

## Assessment of Impact of Alcohol Consumption on Patients Taking Medicines for Chronic Conditions - A Cross Sectional Cohort Study

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### Abstract

Most people consuming alcohol, whether in moderate or large quantities also take medications which may be a prescription based medicine or a over the counter medications at least occasionally causing serious possible interactions. The aim of our study was to characterize the adverse outcomes associated with alcohol and alcohol interacting medications in patients. A questionnaire survey was conducted for a period of six months in Urban health centre with a sample size of 500. All adult and older adults male patients taking alcohol who were on medication for chronic conditions and male Patients who are of age between 30-75 years were included in the study. Data from the questionnaire was analyzed using appropriate statistical tools. POSAMINO criteria was used to assess the potential alcohol drug interactions. In the study population, 40.8% of participants belonged to age group of 41-50. Majority of 60% participants were consuming alcohol weekly 60% of the study participants were consuming alcohol since past 5-10 years. Sixty percent of the participants do not miss their dose after consumption of alcohol. Almost 60% of the participants were not injured after consumption of alcohol. twenty percent of the participants were having potential alcohol drug interactions with anti diabetics drugs were as 20% of the participants were having potential alcohol drug interactions with anti hypertensive drugs, Our study found considerable alcohol- medication interaction. There is a need for educating the people regarding stopping of alcohol consumption while on medications.

**Keywords:** Alcohol, Awareness, chronic-condition, Interactions, Medications, POSAMINO.

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### INTRODUCTION

Excessive alcohol use is a global public health problem accounting for about 6% of mortality and 5% of disability adjusted life years (DALYs) lost worldwide. The reported prevalence of alcohol use disorders (AUD) (defined by an Alcohol Use Disorders Identification Test (AUDIT) score  $\geq 8$ ) is estimated at 4% globally is generally more prevalent among men. AUD are associated with acute and long-term medical complications and may interfere with the treatment of chronic diseases such as diabetes and HIV/AIDS due to poor treatment adherence. Alcohol use and AUD are also associated with intentional and unintentional injuries, domestic violence, unemployment and decreased work productivity. Data from industrialized countries show that excessive alcohol use often begins at young age. In 2012, according to WHO, 46% of the world's adolescents aged 15–19 years reported having ever used alcohol, and 34% had used it in the last years. In India alcohol is one of the leading causes of death

and disability globally and the same is true for our country India. A total of 3.2% of deaths worldwide are caused by alcohol every year (Francis JM *et al.*, 2015).

When drugs are taken along with alcohol, or alcohol consumption while on medication will affect the therapeutic benefits of medications. Alcohol and pharmaceuticals are health-impacting commodities which are significant in the global economy and incur considerable costs to health services. The use of both is determined by many factors, including national governments, regulatory agencies, industry factors and health systems, as well as health professionals and individuals within their own particular life worlds (i.e. the self-evident world of their own lived experience). Alcohol is a psychoactive drug (ethanol) which presents a major public health challenge. It is currently consumed and understood as a recreational rather than as a pharmaceutical drug, although alcohol has historically been assigned therapeutic value and used as a medicine. Alcohol consumption is deeply culturally

ingrained and, in the UK, is commonly associated with enjoyment, relaxation and celebration. Alcohol is also linked to poor health in various and complex ways and presents some risk to all those who use it (Madden M *et al.*, 2019).

Use of alcohol has increased particularly among men and women aged between 65 and 74, and abstinence has decreased over the past decades. Furthermore, many drugs interact adversely with alcohol. However, many older adults concomitantly drink alcohol and take drugs. The ageing body is more susceptible to adverse drug and alcohol interactions; slower metabolic and clearance mechanisms delay their resolution. Some of these interactions are due to age-related changes in the absorption, distribution, and metabolism of alcohol and medications (Immonen S *et al.*, 2013).

Alcoholic interacting medications, when combined with alcohol, increase the risk of medical complications such as hypoglycemia, hypotension, sedation, gastrointestinal bleeds (Cousins G *et al.*, 2014)

Only a few epidemiological studies investigating the concomitant use of alcohol and drugs were presenting in the literature (Immonen S *et al.*, 2013).

In this context, we carried out an assessment Of Impact Of Alcohol Consumption On Patient taking Medicines for Chronic Conditions: with an objective to explore the concurrent use of alcohol and alcohol interacting medications in older adults and also to categorize serious alcohol- drug interactions outcomes according to POSAMINO criteria which will enable us to plan effective interventional strategies to minimize or stop alcohol consumption during medications.

## **METHODS AND MATERIALS**

### **2.1. Study design and sample size**

A cross sectional cohort study was conducted for a period of six months in North Karnataka the sample size was 500. Convenient sampling method was adopted to collect the responses from patients visiting hospitals. The patients who were aged between 30-75 years were included in the study. Only male patients taking alcohol and are on medications for chronic condition were included, The response rate was 100%.

### **2.2. Ethical approval**

The study was approved by Institutional Ethics Committee. by issuing Ethical Clearance Certificate.

