



## Research Article

### **ROLE OF CLINICAL PHARMACIST IN DETERMINING TOBACCO AND ALCOHOL CONSUMPTION PATTERNS AND ITS REPERCUSSIONS IN A TERTIARY CARE HOSPITAL**

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#### ABSTRACT

Tobacco and alcohol consumption are the two unhealthy behaviors which often begin during adolescence. They remain one of the main preventable causes of ill-health and socio-economic burden in the society. This study mainly aims at determining the tobacco and alcohol consumption patterns, their interdependence on each other and their interactions with drugs and enumerating diseases and co-morbidities and clinical pharmacist role in providing patient education and counselling regarding their unhealthy behaviors and creating awareness on these habits and related economic burden on patients. A cross-sectional study conducted in a tertiary care hospital among 250 patients for 6 months. Data was collected from patients by WHO tobacco consumption questionnaire, CAGE tool, FAST + AUDIT tool and Kuppuswamy socio-economic scale through interviewing each subject. The majority of the patients (24.8%) were in age group of 41-50 years. Males are more prone to these habits (96.4%). Most common age of initiation of these habits are 21-30 years. Most commonly affected system was accessory organs 75 (30%) and 46% of the patients are suffering from co-morbidities. A total of 121 (48.4%) prescriptions have drug interactions with social habits. 71% of the patients are suffering from occupational or financial stress. 244 (97.6%) patients are experiencing interdependence of these habits. Majority of the patients (95.2%) are of low economic status experiencing economic burden due to these habits. Clinical pharmacist main provision is providing care to individual patients by patient counselling, regarding the repercussions of these social habits and creating awareness to the patients.

**Keywords:** CAGE tool, FAST + AUDIT tool, Kuppuswamy scale, Interdependence, Clinical pharmacist, Repercussions.

#### INTRODUCTION

Tobacco and alcohol consumption are the two unhealthy behaviors in the society that often begin during adolescence<sup>1</sup>. These are the top causes of preventable deaths. Tobacco kills nearly 6 million people annually<sup>1,2</sup>, an average of 1 person die every 6 seconds<sup>1</sup>. This figure is expected to increase to 10 million deaths per year by 2020, with 7 million of these deaths to occur in China and India. In India, tobacco kills 0.8-1 million people each year and many of these deaths will occur in people who are very young. It has been estimated that an average of five-and-a-half minutes of life is lost for each cigarette smoked. 2.5 million People die from alcohol use each year worldwide<sup>3</sup>. These substances are often used together.

Studies suggest that people who are dependent on alcohol are three times more likely to smoke and people who are dependent on smoke are four times more likely to dependent on alcohol<sup>4,5</sup>. The global statistics on alcohol, tobacco status report said that quarter of a billion hours of healthy human life are lost each year because of smoking and drinking. Globally one in seven adults smoke, while five in one drink<sup>5</sup>.

**Table 1: Classification of tobacco products**

Smoking tobacco	Smokeless tobacco
Cigarettes	Snuff (moist, dry, or in packets)
Cigars	Snus
Pipes	Gutkha
Bidis	Toombak
Kreteks	betel quid with tobacco <sup>6</sup>

#### Repercussion

A result or effect is typically one that is unwelcome or unpleasant. It is also called as consequence or effects. Due to consumption of tobacco and alcohol it leads to consequences like:<sup>7</sup> Health, socio-economic consequences.

- Health effects: System wise  
Sudden withdrawal effects- Cravings, anxiety, self-control, psychosocial distress
- Behavioral consequences
- Effects on family and children
- Economic impact/burden: Direct or indirect

#### Role of clinical pharmacist

Pharmacists are front-line health care providers and arguably are the most accessible members of a health care team<sup>8-10</sup>. They are expected to play a multitude of roles in preventing the harmful effects of social habits. They are:

- Gather the information necessary to conduct a screen for dependence
- Assessing the acute and chronic therapy in terms of interactions for tobacco and alcohol
- Inform the patients about risk, withdrawal symptoms for dependence
- Addressing the patients about different types of clinical interventions

- Locate the sources needed to answer the questions about the effects of alcohol and smoking
- Develop a list of local resources information for rehabilitation
- To provide patient education, and creating awareness to the patients
- To explain socio-economic related consequences to the patients
- To update health care professional regarding recent advancements

**Table 2: Tobacco and alcohol interactions with drugs and their effects**

Drug name	Drug name
Acetaminophen	Acetaminophen
Deriphyllin	Insulin
Ondansetron	Aspirin
Aspirin	Metronidazole <sup>11,13</sup>

**Develop a list of local resources information for rehabilitation**

Collecting the information, regarding rehabilitation centers and referring the patients to the centers that are present in and around Tirupati and providing assistance in their abstinence<sup>9</sup>.

