood lipid levels, and a higher heart rate and cardiac output (Al Hosani *et al*., 2015).

Secondhand smoke also poses significant health risks. Non-smokers exposed to tobacco smoke are subjected to hazardous compounds that contribute to the development of severe conditions, including cardiovascular disease, breast cancer, and lung cancer (Biraghi and Tortorano, 2010). Children exposed to secondhand smoke are particularly vulnerable to asthma, lower respiratory tract infections, sudden infant death syndrome (SIDS), and chronic ear infections (Ellickson *et al.*, 2003). Among women, smoking is linked to a higher risk of miscarriage, low birth weight in infants, complex menstrual symptoms, osteoporosis, and even the transmission of HIV-1 from mother to child (Becoña *et al*., 2013).

Despite widespread awareness of its consequences, the underlying factors driving the continued use of cigarettes and other tobacco products remain insufficiently understood (Neidell, 2004). This is particularly concerning given the known financial burden tobacco use imposes on public health systems (Kanner *et al*., 1999). Smoking behaviors among university students have far-reaching socio-economic implications (Özcebe *et al*., 2014). For example, the allocation of personal or family resources to support smoking habits illustrates the financial strain experienced by these individuals (Izumi *et a*l., 2001). Such expenditures may divert funds from essential needs like education, nutrition, and basic living expenses.

Moreover, smoking-related health issues lead to increased healthcare spending, including costs for medications and medical consultations (Warner, 1997). Musmar (2012) confirmed a correlation between smoking and reduced productivity, which can negatively affect academic performance and limit future employment opportunities. In addition, Nargis *et al*. (2019) argue that the economic consequences of smoking extend beyond students themselves, potentially placing a financial burden on their families as well.

Objectives of the Study

Based on an analysis of the topic background, three objectives were formulated for this study. The first objective is to identify the factors responsible for developing smoking habits among the respondents. The second is to analyze the physical, psychological, and socio-economic impacts of smoking on the respondents, and the third is to evaluate the policy implications aimed at reducing smoking prevalence among the respondents.

Materials and Methods

The materials and methods for this study were drawn from both primary and secondary sources. In order to contextualize the background of the problem, published journal articles were reviewed, while empirical data were collected from primary sources. For achieving the stated objectives,

this study adopted a mixed-method approach, combining both quantitative and qualitative techniques, and employed a semi-structure questionnaire administered to students of Jagannath University. The questionnaire was initially developed in Bangla to ensure clarity and ease of understanding for the respondents. It was subsequently translated into English for analysis and academic reporting. The sample size was calculated using Cochran's (1997) formula, which is appropriate for situations where the overall population size is unknown:

