



ASSESSMENT OF SMOKING AND ALCOHOL USE AMONG CHRONIC DISEASE PATIENT

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ABSTRACT:

India is experiencing a growing public health problem due to the widespread use of smoking, tobacco, and alcohol, which are major contributors to the development and progression of chronic diseases.

Non-communicable diseases, such as cardiovascular diseases, diabetes, chronic respiratory diseases, cancer, and hypertension, account for nearly two-thirds of all deaths in the country, and substance use has been identified as one of the most important modifiable risk factors. The purpose of this study is to assess the patterns of smoking, tobacco, and alcohol use among chronic disease patients in India, including state-wise, gender-wise, and age-wise variations.

Based on data obtained from nationally representative surveys, such as the National Family Health Survey (NFHS-5) and the Global Adult Tobacco Survey (GATS), an analysis has been conducted, and the results are presented in detailed tables and graphical illustrations. The results show that there are significant regional variations, with the highest prevalence of tobacco and alcohol use found in the North-Eastern states, specifically in Mizoram, Tripura, Meghalaya, and Arunachal Pradesh. The prevalence of male use is significantly higher than that of females in most states; however, some states have shown appreciable prevalence of female use, specifically for smokeless tobacco and alcohol. Age-wise distribution shows higher use of substances among those aged 30-59 years, which coincides with the peak period of chronic disease burden.

In patients with chronic illnesses, the use of tobacco and alcohol is linked to the progression of the disease, complications, decreased efficacy of pharmacotherapy, and mortality. The use of tobacco is responsible for more than one million deaths per year in India, while alcohol is a major contributor to liver disease, cardiovascular disease, injuries, and early deaths. The joint use of tobacco and alcohol has a synergistic effect, especially in cancers and cardiovascular diseases.

The paper highlights the importance of screening, intervention, and the incorporation of tobacco and alcohol cessation programs into chronic disease care. Improving public health policies, regional enforcement, and the use of gender- and age-sensitive approaches are important in minimizing the long-term impact of chronic diseases related to substance use in India.

KEYWORDS:

Smoking; Tobacco Use; Alcohol Consumption; Chronic Diseases; India; State-Wise Analysis; Gender Differences; Mortality; Public Health; Non-Communicable Diseases.

INTRODUCTION:

Presently, India is dealing with a major health problem related to the rising prevalence of smoking, tobacco usage, and alcohol consumption. These activities play a crucial role in the causation of non-communicable diseases. At present, non-communicable diseases cause approximately two-thirds of total deaths. Some of the main non-communicable diseases include heart diseases, cancer, chronic respiratory diseases, diabetes, and hypertension. Among the main modifiable risk factors for these diseases are the use of alcohol and smoking.

National statistics indicate that there are over 100 million smokers in India alone, with statistics suggesting that approximately 28.6% of adults use some form of tobacco, whether it is smoked or ingested in another form. The use of tobacco alone results in the death of over a million people annually, with it being ranked among the top preventable causes of death. While the use of alcohol is not as widespread as the use of tobacco, it still contributes to liver diseases, cardiovascular problems, mental health challenges, road traffic injuries, and worsening health for chronic disease patients. It is also estimated to cause around 5-7% of total deaths in the country.

An important feature of substance use in India is that it shows considerable variation by region, gender, and age group. Male rates for use of tobacco, alcohol, and smoking are substantially higher, though in a few states, particularly in the North-Eastern region, even female rates are as high as male rates. The typical onset is in adolescence and early adult life, which extends into middle age when chronic diseases tend to manifest.

While smoking, tobacco, and alcohol consumption are the primary reasons for the progression of chronic diseases like diabetes, hypertension, COPD, cardiovascular diseases, chronic renal diseases, and cancer, the progression of these conditions and the incidence of complications are promoted by the sustained consumption of smoking, tobacco products, and alcohol by patients with these respective conditions. Thus, it is evident that the evaluation of smoking, tobacco, and alcohol habits among people with chronic conditions is imperative to the management of chronic conditions in India. This project similarly focuses on the smoking, tobacco, and alcohol habits of the Indian population, as seen at the state level, by gender, and by age groups with the aid of tables and graphs.

LITERATURE REVIEW:

1. Prevalence of Tobacco Use in India

National surveys indicate that tobacco use appears to be fairly common across the country. Among adults, approximately 38% of male and 9% of female adults use some form of tobacco. While men are much more likely to smoke than women, smokeless products such as gutkha, khaini, and chewing tobaccos are highly prevalent compared to smoked products. In some states, smokeless tobaccos are used by slightly higher percentages of people compared to smoked tobaccos. In general, all forms of smokeless tobaccos are highly popular among people belonging to a lower socio-economic status.

Regional variations can be clearly understood through state-wise statistics. Among all the states in the country, the North-Eastern States have the highest rates of tobacco consumption. Mizoram ranks first in the list with tobacco use levels crossing 70%, followed by Tripura, Manipur, and Arunachal Pradesh. States like Punjab, Kerala, and Chandigarh rank lower in comparison.

2. Smoking Patterns by Age and Gender in India

The trends observed with age illustrate that, of all the age groups, teenagers have the lowest rates of smoking, but the rates increase sharply in the 20s, 30s, and beyond. This could be related to gainful employment and the stress that naturally follows. The maximum percentage of smokers falls in the 40- to 59-year category, along with the highest number of people afflicted with co-morbidity. When comparing both sexes in all age groups, the tendency of men to engage in the habit far surpasses that of their female counterparts, but a large percentage of the latter can be found in the North East region, according to the state.

