

Snuff use Association with GERD In Pashtun Region

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Abstract

Background: Snuff (Naswar), a form of smokeless tobacco widely used in Pashtun communities, is often perceived as less harmful than smoking despite its associated health risks. Evidence on its relationship with gastroesophageal reflux disease (GERD) remains limited. This study assessed the prevalence of Naswar use and its association with GERD-related symptoms among residents of Swat, Nangarhar, and nearby regions.

Methods: A descriptive cross-sectional study was conducted among 276 participants using a structured questionnaire. Information on demographics, Naswar use, lifestyle habits, medical history, and GERD-related symptoms was collected and analyzed using descriptive statistics.

Results: Of the participants, 98.2% were Naswar users, with most initiating use between 6–20 years of age. Long-term use (>41 years) was reported by 36.2%. Daily heartburn occurred in 35.5% of participants, while 23.9% experienced regurgitation 2–3 times weekly. GERD was the most frequently reported diagnosis (32.6%), alongside chronic gastritis, peptic ulcer disease, hypertension, and diabetes. Regular proton pump inhibitor use (43.8%) and common lifestyle factors such as smoking, tea/coffee consumption, and spicy food intake suggested a substantial burden of acid-related disorders.

Conclusion: Naswar use and GERD-related symptoms were highly prevalent in the study population. These findings highlight the need for public health education, early screening, and tobacco cessation programs to reduce gastrointestinal and related health complications in Pashtun communities.

Keywords: GERD, Snuff, Diseases, Region

Introduction

Snuff use is very common among pashtun people living in pashtun region. As there are many addictive intoxications exist in pashtun region approximately each have been discovered but snuff is still under shadows of ignorance and the ratio of snuff use is raising day by day and the cases of GERD is also seen among pashtun people widely.

There are negligible studies exist on GERD relations with addictive intoxications but some how studies have been done on Snuff effects on nasal mucosa it is needed to be mention that Pashtun region requires much more Research studies on these issues as our present study have discovered a lot of Consequences of Snuff use not only association with GERD but other systemic pathologies which can badly effects daily life activities and it can act as trigger for Mental and Social Problems.

Beyond doubt, the preventive Measures of Snuff can Protect People of Pashtun region from GERD as well as other Health issues mentioned above .

It is also paramount of importance that effective usage of our Study on snuff by local heath providing institutions can bring positive changes in Social wellbeing of people and it can help in control of GERD cases its signs and symptoms and its consequences on overall Health condition.

Literature Review

According to Aro, P., Ronkainen, J., Storskrubb, T., Vieth, M., Engstrand, L., Johansson, S. E., ... & Agréus, L. (2010). study found that snus use does not directly linked with stomach symptoms or peptic ulcer disease. But snus users had some small changes in the lower part of the esophagus. These results show that snus may affect the esophagus, even if people do not feel any symptoms. The study did not find strong link between snus use and *Helicobacter pylori* infection.

Based on Lie, T. M., Bomme, M., Hveem, K., Hansen, J. M., & Ness-Jensen, E. (2017). study found that people who using snus daily had a low risk of GERS (Gastroesophageal Reflux Symptoms) compared to people who never used snus. , people who had stopped using snus or used small amounts had very high risk of GERS. Some groups of snus users, especially young users and those who started snus to avoid smoking, showed a higher risk of GERS. The results explain that snus using may have link with GERS.

According to Vaishnav, B., Valiyil, A. S., Anand, S., Ghosal, A., Pailla, R., & Nair, G. R. (2025) study found that for long time use of smokeless tobacco (SLT) can cause the upper gastrointestinal tract (UGI). lots of users believe that SLT is safe and cheaper than smoking, but it can cause hard health problems. Some common problems found in SLT users included GERD, peptic ulcers, *H. pylori* infection, and changes in body tissues. The People who have long-term stomach problems should take proper medical evaluation for ahead time detection.

Although Ness-Jensen, E., & Lagergren, J. (2017). Tobacco smoking and alcohol using reduces the LOS resting pressure. Beside, tobacco smoking reduces salivary bicarbonate secretion and increasing acid clearance time in the oesophagus. Using Alcohol has direct noxious effects on the oesophageal mucosa, predisposing for acidic injury. Smoking tobacco can increase risk of developing GORD, when alcohol may only cause reflux symptoms in people who already have GERD.

According to Miluna, S., Melderis, R., Briuka, L., Skadins, I., Broks, R., Kroica, J., & Rostoka, D. (2022).E-cigarettes used more by women, but snus was used more by men. The Snus users, lots men, had white and hard changes in the mouth where snus was placed. These changes in the mouth had link with higher IL-6 levels in saliva. Snus users also had high levels of some inflammation markers in their saliva. Saliva can help to find soon mouth problems.

Base on Chen, G., & Haber, P. S. (2020).study Alcohol can hurt more parts of the digestive system, including the liver and pancreas. Beside Smoking can cause acid reflux, stomach ulcers, cancers, and Crohn's disease. Opioid medicines can slow digestion and may cause of hard bowel problems. More cannabis using can help nausea but sometime also cause for repeated vomiting. Alcohol, tobacco, and drugs can all cause serious stomach and digestive health problems.

According to Zein, A. F. M. Z., Nauphar, D., Khasanah, U., Pratamawati, T. M., Brajawikalpa, R. S. Ayuningtyas, E., & Hamzah, A. (2021) About one year of e-cigarette using was link to a low number of GER cases. In this time No clear link has found between e-cigarette use patterns and GER. Using e-cigarettes mostly seem that not increase GER. The study included only a small number of people. More research is needed to better understand the effect of e-cigarettes on GER.

Based on Koutlas, N. T., Eluri, S., Rusin, S., Perjar, I., Hollyfield, J., Woosley, J. T., ... & Dellon, E. S. (2018). People with EoE were less likely to smoke or use NSAID medicines with the comparign to others. that who not using the cigarettes Alcohol use was higher in EoE patients, but it wasn't a direct factor for the risk. Smoking, alcohol, and NSAIDs did not change the severity of EoE. NSAID use may help improve treatment results. More studies are needed to understand these effects better.

According to Kallischnigg, G., Weitkunat, R., & Lee, P. N. (2008). Systematic review of the relation between smokeless tobacco and non-neoplastic oral diseases in Europe and the United States. *BMC Oral Health*, 8(1), 13. Smokeless tobacco (ST) has less health risks than smoking, but it can still cause problems. ST use is strongly linked with mouth tissue changes, especially where the product is placed. These mouth

changes can improve and disappear after stopping ST use. Snuff may cause gum recession, but the evidence is not fully certain. More research is needed to understand other effects of ST on oral health.

According to Lagergren, J., Bergström, R., Lindgren, A., & Nyrén, O. (2000) Smoking and alcohol know risk factors for some types of esophageal cancer. This study look at the effects of smoking, snuff, and alcohol on different cancers of the esophagus. Smoking was strongly linked with esophageal squamous-cell cancer and stomach cardia cancer. Alcohol increased the risk of esophageal squamous-cell cancer, especially with smoking. Snuff use was not clearly linked with esophageal cancers. Smoking and alcohol did not explain the increase in esophageal adenocarcinoma cases.

Based on Zaman, H., Zeb, J., Farooq, M. U., Shah, M. T., Qayyum, S. W., & Abbasi, M. A. (2016). SOCIO-DEMOGRAPHIC CHARACTERISTICS OF GASTROESOPHAGEAL REFLUX DISEASE PATIENTS. *Pakistan Journal of Physiology*, 12(3), 40-43. The main factors linked with GERD were female, low income, less education, overweight, and lack of exercise. Alcohol, smoking, NSAID medicines, pregnancy, and unhealthy foods also increased GERD symptoms. People with a family history of GERD and a sedentary lifestyle were more affected. GERD was more common in rural areas than in cities. Other foods linked with symptoms included soft drinks, sweets, rice, coffee, tea, chips, and meat products.

According to Kubo, A., Levin, T. R., Block, G., Rumore, G., Quesenberry Jr, C. P., Buffler, P., & Corley, D. A. (2009). Cigarette smoking and the risk of Barrett's esophagus. *Cancer Causes & Control*, 20(3), 303-311. People who smoked did not have a clear higher risk of Barrett's esophagus (BE). The amount of smoking and quitting smoking were also not strongly linked to BE. However, some groups had a higher risk, such as obese people and people with a large waist size. Smokers without GERD symptoms also showed a higher risk.

Based on Islami, F., Nasser-Moghaddam, S., Pourshams, A., Poustchi, H., Semnani, S., Kamangar, F., ... & Malekzadeh, R. (2014). GERD is common in Golestan Province. This study found that some lifestyle factors may be linked to GERD. Hookah and opium use were associated with a higher chance of GERD. Nass use showed a possible lower risk, but more research is needed. These factors may not directly cause GERD, and the exact reasons are still unclear. Healthy lifestyle changes may help reduce GERD symptoms. More studies are needed to better understand these relationships.

As stated Westra, W. M., Lutzke, L. S., Mostafavi, N. S., Roes, A. L., Calpe, S., Wang, K. K., & Krishnadath, K. K. (2018, September). by This study found that smoking is related to Barrett's esophagus (BE). People who smoke may have a higher chance of developing BE. The study also found that smokeless tobacco and chewing tobacco may increase the risk of BE. These products might have a stronger connection with BE than regular smoking. However, more research is needed to confirm these findings. Scientists also want to know if these products can lead to BE-related cancer. Understanding these risks can help people make better health choices.

According to Kubo, A., Levin, T. R., Block, G., Rumore, G. J., Quesenberry Jr, C. P., Buffler, P., & Corley, D. A. (2009) People with TMD may have some habits and health problems that are linked with sleep bruxism (SB). TMD patients who grind their teeth during sleep may also report more pain and headaches. However, this connection is not fully clear yet. More research with a larger number of people is needed. Understanding this link may help doctors provide better care for patients with TMD.

As stated by Cook, M. B., Corley, D. A., Murray, L. J., Liao, L. M., Kamangar, F., Ye, W., ... & Vaughan, T. L. (2014) Heartburn and acid reflux may increase the risk of esophageal cancer (EA). People who had these problems for a long time had a higher risk. Having heartburn more often also increased the chance of cancer. The link was not as strong for another type of cancer (EGJA). This result was similar among different groups of people. More research is needed to understand this relationship better.

Methods

A descriptive cross-sectional study was conducted to evaluate the association between snuff (Naswar) use and Gastroesophageal Reflux Disease (GERD) among individuals living in Pashtun regions, particularly Swat, Nangarhar, and nearby areas. A total of 276 participants were included in the study through voluntary participation after obtaining informed consent. Data were collected using a structured questionnaire designed after reviewing relevant literature on smokeless tobacco and GERD. The questionnaire included sections on sociodemographic characteristics such as age, gender, marital status, occupation, residence, and educational level. Information regarding Naswar use was also collected, including age of initiation, frequency of use, duration of use, method of placement, swallowing of saliva after use, and attempts to quit.

In addition, participants were asked about GERD-related symptoms, including heartburn, acid regurgitation, nausea or vomiting, bloating after meals, difficulty sleeping due to heartburn, and use of anti-reflux medications such as proton pump inhibitors (PPIs). Lifestyle factors including smoking status, tea or coffee consumption, spicy or fatty food intake, and medical history were also recorded. All collected data were organized and analyzed using descriptive statistical methods. Frequencies and percentages were calculated for categorical variables, and the findings were presented in tables to describe the prevalence of Naswar use, GERD symptoms, associated lifestyle factors, and diagnosed medical conditions among the study population.

Objectives

1. To determine the prevalence of Naswar use.
2. To assess the prevalence of GERD symptoms among participants.
3. To evaluate the association between Naswar use and GERD.
4. To identify lifestyle factors associated with GERD.