**To evaluate socio-economic class of the patients**

Socio-economic status (SES) could be a measure of economic and sociological conditions of an individual's work expertise and of a person's or family's economic and social position in regard to different community members. Usually, income, education, and occupation area unit taken into thought to determine socioeconomic status<sup>13,14</sup>. This scale has been endlessly revised over the amount of years. New version was published in January 2018<sup>13,14</sup>.

**Modified kuppuswamy scale updated for the year 2018** was used for the collection of details regarding socio-economic status<sup>13</sup>.

**MATERIAL AND METHODS**

Cross-sectional study was conducted in SVRRGGH (Sri Venkateshwara Ramnarain Ruia Government General Hospital) Tirupati, tertiary care teaching hospital, in the department of general medicine for a period of 6 months with sample size of 250 patients. Patient data collection proforma, Informed consent form (ICF), WHO smoking questionnaire, AUDIT, FAST questionnaire, CAGE tool for alcohol consumption, Modified Kuppuswamy Socioeconomic scale were used.

Patients of age >18 years in general medicine in-patient ward with or without co-morbidities consuming tobacco and alcohol were included.

Patients who are unwilling to participate in the study, Patients unable to communicate and Patients with psychiatric illness are excluded.

We informed them about the anonymity and confidentiality of the data and the voluntary nature of their participation.

Patients who are willing to participate were asked to sign the informed consent form. Data was collected via a specially designed proforma consisting of two parts. The first part includes questions on socio-demographic characteristics, past medical history, family history, marital status, co-morbidities, drug usage for chronic diseases, diagnosis and present medications

prescribed for each patient, a table to check drug interactions with drug therapy and the second part consisted of three questionnaires:

WHO tobacco consumption questionnaire  
 Questionnaire on alcohol usage i.e. CAGE (Cut down, Annoyed, Guilty, Eye-opener)  
 FAST (Fast Alcohol Screening Test)  
 AUDIT (Alcohol Use Disorders Identification Test) are used to assess tobacco and alcohol consumption patterns, dependence and  
 Modified kuppuswamy socio-economic scale is used for evaluation of socio-economic status and evaluation of economic burden on the patient due to tobacco and alcohol consumption.

**WHO tobacco consumption questionnaire**

1. Have you ever used any form of tobacco?
  - a. Smoking: Cigars/Beedi/ Others Smokeless: Chewing / Snus/ Snuff/ Gutka / Others
2. Do you currently smoke tobacco on a: Daily basis/ less than daily
3. How old were you when you first started smoking cigarettes: years
4. About how many years were you a smoker: <1year / 1-5years/ 5-15years/ >20years
5. How many cigarettes on average did you smoke per day?
6. Have you ever attempted to quit any form of tobacco?
7. What are/were the reasons that you attempted to quit?

High price of cigarettes  
 Disapproval of friends/relatives  
 Hospitalization  
 Health problems  
 Concern over health of others in household or future health risks

- Other:
8. Have you ever visited a doctor regarding health issues: Yes/No
  9. During the visit to doctor have you ever advised to quit? Yes/No
  10. Are you aware of the dangers of tobacco consumption? Yes/No
  11. Quantity of tobacco purchased:
  12. Cost of the product:
  13. Do you have any occupational or job stress:

**Cage tool**

1. Have you ever felt you should Cut down on your drinking?
2. Have people annoyed you by criticizing your drinking?
3. Have you ever felt bad or Guilty about your drinking?
4. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye opener)?

Scoring: Item responses on the CAGE are scored 0 or 1; with a higher score an indication of alcohol problems. A total score of 2 or greater is considered clinically significant.

**FAST + AUDIT: Total Score:** 0-7: lower risk, 8-15: Increased risk, 16-19: Higher risk, 20+: Possible dependence

1. How often do you have a drink containing alcohol and since how many years\_?
  - a) Never b) Monthly or less c) 2 to 4 times a month d) 2 to 3 times a week e) 4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?