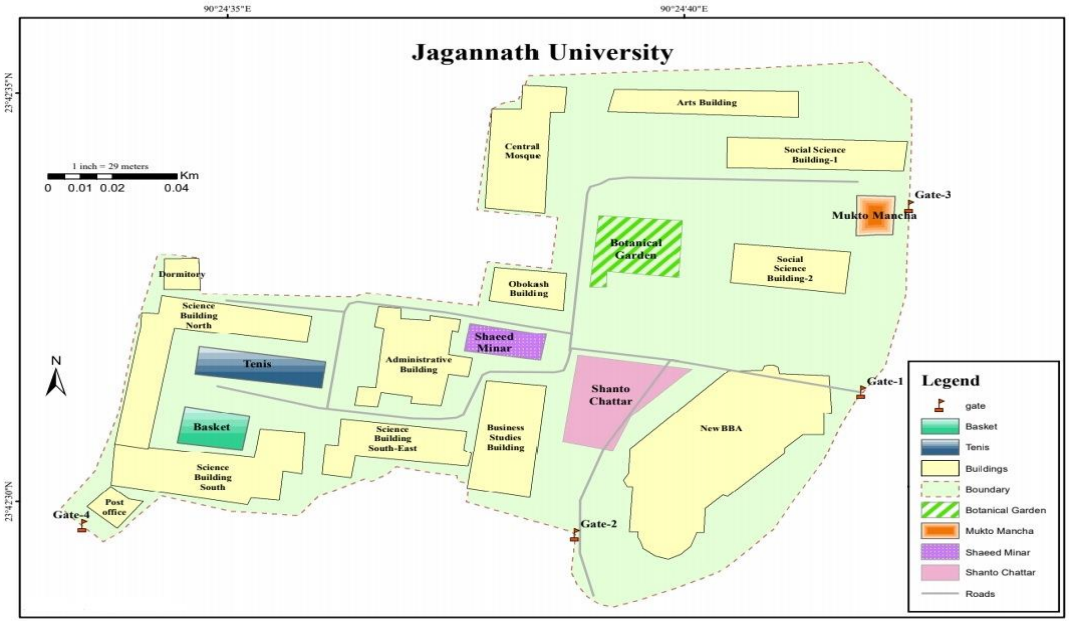
$$n = \frac{Z^2 \times P(1-P)}{(E^2)}$$

Using a 95% confidence level, a 5% margin of error, and an assumed population proportion of 0.5, the required sample size was determined to be 388 respondents. The respondents were purposively selected through the snowball sampling technique. The location points of the study area are given in for locating the point on the map of DMA. The geographic locations within the study area have been mapped using Arc GIS 10.8.

Profile of the Study Area

Jagannath University (JnU) is a public university situated in Sadarghat, Dhaka, the capital of Bangladesh. JnU's new campus, spanning approximately 200 acres, is under development in Keraniganj. Altogether, the university encompasses over 210 acres, including three campus and a residence hall for female students. Jagannath University comprises 38 departments across seven faculties and two Institutes with all departments operating under the semester system. As of October 2024, there had 960 faculty members and enrolled 19,088 students across Bachelor, Masters, M.Phil. and PhD programmes (www. jnu.ac.bd).

Map 1: Spatial Distribution of Jagannath University Campus: The Study Area



Source: Rafid, 2023

Results and Discussion

Key Characteristics of the Respondents

Table 1 depicts the basic information of the respondents. Data collected from the respondents reveal diverse socio-economic and demographic characteristics, along with distinctive patterns in spending and income-generating activities they engage. The largest majority almost 31% were aged 20 to 21 years, followed closely by 27% aged between 22 and 23 years. Third-year students represent the highest majority (30%) among the respondents, while the first-year students account for the smallest proportion (almost 10%). In terms of academic performance, only 6% (almost) have a CGPA above 3.75, with the majority, nearly 74% work as private tutors. Monthly incomes for most of the respondents (almost 48%) fall within the range of BDT 1000-5000 while a substantial 63% send 2001-4000 BDT to support their families. Family contributions typically range between 1000-2000 BDT per month for 38% respondents. Therefore, these data highlight the financial pressures faced by students and provide a basis for exploring how socioeconomic factors may influence smoking habits and their associated health impacts within this demographic.

Table 1: Basic Information of the Respondents

Parameters	Categories	Frequency	Percentage
Age	18-19	100	25.77
	20-21	120	30.93
	22-23	106	27.32
	Above 23+	62	15.98
Academic Year	1st Year	37	9.50
	2nd Year	82	21.10
	3rd Year	120	30.90
	4th Year	98	25.30
	Masters	51	13.10
Academic Result (CGPA)	Below 3.00	24	61.86
	3.01-3.25	98	25.26
	3.26-3.50	189	48.71
	3.51-3.75	55	14.18
	Above 3.75+	22	5.67
Students Engaged in Income-generating Activities	Tuition	286	73.71
	Business	23	5.93
	Part time Job	26	6.70
	Entrepreneur	22	5.67
	No work	31	7.99
Monthly Income (BDT)	1-5000	185	47.68
	5001-10000	129	33.25
	10001-15000	35	9.02

