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Research Article

Age and Gender-wise Distribution, Social History, and Length of Hospital Stay of Cardiovascular Patients with Drug-related Problems

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I N F O

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A B S T R A C T

Introduction: A patient's quality of life, mortality, and morbidity are all impacted by drug-related problems. These problems can occur at any stage of the prescription, transcription, distribution, and administration of medications. Research into the frequency, manifestations, patterns, and treatment implications of drug-related problems in cardiovascular patients will advance, leading to a rise in patient safety and recovery.

Methods: A potential interventional trial was discussed over the course of 8 months in the cardiology and tertiary care medical departments. The required demographic and clinker data were acquired from the case files.

Results: In this study, 246 cardiovascular patients were enrolled, and 1567 drug-related problems (DRPs) were found, with reference to the inclusion and exclusion conditions.

Conclusion: In conclusion, population ageing and growth contribute to the global increase in CVD fatalities. Alcohol and tobacco use are linked to CVDs, with harmful effects observed at high consumption levels. Excessive alcohol and smoking increase blood pressure, cholesterol, and the risk of stroke and heart failure. However, moderate drinking poses minimal risks and may have some benefits. Efforts to reduce smoking and excessive drinking are essential for improving cardiovascular health and reducing CVD-related risks.

Keywords: Drug-related Issues, Adverse Drug Reaction, Cardiovascular Diseases, Drug Interaction

Introduction

Heart and blood vessel issues are collectively referred to as cardiovascular diseases (CVDs).[1] Deep vein thrombosis, pulmonary embolism, congenital and rheumatic heart disease, peripheral artery disease, coronary heart disease, and cerebrovascular disease are a few of them. Heart attacks and strokes are frequently abrupt, and are serious incidents that are mostly the result of a blockage that prevents blood flow to the brain or heart.[2,3] Their major reason is fatty deposits that have built up on the inner walls of the blood arteries providing blood to the brain or

heart. Bleeding from a blood vessel in the brain or blood clots may lead to stroke.[4,5]

The key facts about CVDs are as follows:[6-9]

- They are the main global causes of death
- Over 18 million people die from CVDs each year, which accounts for 32% of all fatalities. 85% of these fatalities are caused by heart attacks and strokes
- The bulk of mortality from CVDs occurs in low- and middle-income countries
- By addressing behavioural risk factors like smoking, a poor diet, obesity, inactivity, and problematic alcohol use, a majority of CVDs can be avoided
- For CVDs to be effectively managed with counselling and medication, early diagnosis is essential

The most recent version, V9.0, was created in a professional workshop (Feb 2019).[10-13] In the context of pharmaceutical treatment and studies related to the nature, prevalence, and incidence of Drug-Related Problems (DRPs), sorting is employed as a process indicator. It serves to assist healthcare professionals in documenting evidence of DDRPs within the pharmaceutical care procedure.[14-16] Hierarchical sorting, which distinguishes between issues and their underlying causes, represents a departure from earlier approaches. Other individuals may commonly refer to these causes as "medication errors", a term frequently observed by quality experts. This approach aims to enhance our understanding of DRPs by comprehensively identifying and addressing both issues themselves and the fundamental causes that contribute to them.[17]

Demographic Details

To better understand the observed rise in mortality in the context of significant demographic shifts,[18,19] the authors looked at each of the three sources of change in the number of CVDs independently: changes in population size, population ageing, and changes in age-specific CVD rates. The authors also investigated the relationship between changes in CVD cases caused by age-specific mortality rates and epidemiologic changes in CVD in developing countries, which have been linked to economic growth.[20]

Social History

Smoking raises the risk of CVD, and the link between the two is dose-dependent. Alcohol use among individuals within a specific age group presents a complex and multifaceted situation.[21-23] The majority of research points to a link between moderate alcohol consumption - defined as 3 to 14 drinks per week, and a lower risk of heart attack (also known as myocardial infarction) and possibly other types of cardiovascular diseases, such as ischaemic stroke or the incapacity of the heart to adequately pump blood throughout the body (i.e., congestive heart failure). Consuming alcohol in larger quantities can increase the likelihood of experiencing a myocardial infarction (heart attack). Additionally, consuming three or more drinks per day raises the risk of developing an ischaemic stroke. These findings highlight the potential adverse health effects associated with excessive alcohol consumption, particularly in relation to cardiovascular health. It is important for individuals to be aware of these risks and make informed decisions regarding their alcohol consumption.[24,25]