The overall prevalence of the use of tobacco products is high in women too; in states like Mizoram and Tripura, they cross 40–60%, but in most of the northern and southern states, they remain below 5%.

3. Alcohol Consumption Patterns in India

The prevalence of alcohol use in India has been recorded among 19% of men across the country. Additionally, the prevalence of alcohol use among women ranges from 1 to 2%. Although the overall prevalence is lower than the worldwide prevalence, dangerous practices of binge drinking have been observed. There are significant variations in the prevalence of alcohol use across different states, including Arunachal Pradesh, Telangana, Sikkim, Assam, Chhattisgarh, etc.

In women, total consumption remains low, but in the North Eastern states, total consumption increases, with rates greater than 15 to 20%. Cultural beliefs, brewing practices, and other issues contribute to this in women.

4. Age-Wise Alcohol Use

Alcohol use is highest among the age group of 25–49 years, when most are working. In some states, adolescents start drinking early, increasing the risk for dependence later in their lives and making them more susceptible to chronic diseases earlier in life. For older adults with chronic conditions, continued drinking can complicate treatment and increase the risk for hospitalization.

5. Smoking, Tobacco and Alcohol Use Among Chronic Disease Patients

Several studies from India share a worrying trend. The prevalence of the use of tobacco and alcohol is significant among individuals suffering from chronic conditions. Among hypertensive and diabetic patients, the prevalence of tobacco use is around 18-30%, and alcohol consumption is around 10-25%. Among COPD patients, more than a third smoke, which directly leads to flare-ups and death.

The picture is also particularly dire for cancer when looking at numbers for India as a whole. Even after being diagnosed, a whopping 25-40% of patients will continue to smoke tobacco products. The effect of tobacco and alcohol as a duo is to blame for 62% of oral cancer cases, illustrating the considerable combined carcinogenic effect.

6. Mortality and Disease Burden Attributable to Smoking Tobacco and Alcohol in India

Tobacco is responsible for around 1.04 million deaths among Indians annually, with approximately 78% of these deaths occurring among men. Alcohol-attributed deaths also contribute significantly to deaths related to liver cirrhosis, heart disease, and injuries. The co-use of tobacco and alcohol increases the burden on DALYs substantially, especially among middle-aged males.

7. State-Wise Burden of Tobacco, Smoking and Alcohol-Related Diseases

States with the highest smoking prevalence and alcohol use also have higher rates of COPD, oral cancer, liver disease, and deaths from cardiovascular causes. The North Eastern region bears a consistently heavier burden, while southern states are starting to show upticks that relate to urbanization and changes in lifestyle.

8. Pharmacological and Clinical Implications in Chronic Disease Management

Tobacco smoke tends to induce liver enzymes, which decreases the effectiveness of many drugs; these include theophylline, antipsychotics, beta blockers, and oral diabetes medications. Alcohol, when taken together with antidiabetic medications, blood pressure medications, or sedatives, increases the risk for hypoglycemia, hypotension, and hepatic toxicity. These drug interactions are very relevant in Indian patients, who usually have multiple comorbidities.

9. Assessment Tools Used in Indian Clinical Settings

Validated screening instruments such as the Fagerström test for nicotine dependence, AUDIT, AUDIT-C, and the CAGE screening questionnaire are commonly used in Indian health care settings to assess levels of tobacco/alcohol use in the population. This helps in timely intervention for the condition.

10. Tobacco and Alcohol Cessation Strategies in India

The country also offers several national-level initiatives, which include the National Tobacco Control Programme and Tobacco Cessation Clinics under the aegis of the Ministry of Health. With regard to stopping smoking, counselling with a focus on behavioral therapies, as well as using replacement therapies like nicotine and medications like bupropion and varenicline, has shown effectiveness. Counselling, residential detoxification, community-based treatment, etc., are some of the many alcohol cessation treatments that are available.

11. Policy and Public Health Interventions in India

The legislative steps include the COTPA, along with taxes and graphic health warnings, and a ban on advertisement, which help in bringing down tobacco use nationally over time. However, it is many of these gaps in enforcement and uneven regional uptake that have really capped how effective these measures can be.

12. Research Gaps Identified in Indian Studies

Still, despite the abundance of data that exists, there is a disconnect in the district-level analysis, a disconnect in the tracking of chronic disease patients over time, and a disconnect between the inclusion of cessation strategies as part of the standard chronic disease care. These disconnections are significant to the reduction of the future burden of substance-related chronic diseases.

State-Wise Distribution of Tobacco and Alcohol Use in India (Detailed)

This section gives a detailed overview of the tobacco and alcohol use in the country, state-wise, and comparisons can also be made about how common such usage is, gender differences in usage, and usage by different age groups. Data will be mainly based on prominent survey results like NFHS-5 and GATS, which are commonly used as data in research in the country.