### **2.3. Designing of Questionnaire**

Questionnaire were taken from previous articles. The format contains provisions to enter the details such as Patient's name, age, sex, date, complaints, diagnosis and medications along with there alcohol consumption habit.

### **Application of POSAMINO criteria by WHO guidelines**

The POSAMINO criteria was applied for finding out the drug and alcohol interactions by referring primary, and tertiary resources. Tertiary resources included textbook like World Health Organization (WHO) and International Network for Rational Use of Drugs. How to Investigate Drug Use in Health Facilities: Selected Drug Use indicators. Primary resources included various articles related to the drug utilization and prescribing pattern studies that guided in explicit potentially serious-alcohol medication interaction for use in older adult. Following the future validation studies, these criteria may allow risk stratification of older adult at the point of prescribing.

### **2.4. Questionnaire distribution, collection of Data and analysis of the data**

The validated questionnaires and data entry form were distributed simultaneously among patients in the study area, i.e., hospital premises and public places. The project team briefed about the study to the participants. The questionnaire was distributed to each patient at a time and the responses were collected. The targeted population for this study were residents of Raichur aged 30-75 years. The participants were informed about the study goals. The information provided by the study participants in the questionnaires and data entry form were kept confidential and only the collected data was processed. Based on the responses obtained from the questionnaires and data entry forms, results were tabulated and analysed.

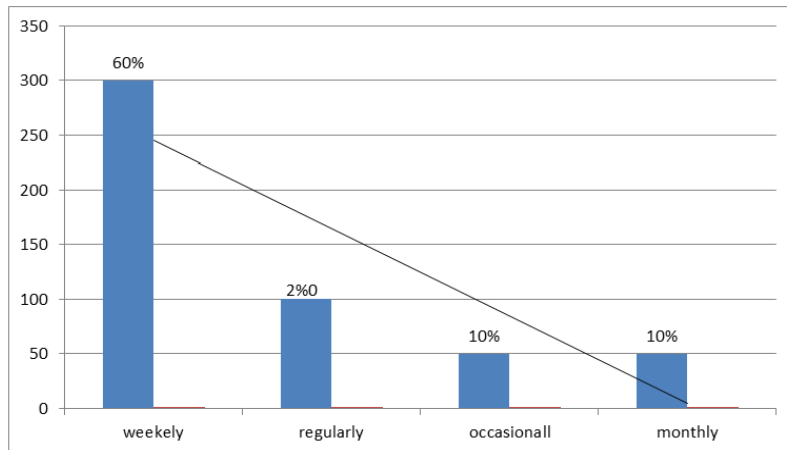
The filled KAP questionnaires were analysed and monitored for the following variables:

1. Socio-demographic data
2. Patients chronic medications

The data from the KAP questionnaires were analysed using descriptive statistics namely total numbers, percentage and mean. Microsoft excel and word was used to generate graphs, Tables etc.

## **RESULTS AND DISCUSSION**

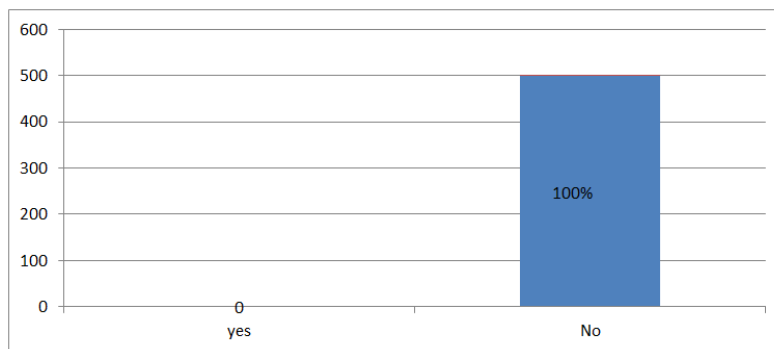
Figure 1 showed that how often they drink alcohol ,most of the patient drink alcohol weekly ie.60% and regularly 20%. Occasionally 10% and monthly 10% respectively. Which is shown in Figure 1.



**Fig 1: Alcohol drinking pattern (N=500)**

Figure 2 illustrated whether consumption of alcohol will be benefiting there life or not. Among 500

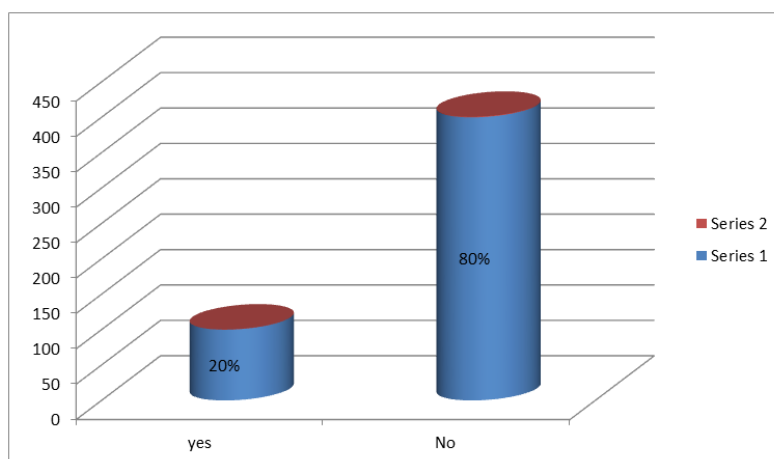
cases collected participant, all were reported no benefit of alcohol consumption.