Smoking is unquestionably associated with an enlarged risk of practically all types of CVDs, such as myocardial infarction, ischaemic stroke, bleeding into the brain (also known as haemorrhagic stroke), congestive heart failure, and constriction of the arteries in the extremities (i.e., peripheral arterial disease). It's not quite understood how drinking alcohol affects cardiovascular risk factors. Moderate alcohol consumption has been linked to a modest reduction in the risk of ischaemic stroke, which is caused by a blockage or clot in a blood vessel supplying the brain. On the other hand, heavy or excessive alcohol intake can increase the risk of both ischaemic and haemorrhagic stroke, the latter being caused by bleeding within the brain.

While moderate alcohol consumption may have some protective effects against myocardial infarction, it is essential to consider the overall balance of risks and benefits. Individuals should consult with healthcare professionals to make informed decisions about alcohol consumption based on their specific health conditions, lifestyles, and risk factors.[26-28]

Length of Hospital Stay (LHS)

Both patients and healthcare professionals may welcome the capacity to recognise heart failure patients in hospitals who are at risk of having an extended length of stay.[29-32] Risk stratification for Longitudinal Health Systems (LHS) helps identify patients who require specialised treatments and extra attention, such as education and specific medications. It involves categorising patients based on their risk factors and medical history. This approach allows healthcare providers to allocate appropriate resources and interventions to higher-risk individuals, improving the chances of delivering effective patient care. Risk stratification also facilitates proactive and preventive care by addressing potential health issues before they worsen. By tailoring care based on individual risk levels, healthcare teams can optimise patient outcomes and provide personalised interventions. Overall, risk stratification in LHS enhances healthcare delivery and patient-centred care.[33] Healthcare experts are currently looking for interventions that will help enhance clinical outcomes and lower the costs associated with providing healthcare.[34-37]

Materials and Methods

This cross-sectional, prospective, interventional study

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was conducted at the Government General Hospital, Kurnool. The study was conducted for eight months (30th December 2020 to 27th August 2021). 246 cardiovascular patients were registered in the study as per the inclusion and exclusion criteria. The inclusion criteria for the study were as follows:[38-40]

- CVD patients who were ready to participate in the study
- Patients of both genders over the age of 18 years
- Inpatients who were admitted to both ICCU and medical ward with CVDs
- Patients prescribed more than 5 drugs
- Patients whose hospital stay was longer than 5 days

The exclusion criteria for the study were as follows:

- Outpatients
- Pregnant women and lactating women
- Paediatric age group
- Patients whose medical records contained insufficient data

Ethical Approval

The study obtained ethical approval from the Institutional Health Research Ethics Review Committee of St. Johns College of Pharmaceutical Sciences in Yemmiganur. The official letter with the reference number SOP 54/11/2020 was obtained and submitted to GGH, Kurnool to obtain permission for conducting the study. This ensured that the research adhered to ethical guidelines and protected the rights and well-being of the participants involved.

Informed Consent

Verbal informed consent was obtained from all study participants due to the expectation that some participants may be illiterate and unable to understand written consent. The research team sought approval from the Institutional Health Research Ethics Review Committee, which waived the requirement for written informed consent based on this consideration. The verbal consent process ensured that participants were fully informed about the study, its purpose, potential risks, and benefits, before their involvement. This approach was implemented to ensure ethical standards were maintained while accommodating the specific circumstances of the study population.

Statistical Analysis

The study was conducted using Student's t-test to compare means between groups. The chi-square (χ^2) test was employed for analysing other variables. A significance level of 0.05 was set for determining statistical significance, using a two-tailed P value. This approach helps assess the significance of differences and associations within the data.

Sources of Data Gathering

Data were collected by interview with the patient and/ or patient's representatives, followed by an interpretation of all available information to identify the patient's actual and potential DRP. A total of 279 patients' data were assessed, and after considering the exclusion criteria, 246 patients' data (163 males and 83 females) were selected for the study.