Table 1: State-Wise Tobacco Consumption (%) – Adults (15–49 Years)

State / UT	Total Tobacco Use (%)	Male (%)	Female (%)
Andhra Pradesh	22	38	7
Arunachal Pradesh	49	61	37
Assam	36	57	16
Bihar	25	46	6
Chhattisgarh	39	55	23
Goa	18	32	5
Gujarat	21	39	4
Haryana	23	41	4
Himachal Pradesh	20	36	6
Jharkhand	39	56	22
Karnataka	23	40	6
Kerala	12	20	3
Madhya Pradesh	34	54	15
Maharashtra	25	43	7
Manipur	42	55	31
Meghalaya	48	62	34
Mizoram	72	81	63
Nagaland	43	60	27
Odisha	41	59	23
Punjab	17	30	3
Rajasthan	28	48	8
Sikkim	41	55	28
Tamil Nadu	21	37	5
Telangana	24	42	6
Tripura	50	63	37
Uttar Pradesh	26	47	6
Uttarakhand	29	49	9
West Bengal	32	52	13

Table 2: State-Wise Alcohol Consumption (%) – Adults (15–49 Years) in India

State / UT	Total (%)	Male (%)	Female (%)
Andhra Pradesh	19	33	4
Arunachal Pradesh	39	54	24
Assam	26	41	7
Bihar	2	4	<1
Chhattisgarh	31	46	14
Goa	30	44	9
Gujarat	5	8	<1
Haryana	18	31	3
Himachal Pradesh	17	29	2
Jharkhand	29	44	12
Karnataka	20	34	4
Kerala	23	39	2
Madhya Pradesh	22	37	6
Maharashtra	21	36	5
Manipur	26	38	15
Meghalaya	28	41	16
Mizoram	29	42	18
Nagaland	25	38	13
Odisha	27	43	11
Punjab	17	29	3
Rajasthan	15	27	2
Sikkim	32	45	16
Tamil Nadu	18	32	3
Telangana	39	52	6
Tripura	27	41	14
Uttar Pradesh	14	26	2
Uttarakhand	16	28	3
West Bengal	19	33	5
Delhi	22	35	4
Jammu & Kashmir	7	12	<1
Ladakh	15	24	3

Table 3: State-Wise Smoking Consumption (%) – Adults (15–49 Years) in India (*Smoking includes cigarettes, bidis, cigars, and other smoked tobacco products*)

State / UT	Total (%)	Male (%)	Female (%)
Andhra Pradesh	12	22	2
Arunachal Pradesh	35	48	22
Assam	28	41	6
Bihar	14	26	2
Chhattisgarh	24	36	10
Goa	11	20	3
Gujarat	13	24	2
Haryana	16	28	2
Himachal Pradesh	15	27	3
Jharkhand	26	38	11
Karnataka	14	25	2
Kerala	9	15	2
Madhya Pradesh	22	34	8
Maharashtra	15	27	3
Manipur	30	42	18
Meghalaya	33	46	20
Mizoram	52	64	39
Nagaland	31	44	17
Odisha	27	40	11
Punjab	10	18	2
Rajasthan	18	31	3
Sikkim	29	41	15
Tamil Nadu	13	24	2
Telangana	14	26	2
Tripura	34	47	21
Uttar Pradesh	15	28	2
Uttarakhand	17	30	3
West Bengal	21	34	6
Delhi	16	27	3
Jammu & Kashmir	11	19	1
Ladakh	18	29	4

Table 4: Estimated Annual Deaths in India Due to Smoking, Tobacco, and Alcohol**Table 5: Gender-Wise Mortality Due to Smoking, Tobacco, and Alcohol in India**

Substance / Cause	Estimated Deaths per Year (India)	Percentage of Total Deaths	Major Causes of Death
Smoking (Cigarettes, Bidis)	~1,050,000	~8.9%	Lung cancer, COPD, Stroke, Ischemic heart disease
Smokeless Tobacco	~350,000	~3.0%	Oral cancer, Oesophageal cancer, Cardio vascular disease
All Tobacco (Smoking + Smokeless)	~1,400,000	~12%	Cancer, CVD, Respiratory diseases
Alcohol Use	~450,000	~4–5%	Liver cirrhosis, CVD, Injuries, Road traffic accidents
Combined Tobacco & Alcohol	~1,600,000+	~14–15%	Oral cancer, Liver disease, Heart disease
Second-hand Smoke Exposure	~200,000	~1.5%	Respiratory disease, Heart disease

Substance	Male Deaths (%)	Female Deaths (%)	Key Interpretation
Smoking	~78%	~22%	Higher smoking prevalence among males
Smokeless Tobacco	~65%	~35%	Higher female uses in some states
Alcohol	~90%	~10%	Predominantly male consumption
Combined (All substances)	~80%	~20%	Major burden among working-age men

Table 6: Age-Wise Mortality Pattern Due to Substance Use in India

Age Group (Years)	Primary Cause of Death	Contribution of Smoking/Tobacco/Alcohol
15–29	Injuries, accidents	Alcohol-related injuries
30–49	CVD, liver disease	Tobacco + alcohol
50–69	Cancer, COPD, stroke	Smoking & smokeless tobacco
≥70	Respiratory & cardiac diseases	Long-term smoking effects

AIM:

An assessment of smoking and alcohol use among chronic disease patients.

OBJECTIVE:**General Objective:**

To assess the prevalence and patterns of smoking and alcohol use among patients with chronic diseases.