**Fig 2: Perception about alcohol benefits (n=500)**

Figure 3 showed the missing dose of medication after consumption of alcohol. Among 500 participants, majority of the participants (60%) not missed any dose of medication after consumption of

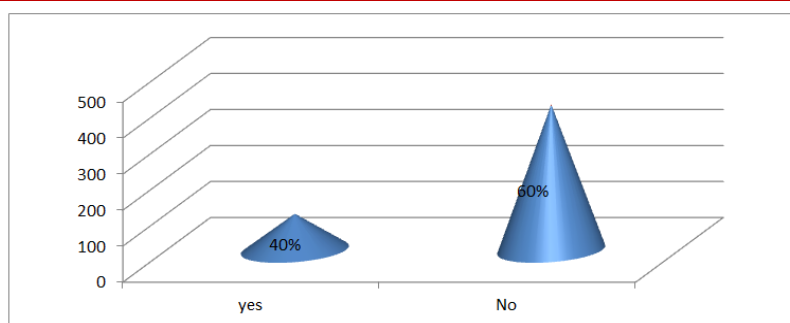
alcohol where as 40% of the patients said they have missed the dose of medication after alcohol consumption.



**Fig 3: Missed doses of medication after consumption of alcohol (n=500)**

Among 500 participants, more than 40% of them had injuries after consumption of alcohol and 60% of patients not experienced any injuries after

consumption of alcohol. The same was stated in Figure 4.



**Fig 4: Injuries after drinking alcohol (n=100)**

Over half of the participants in our study had complained of having side effects of vomiting 60% and 20% of the patients result with nausea, and 20% of the

patients with headache. Among 500 cases collected majority of the participants 60% have vomiting as side effect as depicted in Table 1.

**Table 1: Side effects occurred after consumption of alcohol (n=500)**

Side effects	No of patients	Percentage (%)
Nausea	100	20
Vomiting	300	60
Headache	100	20

Table 2 exhibits the categorization of diagnosis of the patients, over half of the participants were diagnosed with Diabetes mellitus ie (60%) followed by hypertension (20%) and patients with combination of both diabetic and hypertension is (10%)

and 10% of the patients were diagnosed with other chronic conditions like (Asthma, COPD, Arthritis, MI etc) over 500 cases majority of the patients were diagnosed with diabetic mellitus

**Table 2: Categorization of Diagnosis of patients (100)**

Chronic condition	Number of patient	Percentage
Diabetics mellitus	300	60%
Hypertension	100	20%
Combination of DM and HTN	50	10%
Others	50	10%

Table 3 represented total number of people taking medications under chronic condition and also had potential serious alcohol interactions as per the POSAMINO criteria. Fifty of the participants were diabetic and taking sulfonyl ureas, metformin and insulin in which sulfonyl ureas had potential serious interaction with alcohol consumption this may enhance the hypoglycaemic effect of anti diabetic drugs.

Metformin having potential interaction when taken by people having heavy alcohol consumption. This may lead to increased risk of lactic acidosis. Similarly insulin with alcohol consumption may enhance the hypoglycemic effect of insulin. Twenty of the participants were with hypertension and they had treatment with multiple anti hypertensive and there combinations.

**Table 3: Potential Alcohol –medication interactions in study participants**

Interactions	Clinical effects
Sulfonylurea's <> Alcohol	: Sulfonylurea's shows potential serious interaction that alcohol consumption can enhance the hypoglycemic effect
Metformin <> Alcohol	: Metformin shows the potential interaction that combining with heavy alcohol consumption may increase the risk of lactic acidosis
Insulin<> Alcohol	: Insulin with alcohol consumption may enhance the hypoglycemic effect of insulin
Hypertensivedrugs <> Alcohol	: Multiple anti hypertensive combination drugs with heavy consumption of alcohol may increase the risk of orthostatic hypertension.
Alpha blockers<> Alcohol	: Heavy consumption of alcohol along with the alpha blockers may increase the risk of orthostatic hypertension.
Asprin<> Alcohol	: Heavy alcohol consumption with regular use of low dose aspirin (75mg) may cause a small increase in gastro intestinal blood loss
Diuretics	: Heavy alcohol consumption with regular use of low dose aspirin (75mg) may cause a small increase in gastro intestinal blood loss

## CONCLUSION

Awareness on general population about risk of alcohol consumption along with the chronic medications showed that the general population have less knowledge about serious adverse drug reactions that are associated with it. There is a need for educating the people regarding stopping of alcohol consumption while on medications. There is a need for educational intervention program to create awareness on sever impact of alcohol consumption while on medications. The development of our study report will be use full for planning such operational interventions, by government level, so that we can avoid potential serious adverse effects of alcohol drug interactions, there by quality of the patients life can be improved.

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**Conflict of Interest:** The authors declare no conflict of interest.

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