Parameters	Categories	Frequency	Percentage
	Above 15000	8	2.06
	No Income	31	7.99
Money Sent to Family (BDT)	1000-2000	98	25.26
	2001-4000	245	63.14
	4001-6000	41	10.57
	Above 6000	4	1.03
Money Received from Family (BDT)	000	149	38.40
	1-2000	94	24.22
	2001-4000	51	13.14
	4001-6000	45	11.61
	Above 6000	49	12.63

Source: Field Survey, 2023

Living and Transportation Condition of the Respondents

Table 2 shows diverse socio-economic trends in living arrangements, housing preferences and transportation choices. More than half of the respondents 56% live independently, away from their families, with significant concentration in old Dhaka, followed by Mirpur (almost 14%) and Rampura (almost 12%). These residential patterns confirm that the proximity to the university is a primary factor in housing choice, probably due to ease access. Almost 39% respondents use university bus as their mode of transportation followed by walking (31%) indicating a preference for budget-friendly commuting options, probably driven by financial constraints. Collectively, these factors suggest that students' housing, transportation and budgetary considerations shape their daily lifestyle choices, which may also influence behaviors e.g., smoking and other health-related practices.

Table 2: Living and Transportation Conditions

Parameters	Categories	Frequency	Percentage
Living Condition	With family	170	43.81
	Without family	218	56.19
Location of Living Place	Puran Dhaka	132	34.03
	Mirpur	55	14.18
	Dhanmondi	21	5.41
	Uttara	28	7.22
	Rampura	45	11.60
	Jatrabari	16	4.12
	Savar	23	5.93
	Gazipur	13	3.35
	Narayanganj	19	4.90
	Mohammadpur	16	4.12
	Khilgaon	20	5.16

Types of Vehicles Used	University bus	150	38.60
	Local bus	25	6.40
	Rickshaw	44	11.30
	Motor cycle	22	5.70
	Bicycle	26	6.70
	On foot	121	31.20

Source: Field Survey, 2023

Smoking Behavior and Factors Influencing Smoking

Data on smoking behaviors of the respondents' highlights trends in initiation, motivations and financial impacts (Table 3). More than half of the respondents (almost 54%) started smoking between 2015 and 2017, most commonly at ages 16 to 17 (46%). Family influence appears significant, with 83% respondents reporting a family member who smokes, however, 82% (almost) reported that they started on their own. Within families, siblings, especially brothers, are the most common influencer for almost 12% respondents, while friends are the main external factor for another 12% respondents. The most common reasons for smoking include stress reduce (48%), curiosity (16%), and influence of family (16% nearly).

In terms of daily cigarette consumption, majority of the respondents almost 35% smoke 5–6 cigarettes daily and more than half of the respondents (52%) spend over 60 BDT per day on cigarettes, reflecting a notable financial impact. Additionally, the large majority 85% reported that they do not use other drugs, however, a minority uses substances like marijuana/ganja (5%) and liquid nicotine (nearly 3%). This data indicates respondents are primarily driven to smoke by stress and social influences, with economic implications arising from the habit.

Table 3: Causes of Smoking, Smoking Volume and Economic Impact

Parameters	Categories	Frequency	Percentage
Time of First Smoking Experience	2015-2017	208	53.61
	2018-2020	126	30.93
	2021-2023	54	15.64
Age at Smoking Initiation	14-15	102	26.29
	16-17	180	46.39
	18-19	62	15.98
	20-Above	44	11.34
Presence of Smokers in the Family	Yes	322	83.00
	No	62	17.00
Self-Initiation of Smoking	Yes	317	81.70
	No	71	18.50
Smoking Influencer within the Family	Brother	48	12.40
	Uncle	23	5.90
	N/A	317	81.70