Results

Demographic Details

The age and gender-wise cases of CVD were as per Table 1.

Social History

In the current observation, 163 patients were male and 83 were female. Males were more likely to use medications due to their multiple comorbid conditions and the possibility of various perilous features such as smoking, alcoholism, and sedentary lifestyles was also more among males as compared to females. The age group was divided into seven categories: (18-20, 21-30, 31-40, 41-50, 51-60, 61-70, and > 71 years). Among these, the age group of 61-70 years in males and that of 51-60 years in females outnumbered all others, indicating a predominance. The categorisation and understanding of various complaints related to cardiovascular disease (CVD) may become less clear if they are simply gathered and grouped together under the broad term of CVD. The social history of the patients in the CVD cases in the study was as per Table 2.

Table 1.Age and Gender-wise Distribution of CVD Cases

Age (Years)	Male		Female		p Value
	Frequency	%	Frequency	%	
18-20	9	5.59	6	7.23	0.0605
21-30	19	11.68	10	12.04	
31-40	19	11.65	5	6.03	
41-50	25	15.43	12	14.46	
51-60	36	21.43	28	33.75	
61-70	43	26.84	13	15.62	
> 71	12	7.38	9	10.87	
Total	163	100	83	100	

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Table 2.Description of the Social History of the Patients

Social History	Frequency	%
Smokers	64	26.13
Non-smokers	85	34.52
Smokers with alcoholism	39	15.82
Non-alcoholics	58	23.53
Total	246	100

Table 3.Genderwise Length of Hospital Stays

Length of Stay (Days)	Male		Female		p Value
	Frequency	%	Frequency	%	
6-10	112	68.75	55	66.25	0.3532
> 10	51	31.25	28	33.75	
Total	163	100	83	100	

Length of Hospital Stay (LHS)

The distribution of patients as per their duration of hospitalisation has been shown in Table 3.

Discussion

CVD patients in the study ranged in age from 18 to 79 years and were divided by gender. 26.84% of the participants in the age range of 61-70 years were male. 33.75% of the subjects between the ages of 51 and 60 years were female. The cases were less (9%) in males in the age range of 18-20 years and 6.03% and 7.23% of cases were seen in females in the age range of 31-401 years and 18-20 years, respectively. Similar observations were made by Shabana et al. in 2020.[41]

In the current observation, 163 male and 83 female patients were investigated. Among them, 34.52% of cases of CVD were observed in non-smokers (the value is due to the inclusion of females in the study who were non-smokers). In these cases, 15.82% of smokers reported alcohol consumption. Jalaji et al. had similar observations in 2021.[42]

CVD patients hospitalised for 10 days or more were likely to have fewer complications as they were educated and supervised about CVD. The percentile was as low as 31.25% in males and 33.75% in females. Such results were also observed by Chilazi et al. in 2021.[43]

Conclusion

Despite a decline in the overall age-specific death rates, the authors concluded that population ageing and growth were to be blamed for the global increase in CVD fatalities. Although some countries have made progress in improving cardiovascular health, these demographic factors have only been partially offset, resulting in a reduction in the prevalence of CVD.

Alcohol and tobacco use has been connected to a variety of CVDs, despite the fact that these correlations include both harmful and perhaps beneficial effects (at least for moderate drinking). A variety of CVDs are adversely affected by smoking and drinking three or more alcoholic beverages per day. These effects are comparable and may be cumulative. These negative effects include an increase in blood pressure and blood cholesterol levels, as well as a higher risk of stroke and congestive heart failure. On the other hand, there isn't any evidence to suggest that smoking and drinking together have negative effects that go beyond what would be expected from either substance's effects alone, or that the two have a positive synergistic impact.

Most of the time, moderate drinking doesn't come with any of these risks, and it might even have effects on HDL-C and blood clotting that are the opposite of the effects of smoking. However, a sizeable section of the American population is affected by the combined effects of alcohol and cigarette usage because they are frequently mixed and used excessively. The ongoing public health initiatives to minimise cigarette usage and dangerous drinking should result in a considerable improvement in the nation's cardiovascular health.

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Conflict of Interest: None

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