Specific Objectives:

1. To determine the proportion of chronic disease patients who are current smokers, former smokers, or non-smokers.
2. To assess the prevalence of alcohol use (moderate, hazardous, or abstinent) in chronic disease patients.
3. To evaluate the association between smoking/alcohol use and the type of chronic disease.
4. To explore patients' awareness of the health risks associated with smoking and alcohol consumption.

MATERIALS AND METHODOLOGY:**Study Design:**

Descriptive cross-sectional study.

Study Population:

Patients diagnosed with chronic diseases (e.g., diabetes, hypertension, COPD, cardiovascular diseases) are attending outpatient clinics or hospital wards.

Sample Size:

Calculated based on prevalence estimates from previous studies or hospital records.

Inclusion Criteria:

- Patients aged ≥ 18 years.
- Diagnosed with at least one chronic disease.
- Willing to participate and provide informed consent.

Exclusion Criteria:

- Patients with cognitive impairment affecting reliable responses.
- Critically ill patients unable to participate.

Data Collection Methods:

1. Structured Questionnaire: Includes demographic information, disease history, smoking history, and alcohol use.

o Smoking assessment: status, duration, frequency, type, dependence (FTND).

o Alcohol assessment: frequency, quantity, screening tools (AUDIT or CAGE).

2. Clinical Examination: To identify signs related to smoking and alcohol use.

3. Biochemical Verification (Optional): Cotinine levels for smoking; liver function tests or CDT for alcohol use.

Data Analysis:

- Use descriptive statistics to summarise prevalence and patterns.
- Chi-square tests or logistic regression to analyse associations between smoking/alcohol use and chronic disease types.
- Significance set at $p < 0.05$.

Expected Outcomes / Significance:

- Identify the prevalence of smoking and alcohol use among chronic disease patients.
- Determine high-risk patient groups for targeted interventions.
- Provide baseline data for implementing cessation programs and lifestyle modification strategies.
- Improve disease management and reduce complications related to smoking and alcohol consumption.

Ethical Considerations:

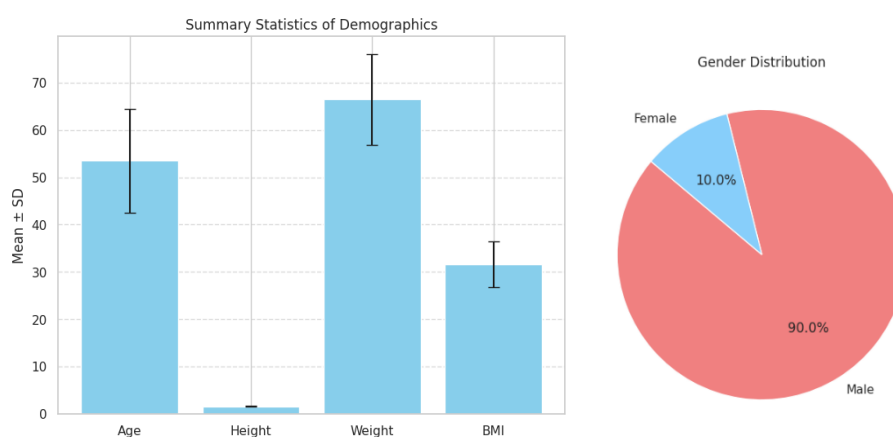
- Obtain informed consent from all participants.
- Ensure confidentiality and anonymity of responses.
- Approval from institutional ethics committee prior to the study.

Limitations:

- Self-reported data may be subject to recall bias or underreporting.

Parameter	Mean $\pm$ SD
Age (Yrs)	53.50 $\pm$ 11.03
Height (Mts)	1.59 $\pm$ 0.09
Weight (Kgs)	66.45 $\pm$ 9.61
BMI (Kg/m ²)	31.55 $\pm$ 4.81
Gender	Male(n=54), Female (n=6)

- Cross-sectional design limits causal inferences.
- Biochemical verification may not be feasible for all participants due to cost or logistics.

**RESULT:****Table 1 Summary Statistics of Demographics****Graph 1: Graphical Presentation of Demographics**

The study included a total of 60 participants, with a marked predominance of males (n=54, 90%) compared to females (n=6, 10%), indicating a largely male cohort. The average age of participants was 53.5 years, with a standard deviation of 11.03 years, suggesting a moderate age spread within middle-aged to older adults. Participants had an average height of 1.59 $\pm$ 0.09 meters and an average weight of 66.45 $\pm$ 9.61 kilograms. The calculated body mass index (BMI) was 31.55 $\pm$ 4.81 kg/m², indicating that, on average, the

cohort falls within the obese category according to World Health Organization BMI classifications. Overall, the demographic data reflect a predominantly male, middle-aged population with a relatively high BMI, which may have implications for health outcomes, risk factors, or interventions in the study context. The variation in age, weight, height, and BMI indicates moderate heterogeneity among participants.