Peer and Social Influence	Friend	48	12.37
	Neighbor	14	3.60
	Social Media	13	3.45
	N/A	313	80.58
Drivers of Smoking Behavior	Curiosity	63	16.23
	Peer acceptance	37	9.54
	Influence of family	61	15.72
	Mass media	25	3.86
	Loss of a loved one	15	3.87
	Stress reduce	187	48.20
Daily Cigarette Consumption	1-2	65	16.75
	3-4	75	19.33
	5-6	134	34.64
	Above 6+	110	28.35
Daily Expenditure on Cigarettes (BDT)	10-20	43	11.08
	21-40	67	17.27
	41-60	75	19.33
	Above 60+	203	52.32
Experience with Other Drugs Use	Yes	58	14.95
	No	330	85.05
Types of Other Drugs Used	Tobacco leaves	12	3.09
	Liquid nicotine	10	2.57
	Marijuana/Ganja	20	5.16
	Electronic cigarette	12	3.09
	Betel leaf with tobacco	4	1.03
	N/A	330	85.05

Source: Field Survey, 2023

Effects on Physical and Psychological Well-being

It is found in the Table 4 that smoking has serious adverse effects on both physical and mental health of the respondents. More than half of the respondents (55%) reported experiencing various physical health problems, while almost 45% indicated no such difficulties. Among those affected, the most common problems were persistent dry cough (almost 18%), unintended weight loss (14%), and chest inflammation 9% (almost). In addition, 19% (almost) of the respondents reported breathing difficulties, and 23% experienced disrupted sleep patterns. However, only a small proportion sought treatment, about 5% reported using medicine and another 5% (about) consulted physician to mitigate the effects of smoking. In terms of perceived psychological effects, nearly 49% of respondents stated that smoking reduced their stress, 39% reported feeling comfortable or relaxed, while around 4% experienced sadness. A significant proportion of respondents (60%) acknowledged the negative impact of smoking on health and identified physical, mental, and economic problems associated with it.

Table 4: Physical and Psychological Effects of the Respondents

Parameters	Categories	Frequency	Percentage
Adverse Physical Effects of Smoking	Chest inflammation	34	8.76
	Insomnia	23	5.93
	Unintended weight loss	55	14.18
	Persistent dry cough	68	17.53
	Lung-related problems	6	1.55
	Asthma	28	7.21
	No problems	174	44.85
Difficulty of Breathing	Yes	72	18.55
	No	316	81.45
Duration of Breathing Difficulties (in Years)	0.5	20	5.20
	1	10	2.60
	2	22	5.70
	3	16	4.10
	N/A	316	82.40
Disrupted Sleep Patterns	Yes	90	23.20
	No	298	76.80
Consultation with a Physician	Yes	18	4.60
	No	370	95.40
Medication for Symptom Relief	Yes	19	4.90
	No	369	95.10
Perceived Effects of Smoking	Feeling	153	39.43
	comfortable/relaxed	189	48.71
	Reduced stress	21	5.41
	Feelings of guilt	10	2.58
	Experience of anxiety	15	3.87
	Feelings of sadness		
Adverse Effects on Physical and Mental Health	Yes	234	60.31
	No	154	39.69
Types of Negative Effects	Physical problems	45	11.60
	Mental problems	106	27.32
	Economic problems	83	21.39
	N/A	154	39.69

Source: Field Survey, 2023

Challenges and Way Forwards for Smoking Cessation

Table 5 shows that smoking cessation among the respondents reflects both a strong interest in quitting and significant challenges in doing so. A large majority (90%) expressed a desire to quit smoking, primarily motivated by economic concerns (37%) and health issues (17%). However, only 47% had previously attempted to quit, and just 31% reported receiving external encouragement, mostly from family members (17%). Participation in awareness programs was low (6%), and nearly 83% indicated that no university-led initiatives were available, suggesting that institutional support remains limited despite students' willingness to quit. University actions against smoking were reported to include counseling services (56%), awareness programs (3%), and emotional or psychological support (2%). The main barriers to quitting included depression (39%) and nicotine addiction (27%), highlighting the mental health challenges associated with cessation. While relatively few respondents considered medical or institutional support beneficial, many identified adopting personal strategies to quit nicotine (35%) and participation in awareness campaigns or educational programs (39%) as effective support mechanisms.