Inclusion Criteria

- 1 Adults (≥ 18 years).
- 2 Residents of the Pashtun region.
- 3 Participants who provided informed consent.
- 4 Individuals who completed the questionnaire.

Exclusion Criteria

- Individuals under 18 years.
- Participants who did not provide consent.
- Incomplete questionnaires.
- Individuals unable to complete the questionnaire.

Results

A total of 276 participants were included in the study. The majority of respondents were males (98.9%), and most participants belonged to the 20–30 years age group (41.7%). Most respondents were residents of Swat (71.7%), followed by Nangarhar (26.8%). Regarding educational status, the majority

had education between 5th and 12th grade (67.0%). Naswar use was highly prevalent among the participants, with 271 individuals (98.2%) reporting current or previous use. Most respondents (56.9%) started using Naswar between the ages of 6 and 20 years, while 34.8% initiated use between 21 and 30 years. Almost all users (99.6%) reported frequent use of Naswar more than three times regularly. Long-term use was also common, as 36.2% of participants had been using Naswar for more than 41 years. The majority of users (99.3%) placed Naswar between the gum and cheek, while 67.0% reported that they do not swallow the saliva produced after use. Regarding quitting behavior, 67.4% of respondents had attempted to quit using Naswar, and 53.3% were currently trying to stop its use. Smoking was reported by 39.1% of participants, while 83.7% consumed tea or coffee daily. Additionally, 42.4% regularly consumed spicy or fatty foods.

GERD-related symptoms were highly prevalent among the study population. Daily heartburn was reported by 35.5% of respondents, while 20.3% experienced heartburn 2–3 times per week. Regurgitation was experienced daily by 19.2% of participants and 23.9% reported it 2–3 times weekly. Nausea or vomiting was reported daily by 17.4% of respondents, while bloating after meals was experienced daily by 20.3%. Difficulty sleeping due to heartburn was reported daily by 19.6% of participants. Use of acid reflux medications such as proton pump inhibitors (PPIs) was common, with 33.7% using them daily. GERD was the most frequently diagnosed disease, affecting 32.6% of participants, either alone or in combination with other conditions such as chronic gastritis, peptic ulcer disease, hypertension, and diabetes. Overall, the findings indicate a high prevalence of Naswar use and GERD-related symptoms among the study population, suggesting a possible association between long-term Naswar use and gastrointestinal health problems.

Table No 1

Age				
10 y-20	20-30	30-40	40-above	total
65	115	51	45	276

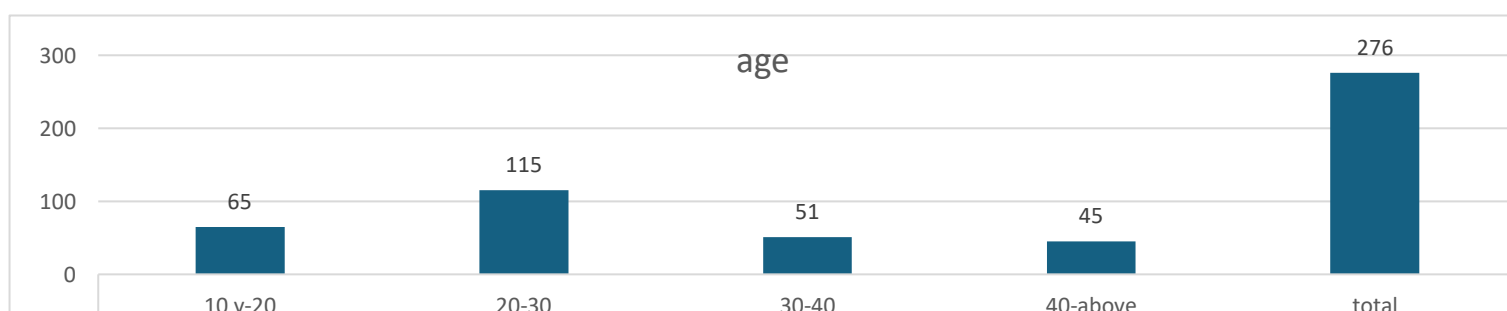
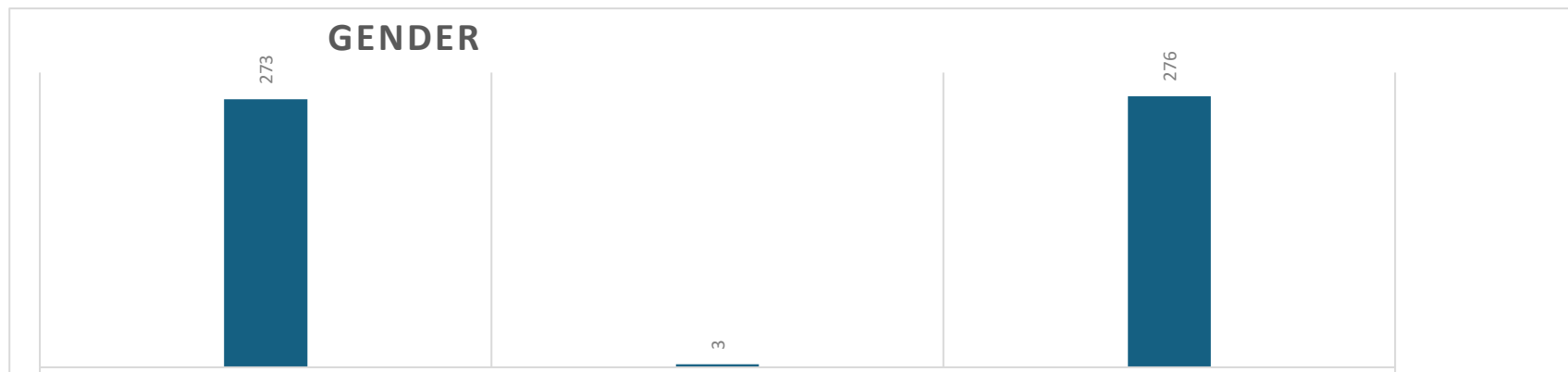


Table No 2 :

Gender		
Male	Female	total
273	3	276

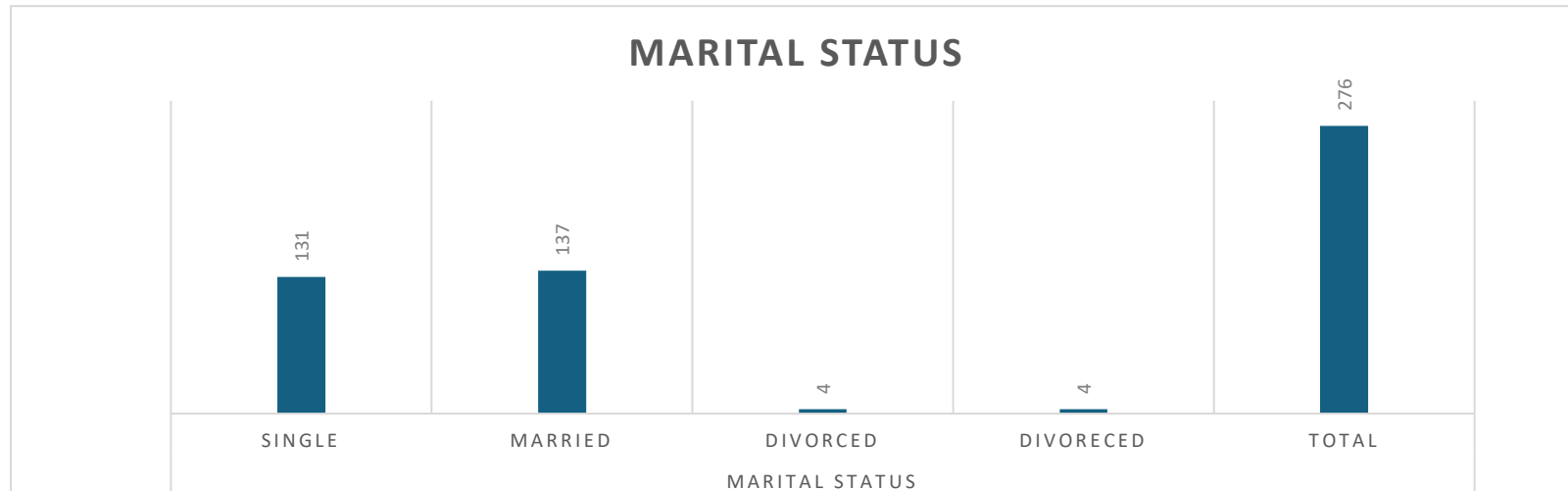


The table shows the gender distribution of the respondents in the study. Out of a total of 276 participants, the overwhelming majority are male, accounting for 273 individuals (98.9%), while only 3 respondents (1.1%) are female. This indicates a highly imbalanced sample in terms of gender, with males being significantly overrepresented compared to females.

Table No 3 :

Marital Status				
<u>Single</u>	<u>Married</u>	<u>Divorced</u>	<u>divoreced</u>	<u>Total</u>

<u>131</u>	<u>137</u>	<u>4</u>	<u>4</u>	<u>276</u>
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The table presents the marital status of the respondents in the study. Out of a total of 276 participants, 137 (49.6%) are married, while 131 (47.5%) are single, indicating that these two groups make up the vast majority of the sample. A very small proportion of respondents are divorced, with 4 individuals (1.4%) recorded under each of the two “divorced” categories. This duplication suggests a possible data entry or labeling error, and these categories may need to be combined for accuracy. Overall, the findings show that most participants are either married or single, with only a minimal number being divorced.

Table No 4:

Occupation

Banking & Advocate & Bussiness & bussnessman & government job & Teacher & Doctor & journalist & Dental surgeon & Nurs	Butcher & Driver & Far mer & Shopkeeper & W atchman & worker & W aiter & Technician & scrap boy & Rickshaw &	Student	Foreigner	House woman & old age	med rep	mart manager	Madrassa	jobless	Hotel	hotel Manager	hotel waiter	govt servant & embroider	Farmer & distributor	total
36	62	100	4	10	1	1	8	1	3	1	43	6	5	276

The table illustrates the occupational distribution of the respondents in the study. Out of a total of 276 participants, the largest group consists of students, with 100 respondents (36.2%), followed by individuals engaged in various informal and manual occupations such as butcher, driver, farmer, shopkeeper, watchman, worker, waiter, technician, scrap boy, and rickshaw drivers, totaling 62 respondents (22.5%). A significant number of respondents (43, 15.6%) are housewives or elderly individuals. Those working in professional fields such as banking, law, business, government jobs, teaching, medicine, journalism, dental surgery, and nursing account for 36 respondents (13.0%). Smaller proportions include hotel-related jobs (10, 3.6%), managerial positions (8, 2.9%), foreign workers (4, 1.4%), unemployed individuals (6, 2.2%), and very few respondents in other categories such as medical representatives, madrassa workers, and distributors. Overall, the data show that the majority of respondents are students and individuals engaged in informal or service-related occupations