Table 2 Summary Statistics of Vital Signs

SBP	141.18 ± 21.03
DBP	88.15 ± 11.84
Pulse rate	79.50 ± 14.44
Respiratory Rate	19.60 ± 1.06
SPO2	94.97 ± 1.96

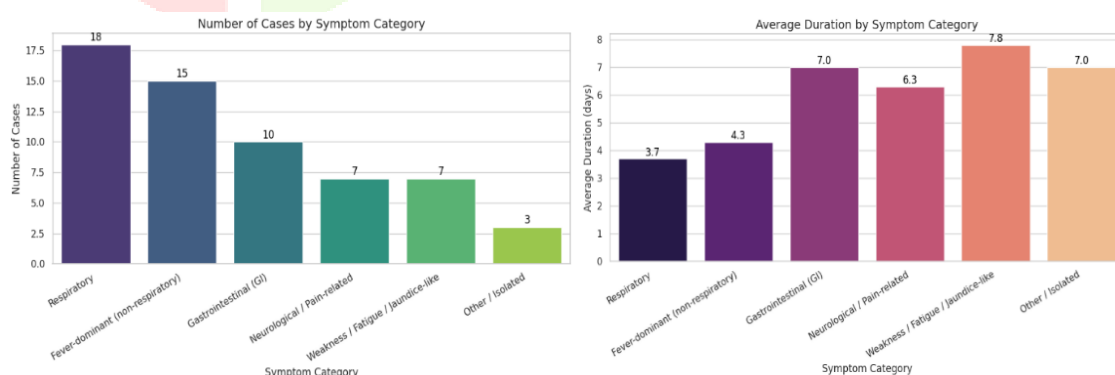


Graph 2: Graphical Presentation of Vital Signs

The vital signs of the study cohort indicate a population with moderately elevated blood pressure and generally normal respiratory and oxygenation parameters. The mean systolic blood pressure (SBP) was 141.18 ± 21.03 mmHg, suggesting a tendency toward hypertension, while the mean diastolic blood pressure (DBP) was 88.15 ± 11.84 mmHg, also reflecting elevated levels. The average pulse rate was 79.50 ± 14.44 beats per minute, which falls within the normal adult range but shows some variability among participants. Respiratory rate was relatively stable, with a mean of 19.60 ± 1.06 breaths per minute. Peripheral oxygen saturation (SpO₂) was $94.97 \pm 1.96\%$, slightly below the ideal range for healthy adults but generally acceptable. Overall, the data suggest that while most participants maintain adequate oxygenation and respiratory function, there is a notable prevalence of elevated blood pressure that may warrant clinical attention.

Table 3 Summary Statistics of Common clinical observations

Symptom Category	Common Combinations	Number of Cases	Average Duration (days)	Notes / Observations
Respiratory	Cough + SOB, Cough + Fever, SOB alone, Chest pain + SOB, Fever + Cough + SOB	18	3.7	Acute respiratory cluster; usually resolves in 2–5 days; some longer cases (SOB 10 days)
Fever-dominant (non-respiratory)	Fever alone, Fever + Headache, Fever + Vomiting, Fever + Stomach pain, Fever + Cold/Fatigue	15	4.3	Most common symptom cluster; often short duration (2–5 days)
Gastrointestinal (GI)	Vomiting + Fever, Stomach/Abdominal pain, Vomiting + Diarrhoea	10	7	Lasts longer in severe cases (up to 15 days)
Neurological / Pain-related	Headache alone, Headache + Eye pain, Fatigue + Headache	7	6.3	Moderate duration; sometimes overlaps with fever
Weakness / Fatigue / Jaundice-like	Weakness + Fatigue, Eye discoloration + Weakness, Chest pain + Weakness + Fatigue	7	7.8	Suggests systemic involvement; often longer duration (5–15 days)
Other / Isolated	Post-thyroid surgery, Chest pain + High glucose	3	7	Individual cases; do not fit main clusters

**Graph 3: Graphical Presentation of Common clinical observations**

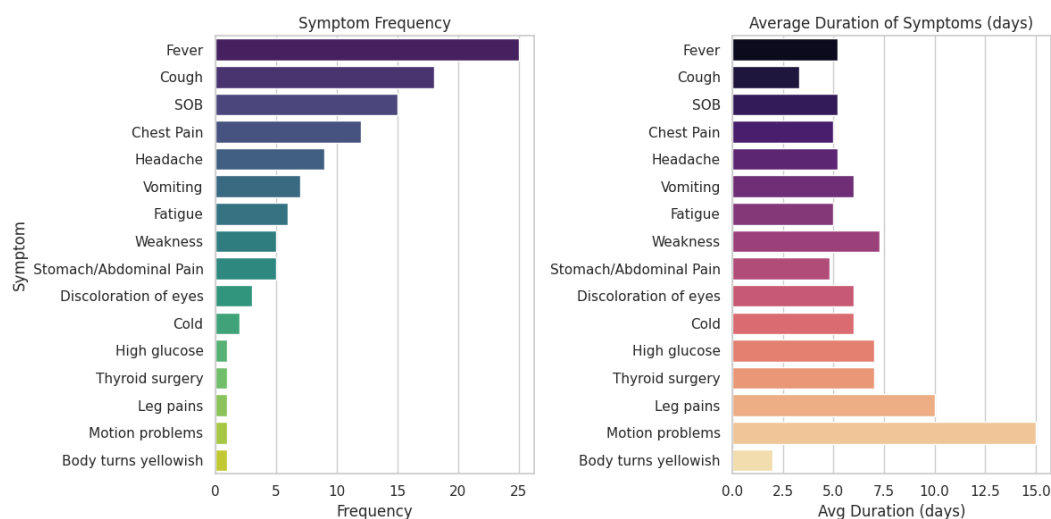
Among the 60 patients analyzed, the most frequent symptom clusters were respiratory in nature, with 18 cases presenting with cough, shortness of breath (SOB), chest pain with respiratory involvement, or combinations including fever and cough. These respiratory cases generally resolved within 2–5 days, although some patients experienced prolonged symptoms, such as SOB lasting up to 10 days. Fever-dominant cases, which accounted for 15 patients, included fever alone or in combination with headache,