Table 5: Smoking cessation among the respondents

Parameters	Categories	Frequency	Percentage
Attempt to quit smoking	Interested	350	90.21
	Not interested	38	9.79
Reasons behind the desire to quit smoking	Concern about health	67	17.27
	Economic/financial reasons	145	37.37
	Pressure from family and friends	49	12.62
	Personal reasons	89	22.94
	N/A	38	9.79
Previous attempts to quit smoking	Yes	184	47.42
	No	204	52.58
External encouragement to stop smoking	Yes	122	31.44
	No	266	68.56
Encouragers of smoking cessation	Family members	65	16.75
	Neighbors	13	3.35
	Relatives	30	7.73
	Institutions	14	3.61
	N/A	266	68.56
University actions to promote smoking cessation	Yes	66	17.01
	No	322	82.99
Types of university actions against smoking	Counseling services	22	5.67
	Awareness programs/Campaigns	12	3.09
	Emotional and psychological support	6	1.55
	Meetings and seminars	26	6.70
	N/A	322	82.99

Participation in smoking awareness programs	Yes	24	6.19
	No	364	93.81
Barriers to smoking cessation	Nicotine addiction/dependence	104	26.80
	Anxiety/excessive worry	66	17.01
	Depression	150	38.66
	Lack of social support	23	5.93
	Lack of effective quitting strategies	45	11.60
Suggested support mechanisms by the respondents for smoking cessation	Adopting strategies to quit nicotine	134	34.53
	Awareness campaigns and education program	150	38.66
	Medical advice from doctors	70	18.04
	Support from drug treatment and rehabilitation centers	20	5.16
	Reducing the availability and accessibility of tobacco products	34	8.76

Source: Field Survey, 2023

Conclusion and Recommendation

This study highlights the complex interplay of social, psychological, and economic factors influencing smoking habits among students at Jagannath University, Dhaka. Key findings reveal that stress relief (48%) and curiosity (16%) are the primary motivators for smoking, while financial strain (52% spending over 60 BDT daily on cigarettes) and health concerns (60% acknowledging negative health effects) pose significant challenges. Despite a strong desire to quit (90.21% of respondents), obstacles such as nicotine addiction (about 27%), depression (about 39%), and lack of institutional support (83% reporting no university-led initiatives) hinder cessation efforts.

The study underscores the urgent need for targeted interventions addressing both the root causes of smoking and its adverse health and economic impacts. Given the high prevalence of smoking among young adults and its long-term consequences, a multi-faceted approach involving policy enforcement, awareness campaigns, and psychological support is essential to foster a smoke-free campus environment.

To effectively reduce smoking prevalence among university students, the following measures are recommended:

Enhanced Awareness and Education Programs

- Conduct regular anti-smoking workshops, seminars, and health campaigns to educate students on the risks of tobacco use.

- Integrate smoking cessation modules into university curricula, emphasizing the physical, mental, and financial consequences of smoking.

University Policy and Enforcement

- Strengthen enforcement of smoke-free campus policies, including designated smoking zones (if necessary) and penalties for violations.
- Collaborate with local authorities to restrict tobacco sales near educational institutions.

Psychological and Peer Support Systems

- Establish counseling services and peer support groups to help students cope with stress, depression, and nicotine addiction.
- Train faculty and student leaders to identify and assist individuals struggling with smoking cessation.

Accessible Cessation Programs

- Provide free or subsidized nicotine replacement therapies (e.g., patches, gum) and counseling through campus health centers.
- Partner with healthcare providers to offer medical support for students attempting to quit.

Economic Incentives and Alternatives

- Introduce financial literacy programs to help students recognize the long-term economic burden of smoking.
- Promote healthy stress-relief alternatives such as sports, recreational activities, and mindfulness programs.

Research and Continuous Monitoring

- Conduct follow-up studies to assess the effectiveness of anti-smoking initiatives and adapt strategies accordingly.
- Monitor trends in student smoking behavior to identify emerging challenges and opportunities for intervention.
- By implementing these measures, Jagannath University can play a pivotal role in reducing tobacco use among students, improving public health outcomes, and fostering a healthier academic environment.

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