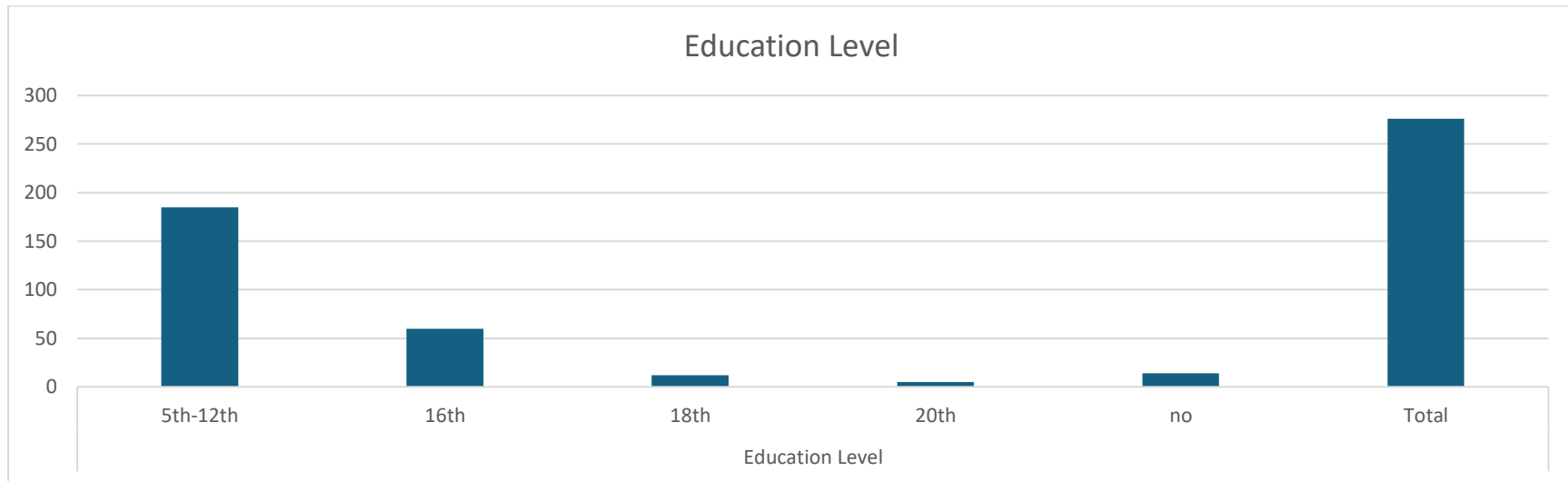
Dir & 8	Swat	Nangarhar	Total
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4	198	74	276
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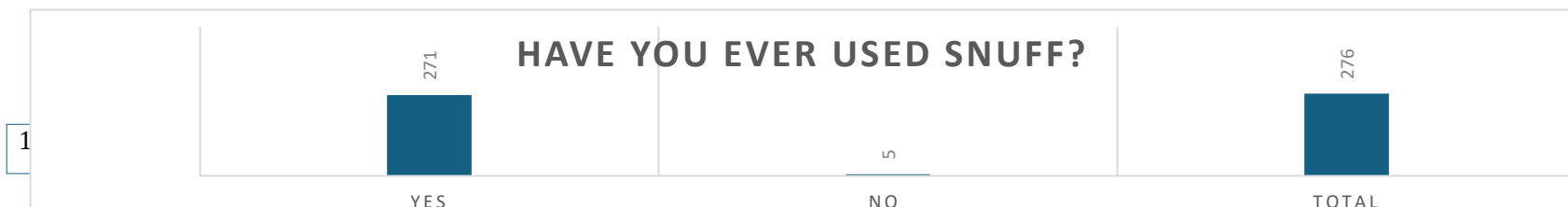
table presents the area of residence of the respondents in the study. Out of a total of 276 participants, the majority reside in Swat, accounting for 198 individuals (71.7%). This is followed by Nangarhar with 74 respondents (26.8%), while only a small number of participants, 4 individuals (1.4%), are from Dir and surrounding areas. The data indicate that most of the study sample is concentrated in Swat, with comparatively fewer respondents from other regions.

Table No 6:



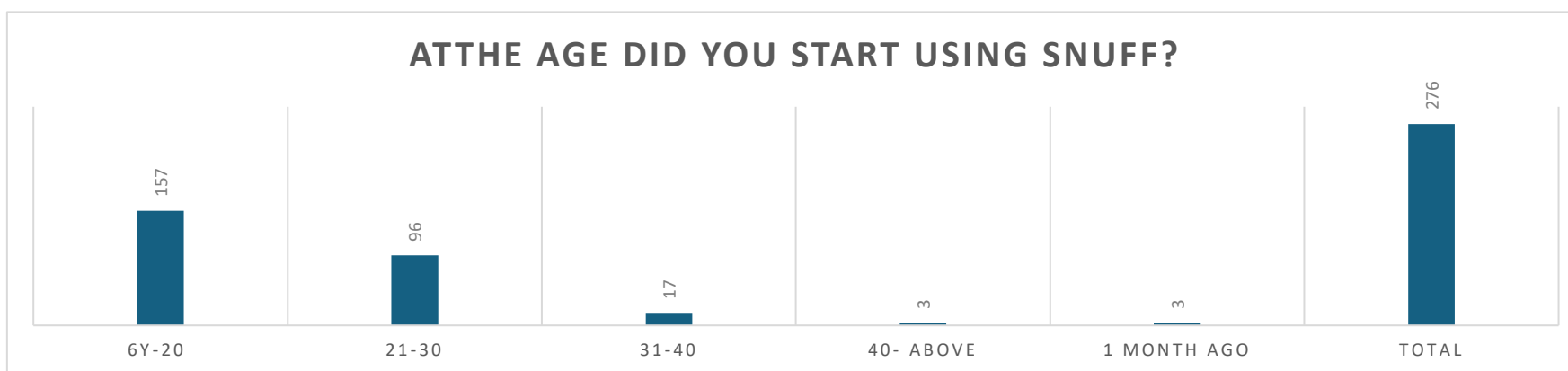
The table presents the educational level of the respondents in the study. Out of a total of 276 participants, the majority have an education level between 5th and 12th grade, accounting for 185 individuals (67.0%). This is followed by 60 respondents (21.7%) who fall into the “16” category, while 12 respondents (4.3%) have an education level of 18, and only 5 individuals (1.8%) have reached level 20. Additionally, 14 respondents (5.1%) have no formal education. Overall, the data indicate that most participants have a basic to intermediate level of education, with relatively few attaining higher levels of education

Table No 7:



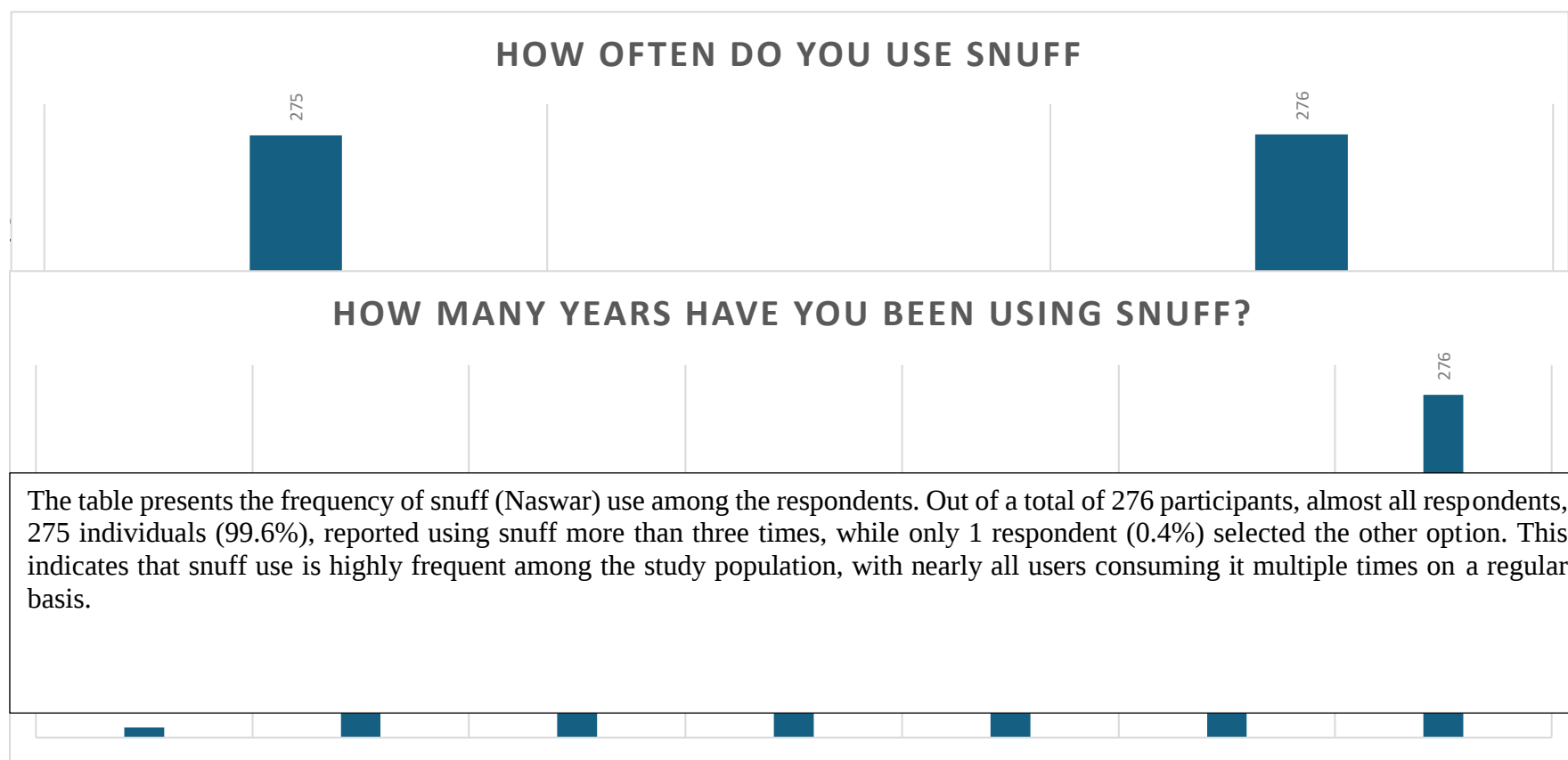
The table shows the respondents' experience with using snuff (Naswar). Out of a total of 276 participants, an overwhelming majority, 271 individuals (98.2%), reported that they have used Naswar, while only 5 respondents (1.8%) indicated that they have never used it. This suggests that the use of Naswar is highly prevalent among the study population.

Table No 8:



The table presents the age at which respondents started using snuff (Naswar). Out of a total of 276 participants, the majority, 157 individuals (56.9%), reported that they began using snuff between the ages of 6 and 20 years. This is followed by 96 respondents (34.8%) who started between 21 and 30 years of age. A smaller number, 17 individuals (6.2%), initiated use between 31 and 40 years, while only 3 respondents (1.1%) started at the age of 40 years or above. Additionally, 3 participants (1.1%) reported that they began using snuff just one month ago. Overall, the findings indicate that most users start using snuff at a relatively young age.

Table No 9:



The table presents the duration of snuff (Naswar) use among the respondents. Out of a total of 276 participants, the largest group, 100 individuals (36.2%), reported using snuff for 41 years or more. This is followed by 50 respondents (18.1%) who have been using it for 31–40 years, and 30 respondents (10.9%) for 21–30 years. Additionally, 44 participants (15.9%) reported a usage duration of 11–20 years, while another 44 respondents (15.9%) have been using it for 1–10 years. A small proportion, 8 individuals (2.9%), reported using snuff for less than one year (1–9 months). Overall, the data indicate that a significant number of respondents have been long-term users of snuff, with many reporting several decades of use.