- a) 1 or 2 b) 3 or 4 c) 5 or 6 d) 7 to 9 e) 10 or more
- 3. How often do you have 5 or more drinks on one occasion?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 4. How often during the last year have you found that you were not able to stop drinking once you had started?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 5. How often during the last year have you failed to do what was normally expected of you because of drinking?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 7. How often during the last year have you had a feeling of guilt or remorse after drinking?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 8. How often during the last year have you been unable to remember what happened the night before because of your drinking?
  - a) Never b) Less than monthly c) Monthly d) Weekly e) Daily or almost daily
- 9. Have you or someone else been injured because of your drinking?
  - a) No b) Yes, but not in the last year c) Yes, during the last year
- 10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?
  - a) No b) Yes, but not in the last year c) Yes, during the last year

**Table 3: Modified Kuppaswamy Socioeconomic scale updated for January 2018**

**(a) Occupation of the Head of the Family**

Occupation of the head	Score
Legislators, Senior Officials and Managers	10
Professionals	9
Technicians and Associate Professionals	8
Clerks	7
Skilled Workers and Shop and Market Sales Workers	6
Skilled Agricultural and Fishery Workers	5
Craft and Related Trade Workers	4
Plant and Machine Operators and Assemblers	3
Elementary Occupation	2
Unemployed	1

**(b) Education of the Head of the Family**

Education of the head	Score
Profession or Honours	7
Graduate	6
Intermediate/ Diploma	5
High school certificate	4
Middle school certificate	3
Primary school certificate	2
Illiterate	1

**(c) Total Monthly Income of the Family**

Updated Monthly Family Income in Rs. (2018)	Score
>126,360	12
63,182-126,356	10
47,266-63178	6
31,591-47262	4
18,953-31589	3
6327-18949	2
≤6323	1

**(d) Kuppaswamy's Socio-Economic Status Scale 2018**

Socioeconomic class	Score
Upper (I)	26-29
Upper middle (II)	16-25
Lower middle (III)	11-15
Upper lower (IV)	5-10
Lower (V)	<5

We collected the information from patient case sheet and patient interview. Patients are counseled regarding their social habits. Further, patients are informed regarding abstinence and their beneficial effects. Patients in case of high substance abuse are recommended to their nearest de-addiction centers (which are listed in annexure) and in case of mild to moderate conditions they are informed regarding de-addiction centers and if not interested counselling is provided to the patients regarding withdrawal and benefits. Based on the results obtained on Socio-economic status of patients and are educated regarding pre-requisite of several diseases and their effects on income and are instructed on financial gain.

**RESULTS**

**Table 4: Classification of patients based on age**

Age (years)	Number of patients	Percentage (%)
20-30	15	6
31-40	49	19.6
41-50	62	24.8
51-60	59	23.6
61-70	49	19.6
71-80	12	4.8
>80	4	1.6
<b>Total</b>	250	100

**Table 5: Classification of patients based on gender**

Gender	Number of patients	Percentage (%)
Male	241	96.4
Female	9	3.6
<b>Total</b>	250	100

**Table 6: Classification of patients based on duration of alcohol**

Duration (years)	Number of patients	Percentage (%)
1-5	16	6.5
6-10	37	15.1
11-15	38	15.5
16-20	43	17.6
>20	110	45
<b>Total</b>	244	100

Table 7: Classification of patients based on duration of tobacco

Duration (years)	Number of patients	Percentage (%)
1-5	18	7.2
6-10	17	6.8
11-15	49	19.6
16-20	13	5.2
>20	152	61
<b>Total</b>	<b>249</b>	<b>100</b>

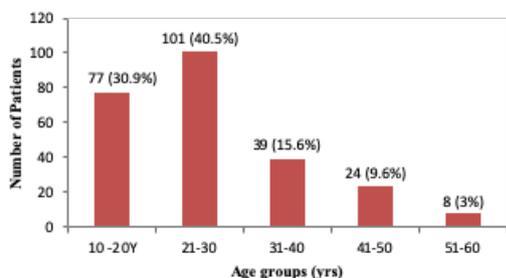


Figure 1: Classification of patients based on age of initiation of tobacco consumption