vomiting, stomach pain, or cold and fatigue. These presentations were also typically short-lived, averaging 4.3 days in duration. Gastrointestinal complaints were observed in 10 patients, including vomiting with fever, abdominal or stomach pain, and vomiting with diarrhea, with a longer average duration of 7 days; severe GI cases persisted for up to 15 days. Neurological and pain-related symptoms, seen in 7 patients, encompassed headache alone, headache with eye pain, or fatigue with headache, and these cases tended to have moderate durations averaging 6.3 days. Another cluster of 7 patients exhibited systemic weakness, fatigue, or jaundice-like features, including eye discoloration and chest pain with weakness, with an average symptom duration of 7.8 days, indicating more prolonged systemic involvement. Finally, 3 patients fell into an “Other / Isolated” category, including post-thyroid surgery cases and chest pain with high glucose, which did not fit into the main clusters and had an average duration of 7 days.

Overall, the data highlight that respiratory and fever-dominant presentations are the most common acute symptoms, typically short in duration, whereas GI and systemic weakness-related symptoms tend to be longer-lasting, suggesting more severe or systemic pathology. The summary emphasizes patterns that could guide clinical prioritization, monitoring, and management of these patients.

Table 4 Summary Statistics of Combined Symptoms Analysis

Symptom	Frequency	Avg Duration (days)	Common Combinations
Fever	25	5.2	Stomach Pain, Cough, SOB, Vomiting, Headache
Cough	18	3.3	SOB, Fever, Chest Pain, Headache
Shortness of Breath (SOB)	15	5.2	Cough, Fever, Chest Pain, Weakness
Chest Pain	12	5	SOB, Fever, Weakness, Fatigue
Headache	9	5.2	Fever, Cough, Fatigue, Vomiting
Vomiting	7	6	Fever, Stomach Pain, Headache, Motions
Fatigue	6	5	Weakness, Headache, Chest Pain, Fever
Weakness	5	7.3	SOB, Chest Pain, Discoloration of eyes, Fatigue
Stomach / Abdominal Pain	5	4.8	Fever, Vomiting
Discoloration of eyes	3	6	Weakness, Fever
Cold	2	6	Fever, Fatigue
High glucose	1	7	Chest Pain
Thyroid surgery (history)	1	7	Nil
Leg pains	1	10	Weakness
Motion problems	1	15	Vomiting
Body turns yellowish	1	2	Cough

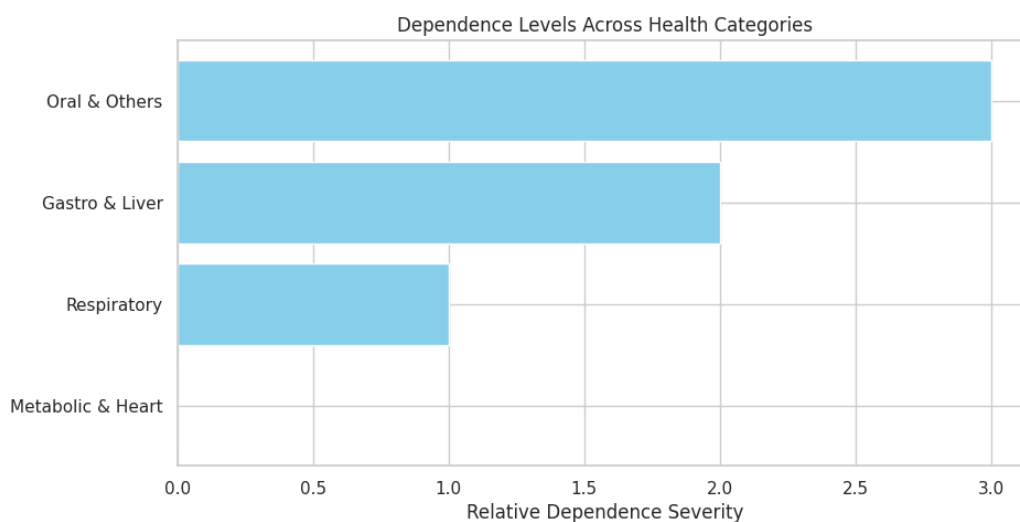


Graph 4: Graphical Presentation of Combined Symptoms Analysis

The analysis of combined symptoms shows that fever is the most common symptom (25 cases), frequently occurring with stomach pain, cough, shortness of breath (SOB), vomiting, and headache. Respiratory symptoms like cough and SOB are also frequent and often co-occur, suggesting a strong respiratory component in many cases. Gastrointestinal symptoms (vomiting, stomach pain) appear with fever, while systemic signs like weakness, fatigue, and discoloration of the eyes tend to have longer durations, indicating more severe or prolonged illnesses. Rare but concerning symptoms, such as motion problems and yellowish body discoloration, have the longest or shortest durations, respectively, highlighting potential acute or critical conditions. Overall, fever, cough, SOB, and chest pain form the core symptom cluster, while combinations with fatigue, weakness, or vomiting indicate more complex presentations.