Table No 11:

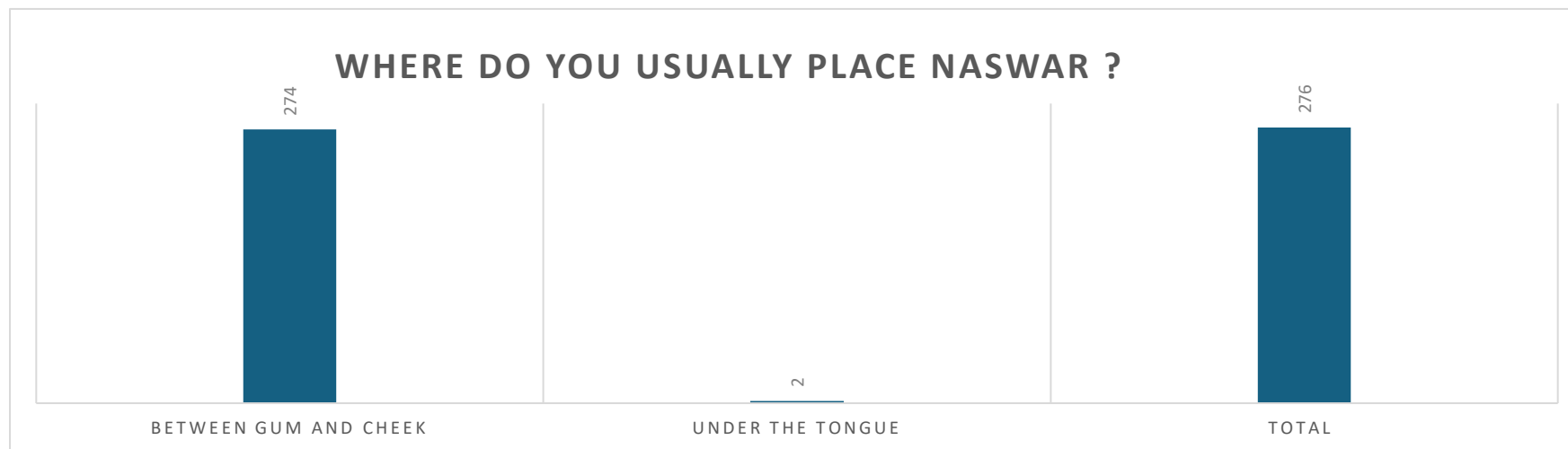
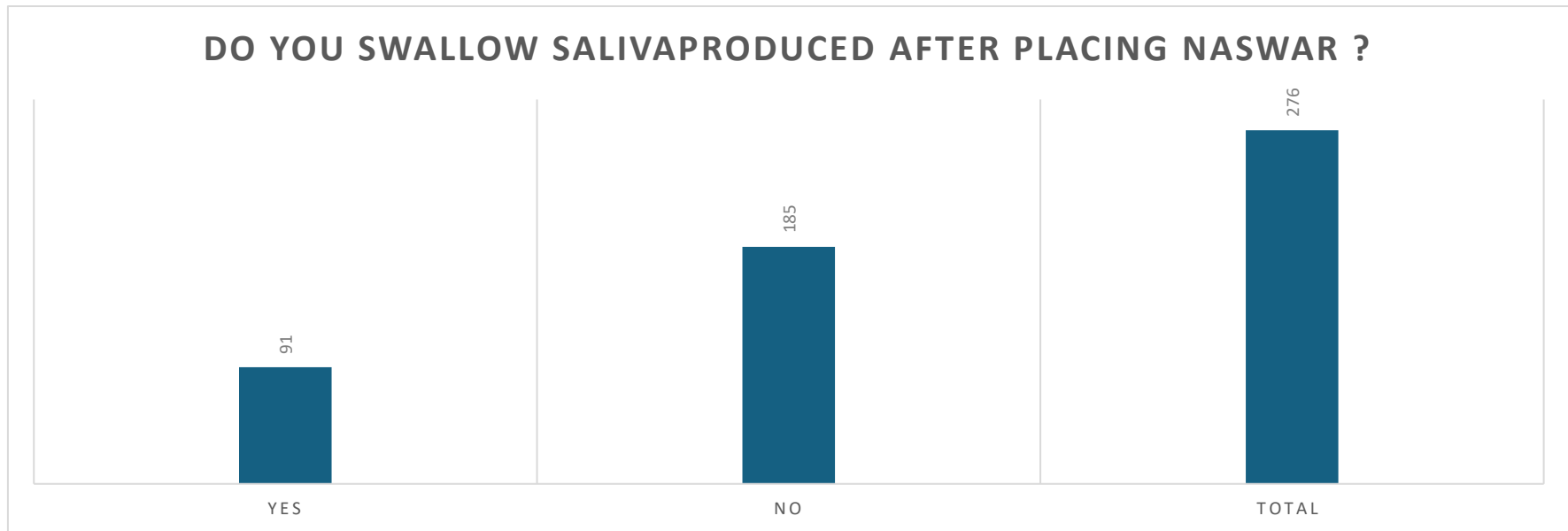


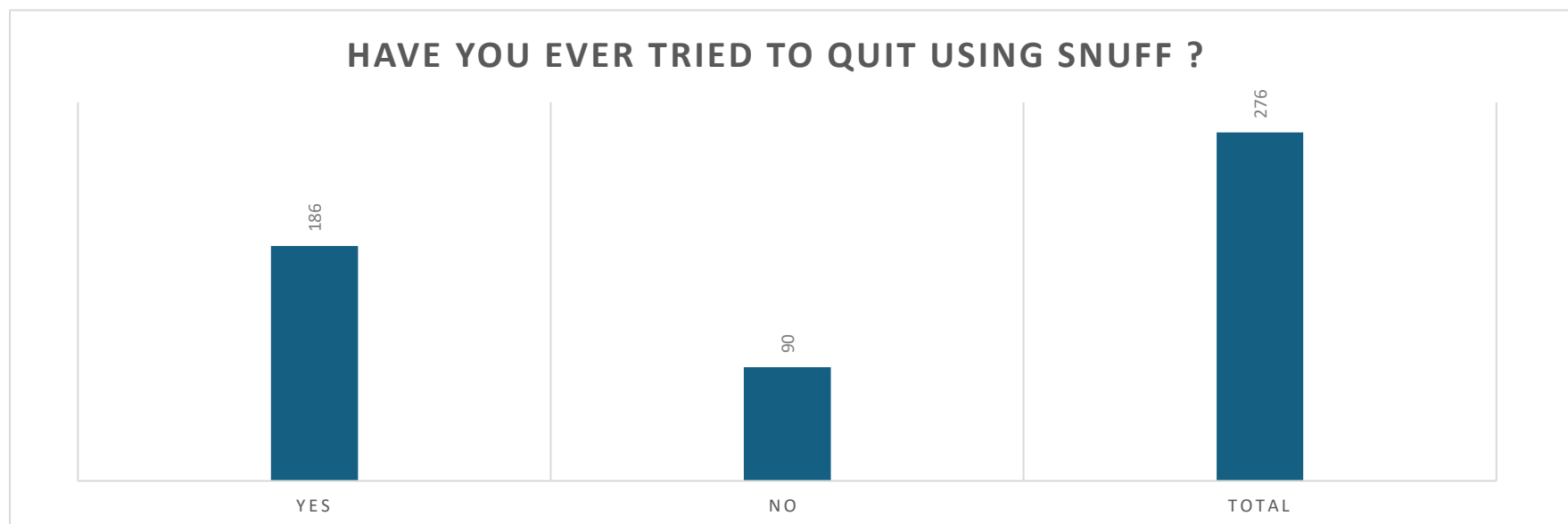
table shows the usual placement of Naswar among the respondents. Out of a total of 276 participants, the vast majority, 274 individuals (99.3%), reported placing Naswar between the gum and cheek, while only 2 respondents (0.7%) indicated that they place it under the tongue. This suggests that placing Naswar between the gum and cheek is the most common and preferred method of use among the study population.

Table No 12:



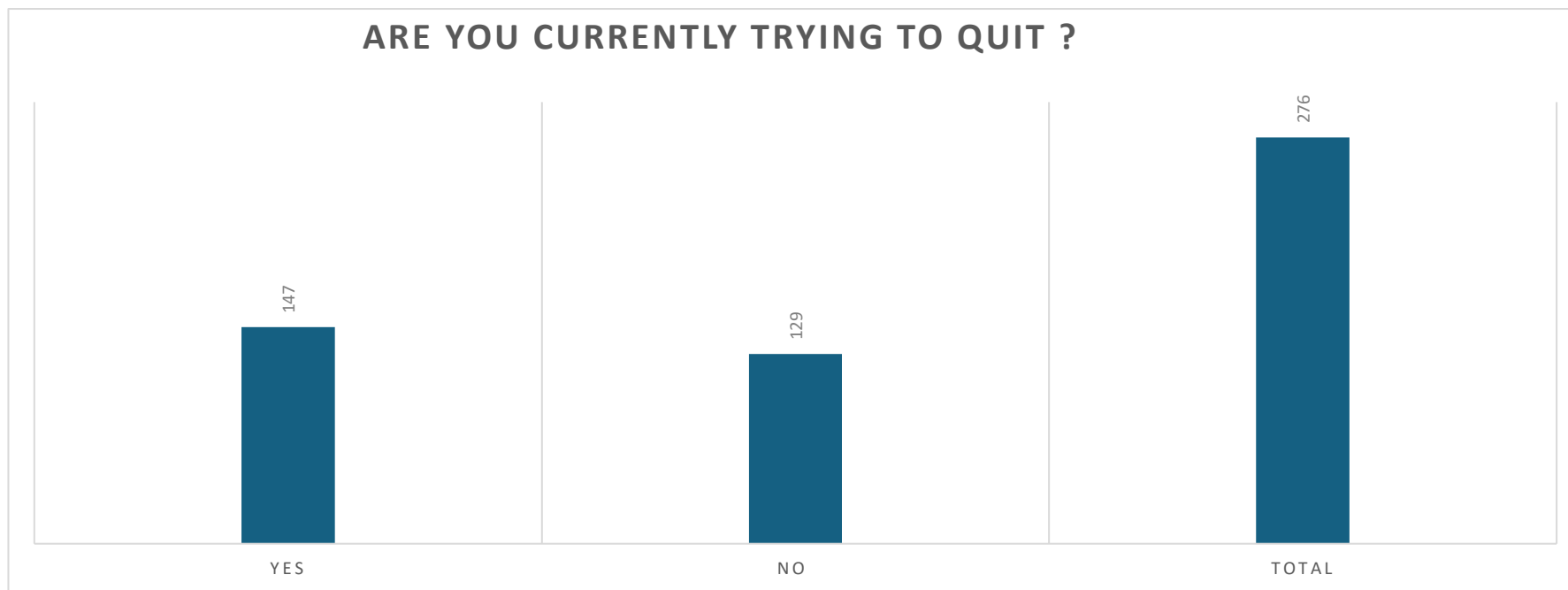
The table presents whether respondents swallow the saliva produced after placing naswar. Out of a total of 276 participants, 185 individuals (67.0%) reported that they do not swallow the saliva, while 91 respondents (33.0%) indicated that they do. This shows that the majority of users tend to avoid swallowing the saliva produced after using naswar, although a considerable proportion still do so.