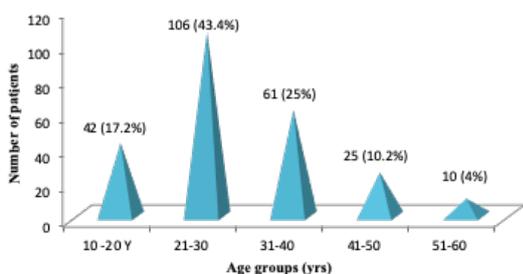


Figure 2: Classification of patients based on age of initiation of alcohol

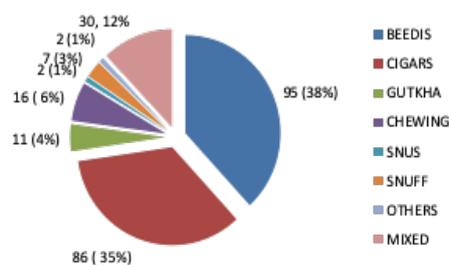


Figure 3: Classification of types of tobacco consumption

Table 8: Classification of dependence through cage tool

Score	Number of patients	Percentage (%)
1	5	2
2	35	14.3
3	105	43
4	99	40.5
<b>Total</b>	<b>244</b>	<b>100</b>

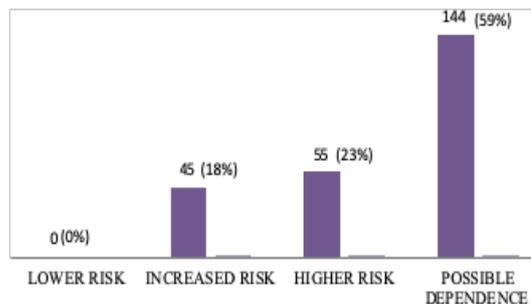


Figure 4: Classification by using fast + audit tool

Table 9: System wise classification of diseases

System affected	Number of patients	Percentage (%)
CNS	35	14
Respiratory	30	12
GIT	16	7
Accessory organs	75	30
CVS	65	26
Renal system	15	6
Musculo- skeletal	6	2
Others	8	3
<b>Total</b>	<b>250</b>	<b>100</b>

Table 10: Number of drugs per prescription

Drugs per prescription	Number of patients	Percentage (%)
1-3	18	7%
4-6	102	14%
7-9	105	42%
10-12	20	8%
>or equal to 13	5	2%
<b>Total</b>	<b>250</b>	<b>100</b>

Table 11: Classification of drug interactions

Type of interaction	Number of prescriptions	Percentage (%)
Tobacco	22	18
Alcohol	33	26
Both	69	56
<b>Total</b>	<b>121</b>	<b>100</b>

Table 12: Classification based on stress

Stress	Number of patients	Percentage (%)
Present	178	71
Absent	72	29
<b>Total</b>	<b>250</b>	<b>100</b>

Table 13: Classification of patients based on socio-economic class

Socio-economic class	Number of patients	Percentage (%)
Upper (i)	0	0
Upper middle (ii)	12	4.8
Lower middle (iii)	39	15.6
Upper lower (iv)	186	74.4
Lower (v)	13	5.2
<b>Total</b>	<b>250</b>	<b>100</b>

**Table 14: Socio-economic burden**

Economic class	Number of patents	Monthly expenses
Lower	13	450-7900
Upper-lower	186	1560-11,250
Lower-middle	39	2200-10900
Upper-middle	12	4450-10600
Upper	0	7600
<b>Total</b>	<b>250</b>	

**Table 15: Mutual dependence**

Habit initiated	Number of patients	Percentage
Tobacco	156	62.4
Alcohol	88	35.2
No dependence	6	2.4
<b>Total</b>	<b>250</b>	<b>100</b>

**DISCUSSION**

Tobacco and alcohol consumption are the two unhealthy behaviors so far. This habit although seemed to be independent but have mutual dependence with each of the habit. These two habits have high impact on both health related and also causes socio-economic consequences. In the present study, 250 subjects were analyzed regarding their tobacco and alcohol consumption patterns, dependency and consequences. Average drugs per prescription were found to be 5 drugs in 250 prescriptions.

The study revealed that majority of patients hospitalized were in the range of 20-30 years were 15 (6%) patients followed by 31-40 years were 49 (19.6%), 41-50 years were 62 (24.8%), 51-60 years were 59 (23.6%), 61-70 years were 49 (19.6%), 71-80 years were 12 (4.8%) and >80 years were 4 (1.6%) respectively showing that majority of the hospitalized patients fall under the age group range 41-50 years with 62 patients and the results found were supported by Hemalatha *et al.*<sup>1</sup>

Among 250 patient’s males were 241 (96.4%) whereas females were 9 (3.6%) indicating male patients are dominant over female which is similar to the study conducted by A.M.Reis *et al.*, and Drum *et al.* This may be due to males have more reward effects than females. The most common age of initiation of tobacco and alcohol consumption is between 21-30 years as studies conducted by A.M. Reis *et al.*, Drum *et al.*<sup>6</sup> This may be due to curiosity, peer pressure and stress related issues<sup>14</sup>.