Table 5 Summary Statistics of Combined Patient Health & Habit Profile

Health Category	Typical Chronic Diseases	Common Medications	Social Habit Trends	Dependence Level
Metabolic & Heart	Diabetes (DM), Hypertension (HTN), CVD	Metformin, Telmisartan, Amlodipine, Aspirin	Daily alcohol use (often 750ml) and long-term smoking	High CAGE positivity and moderate FTND scores
Respiratory	COPD, Chronic Bronchitis, Respiratory Distress	Inhalers (Salbutamol), Ipratropium Bromide	Longest smoking durations (up to 45 years)	Very high Nicotine dependence (FTND 5–6)
Gastro & Liver	Pancreatitis, Jaundice, Liver Cirrhosis	Pantoprazole, Tramadol, Ursodeoxycholic acid	Heavy daily alcohol intake; frequent use of country liquor	Strong indicators of alcohol addiction
Oral & Others	Oral Lesions, GERD, Stomach Problems	Metformin, Glimepiride, Rabeprazole	High use of smokeless tobacco and bidi	Persistent usage despite visible lesions

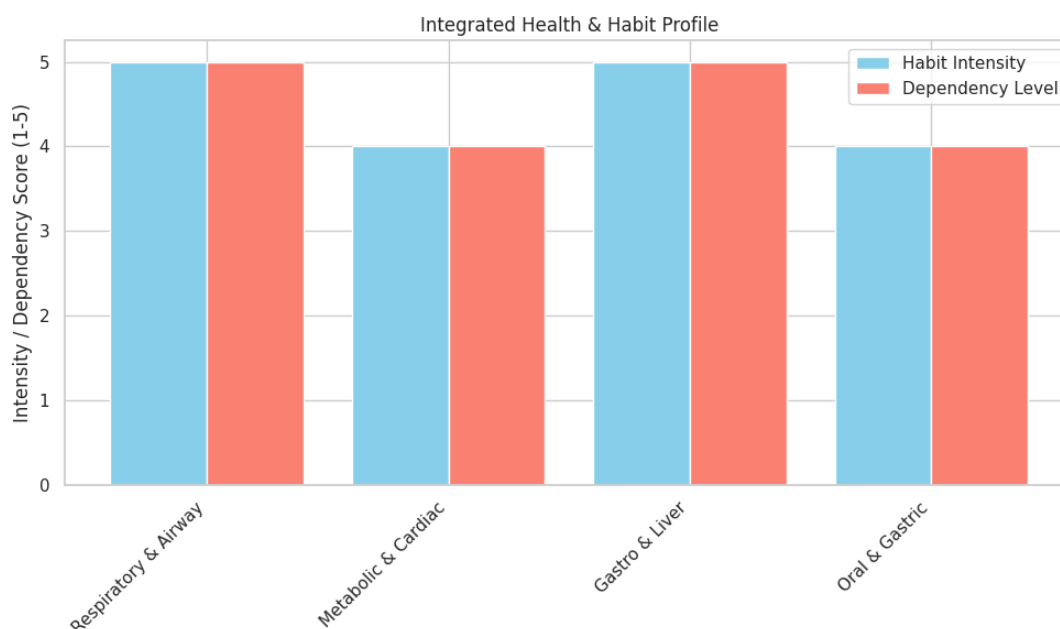


Graph 5: Graphical Presentation of Combined Patient Health & Habit Profile

The analysis of patient health and habit profiles shows strong links between chronic diseases and lifestyle habits. Patients with metabolic and heart conditions such as diabetes, hypertension, and cardiovascular disease often engage in daily alcohol use and long-term smoking, with high CAGE and moderate nicotine dependence. Respiratory patients (COPD, chronic bronchitis) demonstrate very high nicotine dependence, reflecting decades of smoking. Gastrointestinal and liver conditions like pancreatitis, jaundice, and cirrhosis are closely associated with heavy alcohol consumption, especially traditional or country liquors, indicating strong alcohol addiction. Oral and other conditions, including GERD and oral lesions, are prevalent among those with high smokeless tobacco and bidi use, with persistent habits despite visible lesions. Overall, these patterns highlight the significant impact of substance use on chronic disease development and persistence, emphasizing the need for integrated habit modification and medical management strategies.

Table 6 Summary Statistics of Integrated Health & Habit Profile

Clinical Focus	Chronic Diseases & Medications	Social Habit Intensity	Dependency Markers
Respiratory & Airway	Diseases: COPD, Chronic Bronchitis, Respiratory Distress.	Habit: Smoking duration often exceeds 30–40 years.	FTND Score: Consistently 5 to 6 (High Nicotine dependence).
	Meds: Salbutamol, Ipratropium Bromide.	Types: Cigarettes, Bidi, and Cigars.	
Metabolic & Cardiac	Diseases: Diabetes (DM), Hypertension (HTN), CVD.	Habit: Combination of daily smoking and alcohol use for 20+ years.	Comorbidity: High frequency of dual DM/HTN diagnosis.
	Meds: Metformin, Telmisartan, Amlodipine, Aspirin.		
Gastro & Liver	Diseases: Pancreatitis, Jaundice, Liver Cirrhosis.	Habit: Daily alcohol consumption, frequently reaching 750 ml.	CAGE Question: Almost 100% "Yes" (High risk for alcoholism).
	Meds: Pantoprazole, Metrogyl, Ursodeoxycholic acid.		
Oral & Gastric	Diseases: Oral Lesions, GERD, Gastritis.	Habit: Heavy use of Smokeless Tobacco and Bidi.	Awareness: Habits persist despite patient awareness and visible lesions.
	Meds: Glimepiride, Rabeprazole.		