Table No 13:



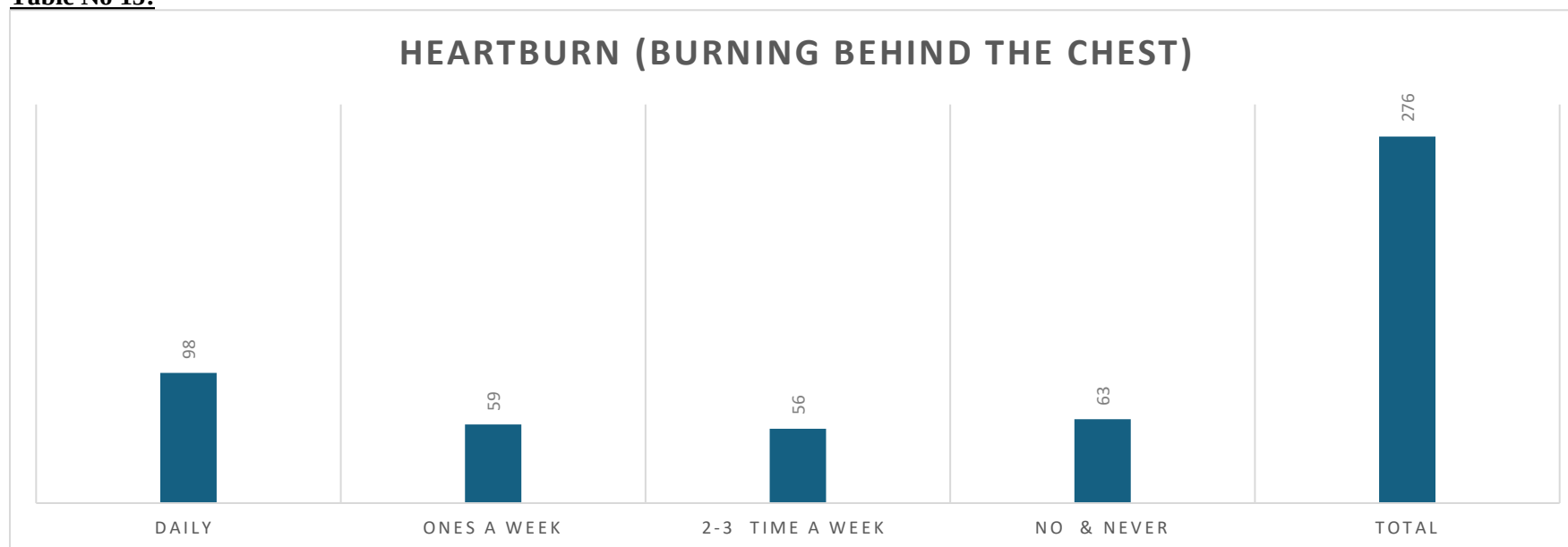
The table shows whether respondents have ever attempted to quit using snuff (Naswar). Out of a total of 276 participants, 186 individuals (67.4%) reported that they have tried to quit, while 90 respondents (32.6%) indicated that they have never made an attempt. This suggests that a majority of users have made efforts to stop using snuff, although a substantial proportion have not attempted to quit.

Table No 14:



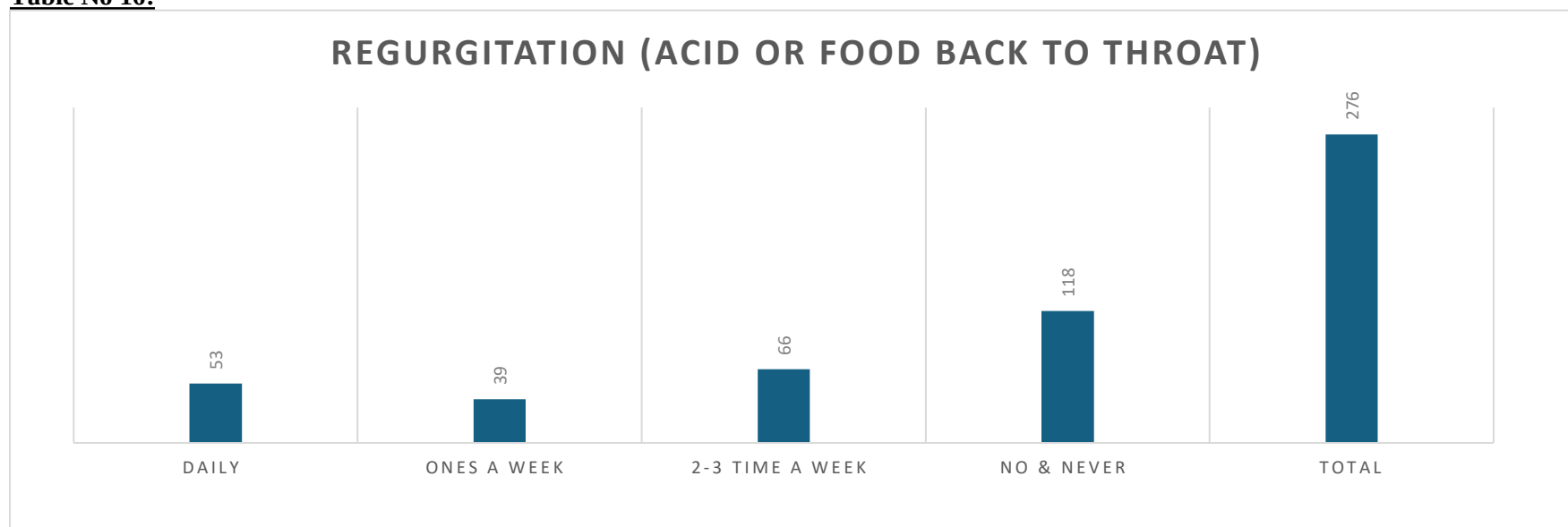
The table presents whether respondents are currently trying to quit using snuff (Naswar). Out of a total of 276 participants, 147 individuals (53.3%) reported that they are currently attempting to quit, while 129 respondents (46.7%) indicated that they are not. This suggests that slightly more than half of the respondents are actively trying to stop using snuff, while a considerable proportion are not making a current effort to quit.

Table No 15:



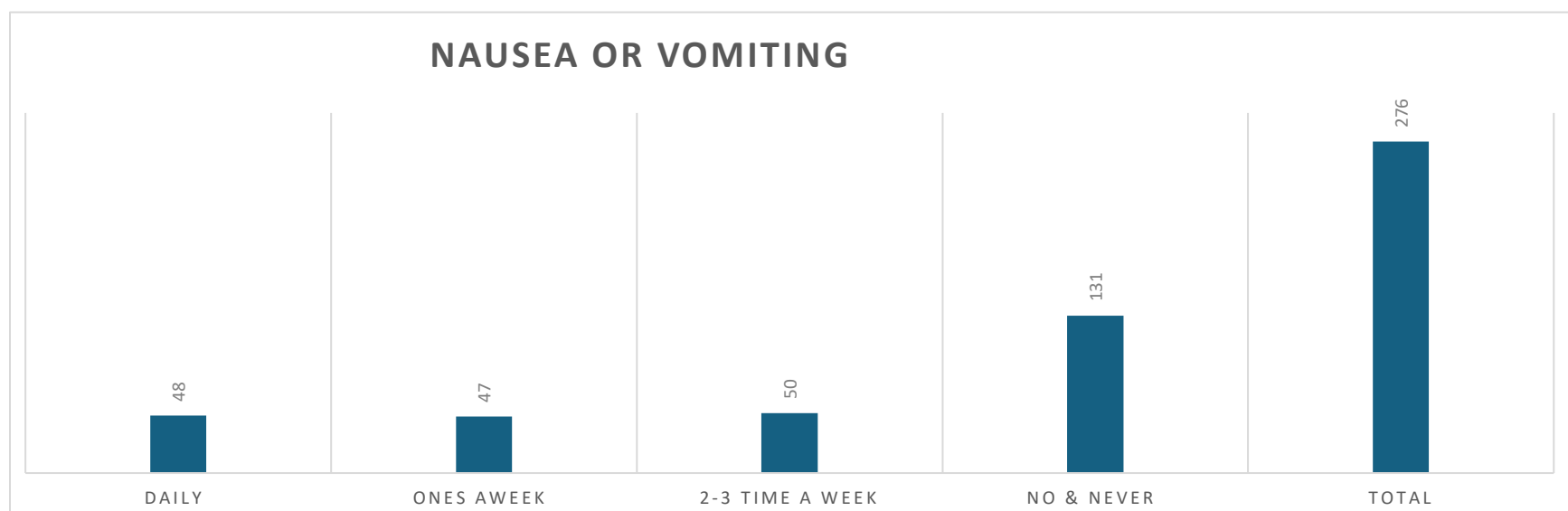
The table presents the frequency of heartburn (burning sensation behind the chest) among the respondents. Out of a total of 276 participants, 98 individuals (35.5%) reported experiencing heartburn daily, while 59 respondents (21.4%) experience it once a week. Additionally, 56 participants (20.3%) reported having heartburn 2–3 times per week. On the other hand, 63 respondents (22.8%) stated that they never experience heartburn. Overall, the results indicate that a significant proportion of the study population experiences heartburn regularly, with only a smaller portion reporting no symptoms.

Table No 16:



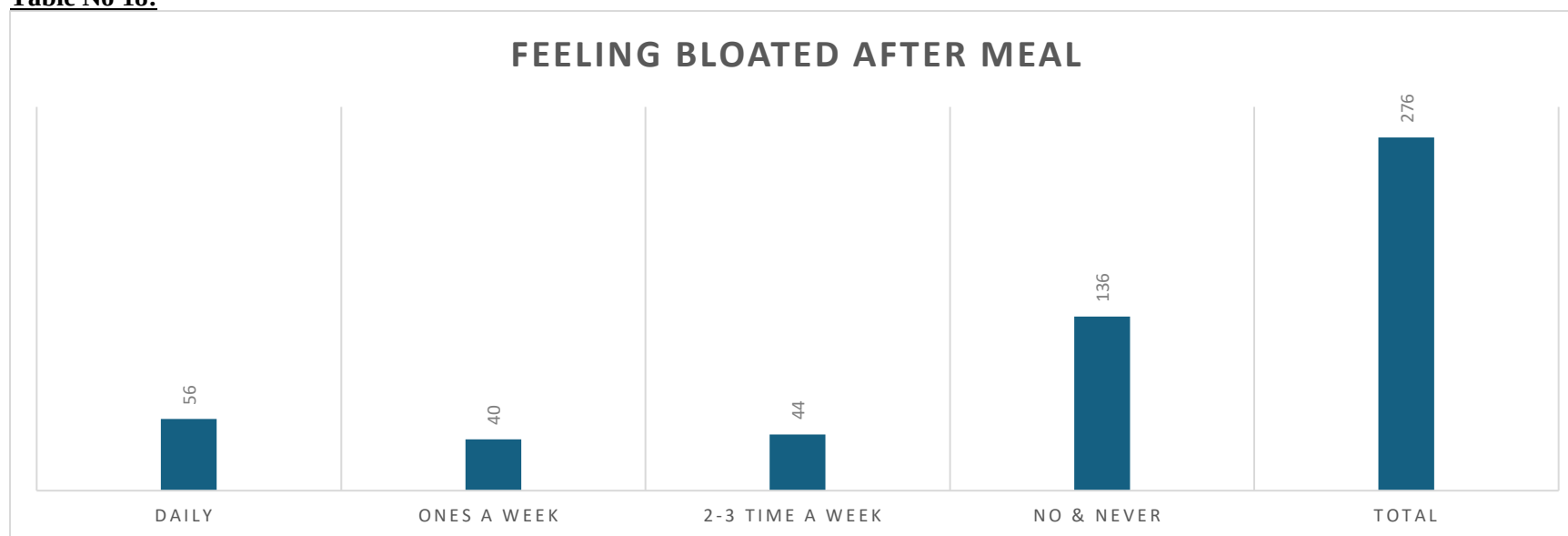
The table shows the frequency of regurgitation (acid or food coming back into the throat) among the respondents. Out of a total of 276 participants, 118 individuals (42.8%) reported that they never experience regurgitation. In contrast, 66 respondents (23.9%) experience it 2–3 times a week, while 53 individuals (19.2%) reported daily regurgitation. Additionally, 39 respondents (14.1%) stated that they experience it once a week. Overall, the findings indicate that while a considerable proportion of respondents do not experience regurgitation, a notable number still suffer from it on a regular basis

Table No 17:



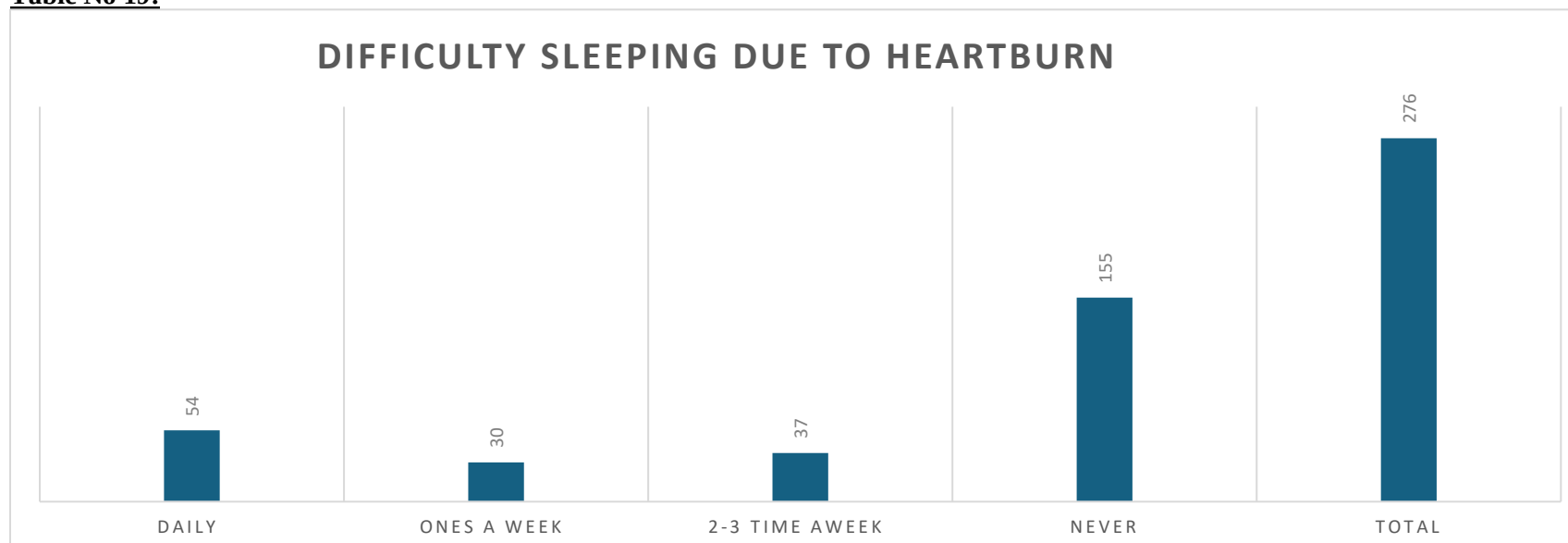
The table presents the frequency of nausea or vomiting among the respondents. Out of a total of 276 participants, 131 individuals (47.5%) reported that they never experience nausea or vomiting. On the other hand, 50 respondents (18.1%) experience it 2–3 times per week, while 48 individuals (17.4%) reported daily symptoms. Additionally, 47 respondents (17.0%) stated that they experience nausea or vomiting once a week. Overall, the results show that nearly half of the respondents do not suffer from nausea or vomiting, while the remaining participants experience it with varying frequency.

Table No 18:



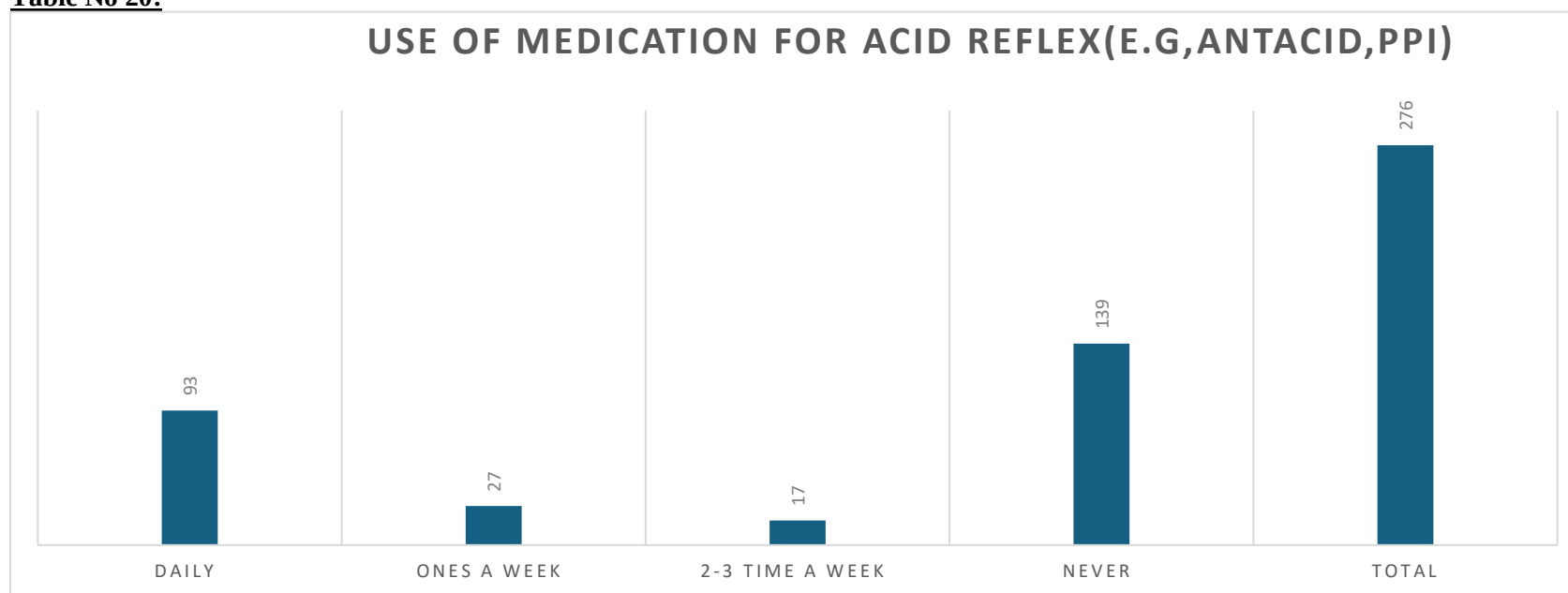
The table presents the frequency of feeling bloated after meals among the respondents. Out of a total of 276 participants, 136 individuals (49.3%) reported that they never experience bloating after meals. In contrast, 56 respondents (20.3%) experience bloating daily, while 44 individuals (15.9%) reported having it 2–3 times per week. Additionally, 40 respondents (14.5%) stated that they feel bloated once a week. Overall, the findings indicate that about half of the respondents do not experience post-meal bloating, while the other half report it with varying frequency.

Table No 19:



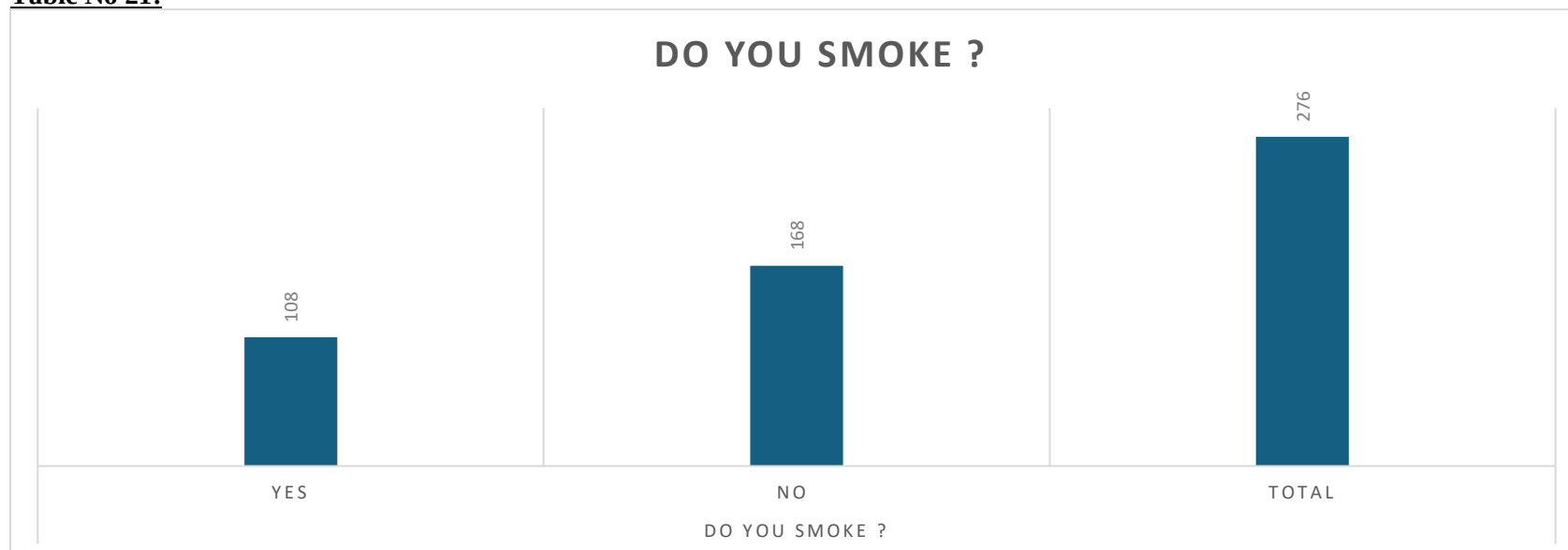
The table presents the frequency of difficulty sleeping due to heartburn among the respondents. Out of a total of 276 participants, 155 individuals (56.2%) reported that they never experience sleep disturbances caused by heartburn. In contrast, 54 respondents (19.6%) experience difficulty sleeping daily, while 37 individuals (13.4%) reported having this issue 2–3 times per week. Additionally, 30 respondents (10.9%) stated that they experience sleep difficulty due to heartburn once a week. Overall, the findings indicate that more than half of the respondents are not affected in their sleep by heartburn, although a considerable proportion still experience it regularly.

Table No 20:



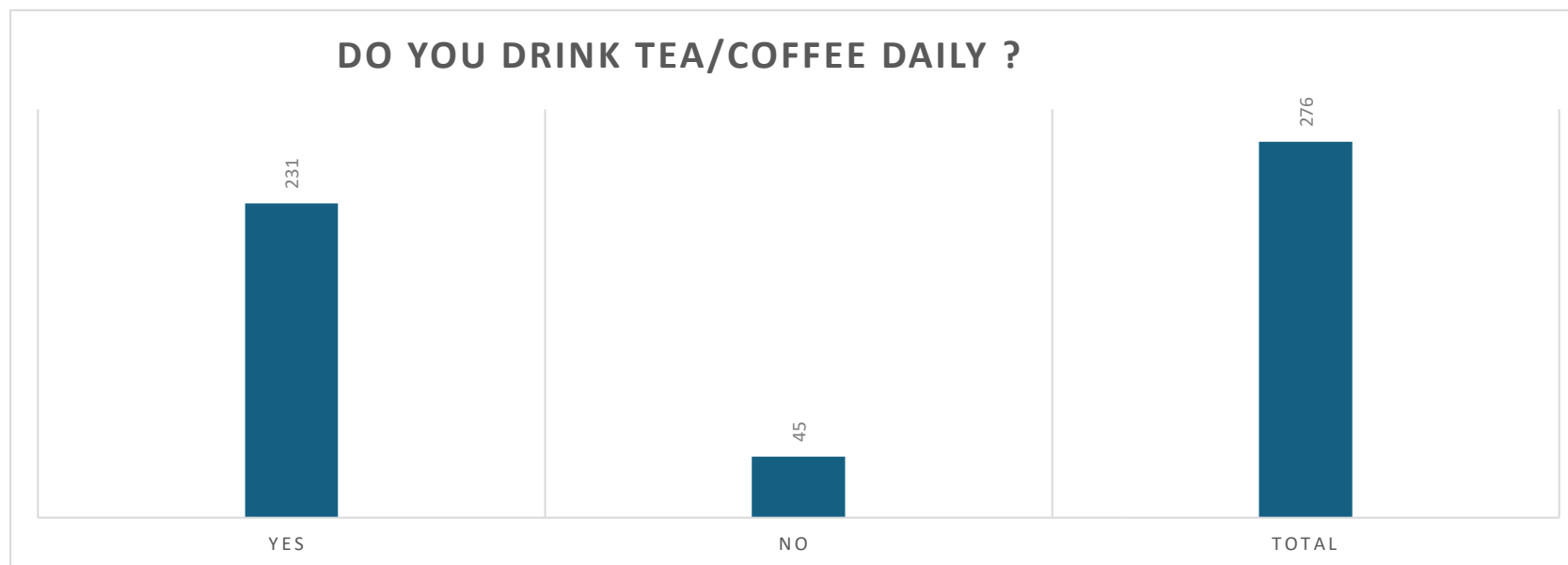
The table presents the use of medication for acid reflux (such as antacids and proton pump inhibitors) among the respondents. Out of a total of 276 participants, 139 individuals (50.4%) reported that they never use any medication for acid reflux. In contrast, 93 respondents (33.7%) use medication daily, while 27 individuals (9.8%) use it once a week. Additionally, 17 respondents (6.2%) reported using such medications 2–3 times per week. Overall, the results indicate that half of the respondents do not use acid reflux medication, whereas a considerable proportion rely on it regularly, especially on a daily basis.