The prevalence of tobacco use in the present study is 98.9% in which 72.5% smoked tobacco and 26.4% consumed smokeless tobacco. The prevalence of alcohol use in patients is 97.6% and the results were supported by Patel J. *et al.*

The morbidity pattern in our study was found to be Accessory organs involved diseases are 30%, followed by CVS 26%, CNS 14%, Respiratory 12%, GIT 7%, Renal 6%, Musculo-skeletal 2% and others are 3%. As expected, increased consumption of tobacco and alcohol has major effects on liver are similar to that of reported by Hemalatha *et al.*<sup>1</sup>.

Presence of co-morbidities tells that, there are 46% of the patients suffering from either one or two or three or more than three co-morbidities and also reveals that maximum of the patients without co-morbidities will be prone them in near future.

The study observed that the drugs prescribed has interactions with tobacco and alcohol containing products, majority of the prescriptions have interactions with only tobacco 18%, 26% prescription have interactions with alcohol and 56% prescriptions have interactions for both habits as suggested by Vidyavati S Koppiseti *et al.* Alcohol interactions are due to alteration in gastric mucosa, enzyme induction and inhibition of metabolism. Tobacco interactions are as a result of CYP 450 enzyme inducers and oxidative stress. Stress is considered as a major attribute for getting used to these social habits and also one of the reasons for not opting to cessation, 71% of the patients are found to be experiencing stress related to occupation or financial and the results are similar to Ayemen Almeen *et al.* This is due to increase in cortisol hormone in the patients, thus acting as stress-reliever.

Present study revealed that 156 patients are initially having habit of tobacco consumption and 88 patients are having a habit of alcohol consumption. Further, presence of any one of the habit lead to initiating the other habit and the use of one may act as a potentiating factor for the use of others as of with study by David J. Drobos *et al.* and Pathak NK *et al.* Studies suggest that people who are dependent on alcohol are three times more likely to smoke and people who are dependent on smoke are four times more likely to dependent on alcohol. As they potentiate each other’s effects.

Among 250 patients, 95.2% of the patients are under low socio-economic status. Combined use: the prevalence of co-use increased across socioeconomic status with poorer households co-using more than richer households. Tobacco consumption prevalence increased with poorer households than richer households as done by Nirun Intarut *et al.* Alcohol-related mortality and morbidity are high in socioeconomically low populations compared with individuals from advantaged areas Srinivasa Vittal Katikireddi *et al.*

Tobacco and alcohol consumption are the two social behaviors having interdependence on each other. These habits lead to consequences such as health related and socio-economic consequences. To reduce the repercussions and to increase patient quality of life in all terms, clinical pharmacist plays a major role in enhancing the positive outcomes in the patients. As clinical pharmacist the most accessible person of the health care team to help the patient to overcome these habits by providing counselling regarding the withdrawal benefits and educating the patients regarding dependence, available interventions and economic benefits and referring them to rehabilitation centers. By monitoring the prescriptions, we gauge them for drug interactions with social habits and also update the physician regarding these issues and the recent interventions available for treating these issues.

As a clinical pharmacist by providing counselling sessions to the patients and if necessary, for family members and opting them to accept the risks and benefits caused by these habits will provide more abstinence in the patients and helps in improving patient quality of life.

**CONCLUSION**

The present study emphasizes the association between concurrent use of alcohol and tobacco and their harmful consumption patterns by collecting the details on social habits and evaluating the data obtained. With this study we conclude that, along with proper medications, health educational interventions and rehabilitation centers will greatly help in reducing the various repercussions caused by tobacco and alcohol consumption. As clinical pharmacist provides feed-back to the physicians by

assessing patient's prescriptions for drug – social habits interactions to enhance positive therapeutic outcomes, increase quality of life and helps decrease in economic burden for the patients and family members. So, co-ordination of clinical pharmacist along with physicians as a member of health care team is necessary to improve the psychology of patients in eradicating the tobacco and alcohol consumption habits.

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