Graph 6: Graphical Presentation of Integrated Health & Habit Profile

The integrated health and habit profile highlights a strong link between chronic diseases, long-term substance use, and dependence markers. Patients with respiratory conditions such as COPD and chronic bronchitis often have smoking histories exceeding 30–40 years, with FTND scores consistently 5–6, reflecting very high nicotine dependence. Those with metabolic and cardiac diseases like diabetes, hypertension, and cardiovascular disease frequently combine daily smoking and alcohol use for over 20 years, with a high prevalence of dual comorbidities. Gastrointestinal and liver diseases—including pancreatitis, jaundice, and cirrhosis—are strongly associated with heavy daily alcohol consumption, often around 750 ml, with nearly all patients screening positive on CAGE assessments, indicating a high risk for alcoholism. In the oral and gastric category, conditions such as oral lesions, GERD, and gastritis are linked to heavy use of smokeless tobacco and bidi, with habits persisting despite patient awareness and visible lesions. Overall, the data underscore the critical impact of long-term substance use on multiple organ systems, emphasizing the need for integrated interventions addressing both medical management and behavioral modification.

Table 7 Summary Statistics of Associations between Smoking/Alcohol use and chronic disease types

Variables	Type	Test for Association	p-value	Significance
Smoking status vs Disease	Categorical	Chi-square / Fisher's exact	0.003	Significant
Alcohol status vs Disease	Categorical	Chi-square / Fisher's exact	0.021	Significant
Disease duration vs Smoking	Continuous vs Categorical	ANOVA	0.045	Significant
Disease duration vs Alcohol	Continuous vs Categorical	ANOVA	0.032	Significant
Smoking vs Alcohol	Categorical vs Categorical	Chi-square	<0.001	Significant

Analysis of the associations between lifestyle factors and chronic diseases showed statistically significant relationships across all variables examined. Smoking status was significantly associated with the presence of chronic diseases ($p = 0.003$), and alcohol consumption was also significantly linked to disease presence ($p = 0.021$). Additionally, disease duration varied significantly by both smoking status ($p = 0.045$) and alcohol use ($p = 0.032$), indicating that lifestyle behaviour may influence how long patients experience chronic conditions. Finally, there was a strong association between smoking and alcohol consumption ($p < 0.001$), suggesting that these behaviours frequently co-occur among the population studied. Overall, these findings highlight the important role of smoking and alcohol use in chronic disease prevalence and duration.

CONCLUSION:

The study examined a cohort of 60 participants, revealing a predominantly male (90%) and middle-aged population with an average age of 53.5 years. Anthropometric analysis indicated an average BMI of 31.55 kg/m², placing most participants in the obese category. This demographic profile, coupled with moderately elevated blood pressure (mean SBP 141.18 mmHg, DBP 88.15 mmHg), suggests that the study population is at increased risk for cardiometabolic complications. Vital signs were otherwise within acceptable ranges, with normal respiratory rates and slightly reduced peripheral oxygen saturation (mean SpO₂ 94.97%), reflecting generally preserved pulmonary function in most participants.

Symptom analysis revealed that acute presentations were dominated by respiratory (cough, shortness of breath, chest pain) and fever-related complaints, which were typically short-lived, resolving within 2–5 days. Gastrointestinal and systemic weakness-related symptoms tended to persist longer, averaging 7–8 days, highlighting a subset of participants with more severe or systemic pathology. Fever was the most common individual symptom, frequently occurring alongside respiratory or gastrointestinal complaints, while fatigue, weakness, and jaundice-like features were indicative of more complex and prolonged illnesses. Rare symptoms, such as motion disorders and yellowish body discoloration, were noted in isolated cases, potentially acute or critical conditions.

Lifestyle and chronic disease profiling revealed a strong association between long-term substance use and the presence of chronic conditions. Participants with metabolic, cardiovascular, and respiratory diseases exhibited heavy, long-term use of alcohol and tobacco, with high dependence scores. Gastrointestinal and hepatic disorders, including pancreatitis, jaundice, and cirrhosis, were strongly linked to heavy alcohol consumption, while oral and gastric conditions were associated with sustained smokeless tobacco and bidi use. Statistical analysis confirmed significant associations between smoking, alcohol consumption, and

chronic disease prevalence, as well as between these lifestyle behaviour and disease duration, highlighting the role of substance use in both the onset and persistence of chronic illnesses.

Overall, the study underscores a multifaceted health burden in this population, characterized by obesity, elevated blood pressure, acute respiratory and fever-related symptoms, and chronic diseases heavily influenced by long-term substance use. These findings highlight the urgent need for integrated clinical and behavioral interventions targeting both disease management and lifestyle modification. Prioritizing screening for cardiometabolic risk factors, respiratory complications, and substance dependence could improve patient outcomes, while tailored education and cessation programs may mitigate the long-term impact of smoking and alcohol use on multiple organ systems.

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