Table No 21:



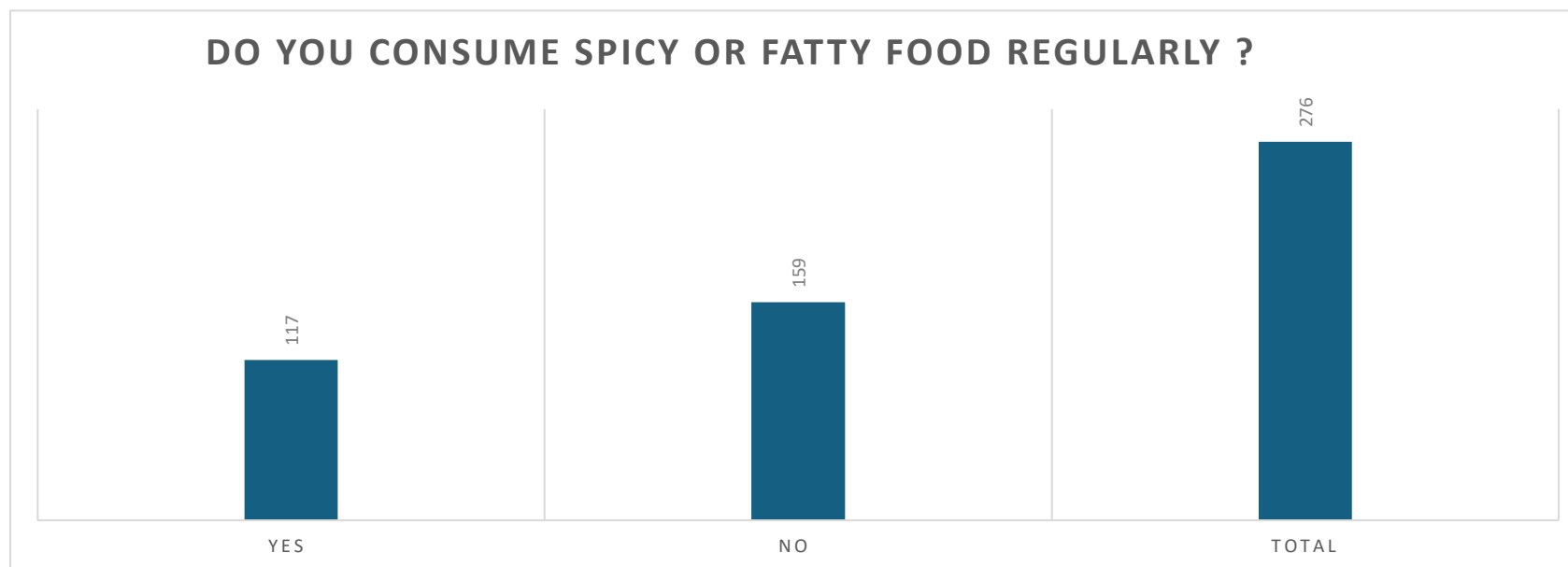
The table shows the smoking status of the respondents. Out of a total of 276 participants, 168 individuals (60.9%) reported that they do not smoke, while 108 respondents (39.1%) indicated that they are smokers. This indicates that the majority of the study population are non-smokers, although a considerable proportion still engage in smoking

Table No 22:



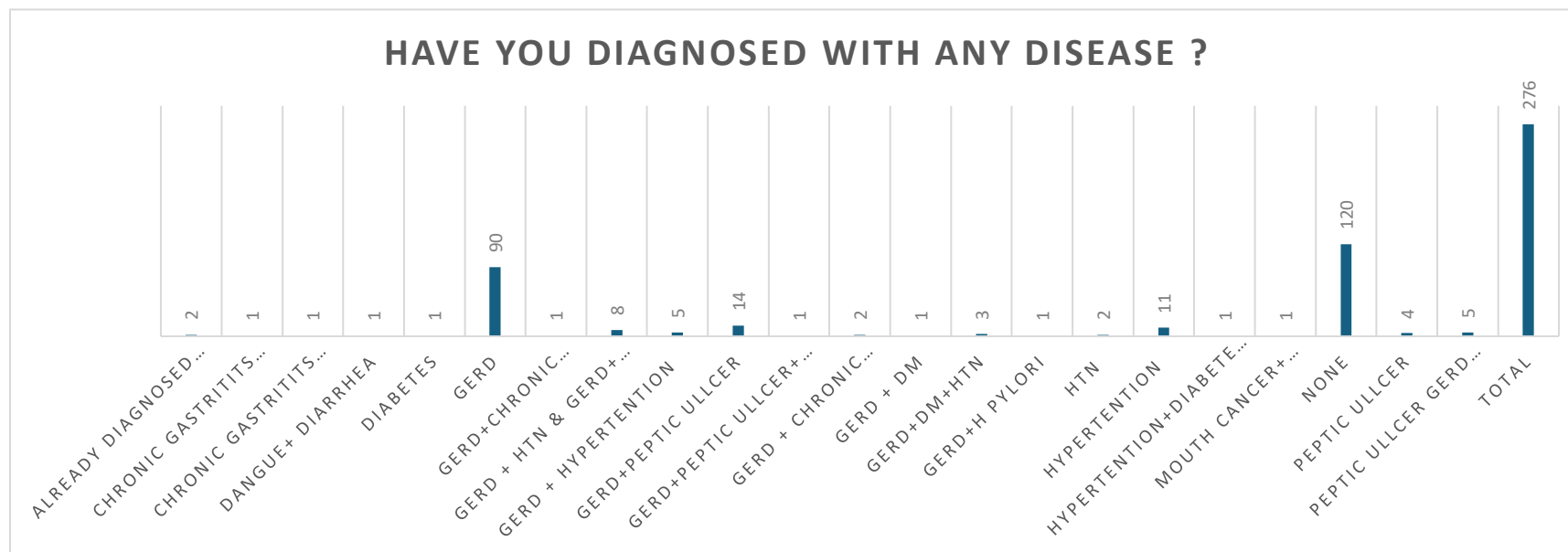
The table presents the daily consumption of tea or coffee among the respondents. Out of a total of 276 participants, 231 individuals (83.7%) reported that they consume tea or coffee daily, while 45 respondents (16.3%) stated that they do not. This indicates that the vast majority of the study population have a habit of regular daily tea or coffee consumption.

Table No 23:



The table shows the regular consumption of spicy or fatty foods among the respondents. Out of a total of 276 participants, 159 individuals (57.6%) reported that they do not regularly consume spicy or fatty foods, while 117 respondents (42.4%) indicated that they do. This suggests that a slightly higher proportion of the study population avoids regular intake of spicy or fatty foods, although a considerable number still include them in their diet.

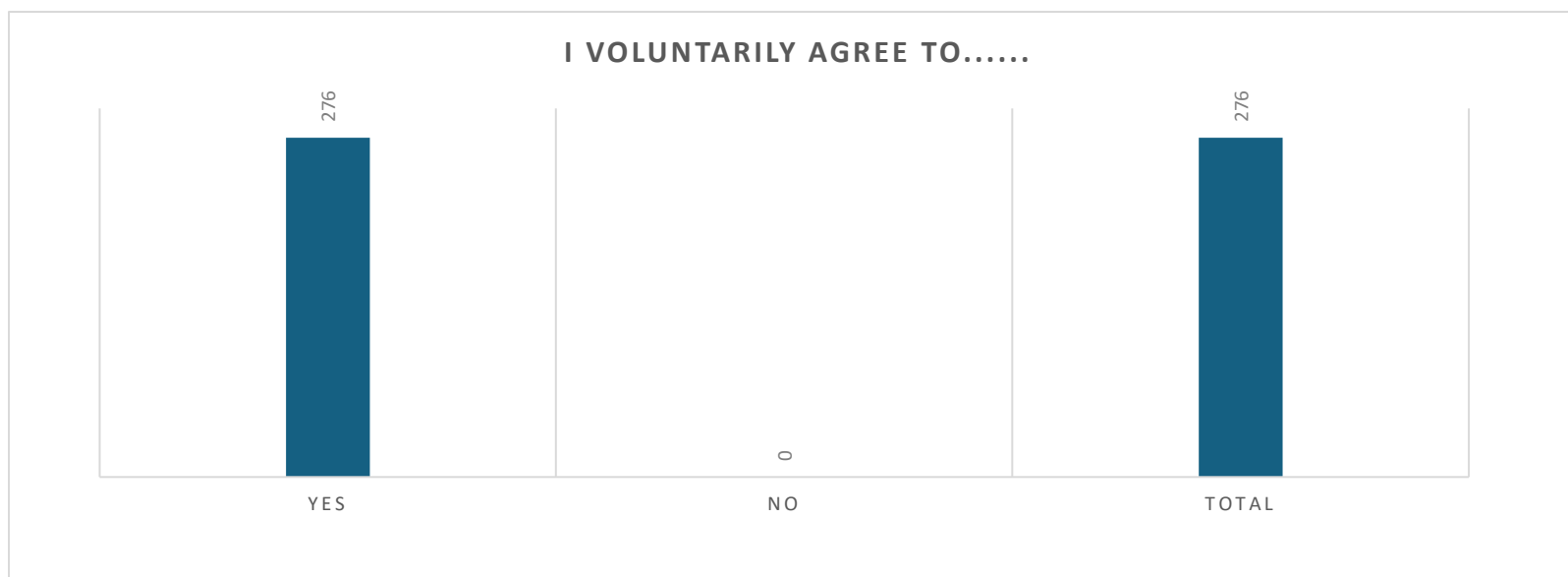
Table No 24:



The table presents the disease history diagnosed among the respondents. Out of a total of 276 participants, the largest group, 120 individuals (43.5%), reported that they have no diagnosed disease. However, a considerable number of respondents reported suffering from various health conditions, with

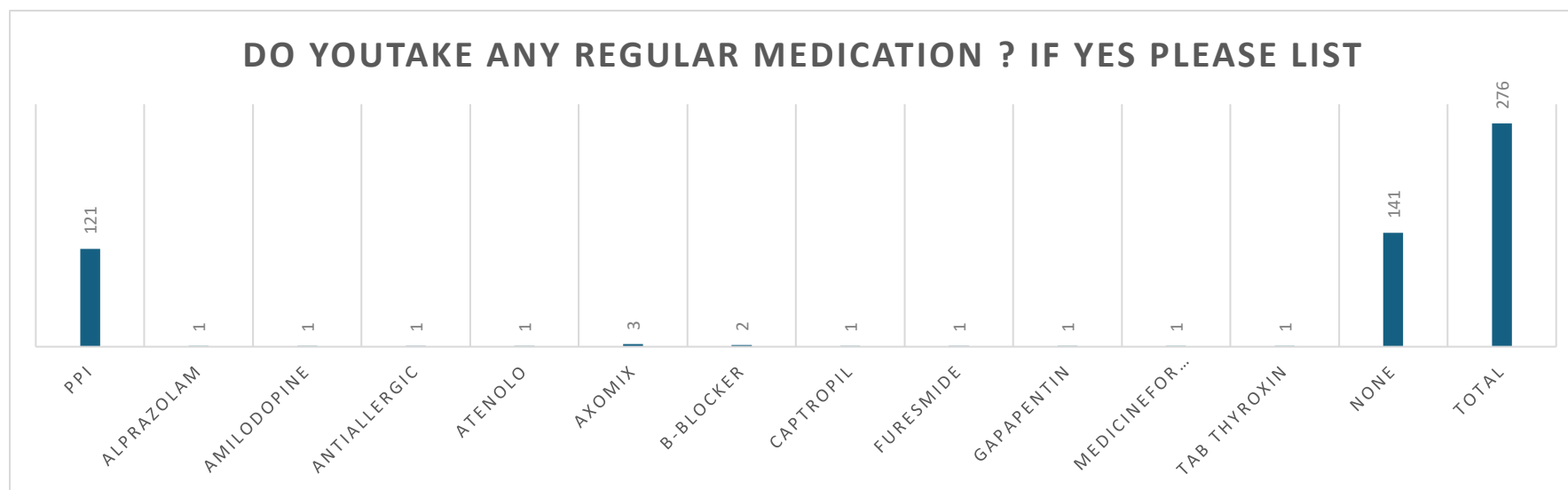
GERD being the most common single diagnosis, affecting 90 individuals (32.6%). In addition, smaller proportions of respondents reported other single or combined conditions, including peptic ulcer (4, 1.4%), hypertension (11, 4.0%), and diabetes (1, 0.4%). Several participants also reported multiple comorbid conditions such as GERD combined with hypertension, diabetes, chronic gastritis, or peptic ulcer in different combinations. A few cases of more severe or less common conditions were also noted, including mouth cancer (1 case, 0.4%) and acute illnesses such as dengue with diarrhea (1 case, 0.4%).

Table No 25:



The table presents the respondents' consent to participate in the study. Out of a total of 276 participants, all individuals (100%) reported that they voluntarily agreed to participate in the research, while none of the respondents (0%) declined. This indicates full consent from all participants, ensuring that the study was conducted with complete voluntary participation and adherence to ethical research standards.

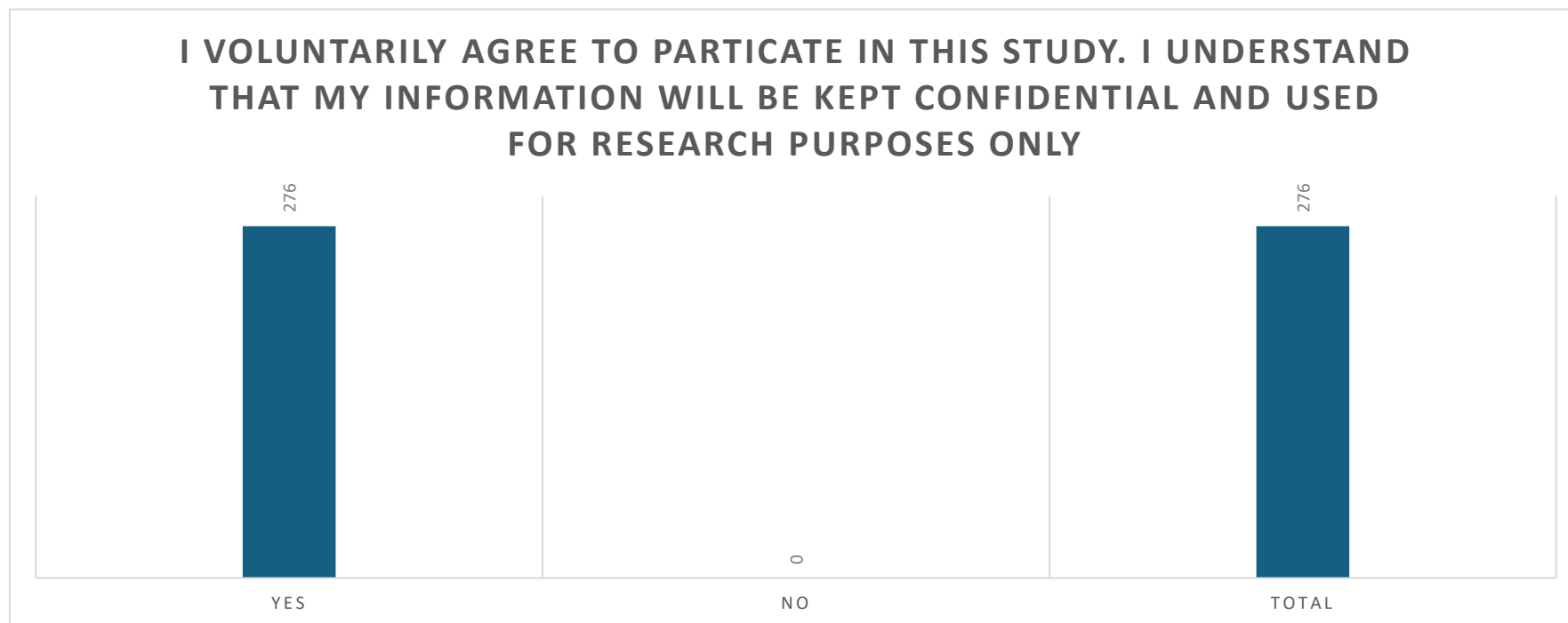
Table No 26:



The table presents the use of regular medications among the respondents. Out of a total of 276 participants, 141 individuals (51.1%) reported that they do not take any regular medication. Among those who do use medication, the most commonly reported drugs are proton pump inhibitors (PPI), used by 121 respondents (43.8%), indicating frequent use for acid-related conditions. A very small number of participants reported using other medications, including alprazolam (1), amlodipine (1), antihypertensive drugs such as atenolol (1), captopril (1), and a combination of medicines for hypertension and diabetes (1). Other single-reported medications include antiallergic drugs (1), axomix (3), beta-blockers (2), furosemide (1), gabapentin (1), thyroid hormone (levothyroxine) (1), and unspecified antihypertensive or diabetic medicines (1 each).

Overall, the findings indicate that while more than half of the respondents are not on regular medication, a significant proportion rely on PPIs, suggesting a high prevalence of acid-related conditions in the study population.

Table No 27:



The table shows the informed consent of the respondents regarding participation in the study. Out of a total of 276 participants, all respondents (100%) agreed to participate in the research and indicated “Yes,” while none of them (0%) selected “No.” This demonstrates that the study was conducted with full voluntary participation from all individuals, ensuring ethical approval and complete consent

COMPLETE ANALYSIS

10 Y-20	65	115
30-40	51	45
TOTAL	276	276
FEMALE	3	276
SINGLE	131	137
DIVORCED	4	276
TOTAL	36	276
BUTCHER&DRIVER&FARMER&SHOPKEEPER	62	100
FOREIGNER	4	10
MED REP	1	8
MADRASSA	1	3
HOTEL	1	43
HOTEL WAITER	5	276
FARMER& DISTRIBUTER	4	198
DIR & 8	74	185
NANGARHAR	60	12
5TH-12TH	14	276
18TH	5	271
NO	5	276
YES	157	276
TOTAL	17	96
21-30	3	276
40- ABOVE	1	275
TOTAL	1	276
CHOICE	8	44
1MONTH- 9 MONTHS	30	44
11Y-20	50	100
31-40	2	276
TOTAL	91	185
YES	186	276
NO	90	276
YES	129	147
TOTAL	98	276
ONES A WEEK	59	56
NO & NEVER	63	53
DAILY	39	66
2-3 TIME A WEEK	118	276
TOTAL	48	50
ONES A WEEK	131	276
NO & NEVER	56	40
DAILY	44	54
2-3 TIME A WEEK	136	276
TOTAL	30	37
ONES A WEEK	93	276
NEVER	155	276
DAILY	177	139
2-3 TIME A WEEK	108	168
TOTAL	231	276
NO	45	276
YES	117	159
TOTAL	276	276
ALREADY DIAGNOSED WITH GERD	2	276
CHRONIC GASTRITIS HYPER TENTION	1	90
DIABETES	1	5
GERD+CHRONIC GASTRITIS+ PEPTIC	8	14
GERD + HYPERTENTION	1	1
GERD+PEPTIC ULLCER+ HYPERTENTION	1	3
GERD + DM	1	11
GERD+H PYLORI	1	120
HYPERTENTION	4	5
MOUTH CANCER+ SURGERY DONE	0	276
PEPTIC ULLCER	121	276
TOTAL	1	1
NO	1	1
PPI	3	2
AMILODOPINE	1	1
ATENOLO	1	1
B-BLOCKER	1	1
FURESMIDE	1	1
MEDICINEFOR HYPERTENTION+DIAB	1	141
NONE	0	276
YES	276	276
TOTAL	276	276

Discussion

The present study found a very high prevalence of Naswar use among participants, with most users initiating the habit at a young age and continuing it for many years. GERD-related symptoms, particularly heartburn and regurgitation, were common among long-term Naswar users. These findings suggest a possible association between frequent Naswar use and gastrointestinal disorders. Similar observations have been reported in previous studies, which indicate that smokeless tobacco may contribute to mucosal inflammation and upper gastrointestinal diseases. In addition, lifestyle factors such as smoking, regular tea or coffee consumption, and spicy food intake may further increase the risk of GERD.

Conclusions

The study demonstrated a high prevalence of Naswar use and GERD-related symptoms among people living in the Pashtun region. Long-term and frequent Naswar use appears to be associated with an increased occurrence of GERD symptoms and other gastrointestinal conditions. These findings highlight the importance of addressing smokeless tobacco use as a public health concern.

Recommendations

- 1 Increase public awareness regarding the health risks of Naswar use.
- 2 Implement tobacco cessation and counseling programs in the community.
- 3 Encourage early screening and diagnosis of GERD among long-term Naswar users.
- 4 Conduct larger multicenter studies using analytical designs to confirm the association between Naswar use and GERD.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research.

Ethics Approval

This study is conducted in accordance with the ethical principles of research involving human participants. Ethical approval is obtained from the Research Ethics Committee of Rokhan University before data collection. Participation is voluntary, and respondents' anonymity and confidentiality are strictly maintained throughout the study.

Informed Consent

Informed consent is obtained from all participants before they completed the questionnaire. Participants were informed about the purpose of the study, their right to withdraw at any time without penalty, and the confidentiality of the information they provided.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request. The data are not publicly available because they contain information collected from human participants.

Author Contributions

Dr M Tariq Noor: Conceptualization, research design, Dr. Khyber Iqbal Safi :methodology, questionnaire development, Abdullah Miakhail, UBAIDULLAH: data collection, statistical analysis, interpretation of results, manuscript writing, review, and supervision.
Abdullah_chardiwal , Malik Muhammad Anas. Abdullah: Literature review, data collection support, interpretation of findings, manuscript review, editing, and final approval of the manuscript.

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