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Prescription monitoring of cardiovascular medications in Dhaka, Bangladesh

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Abstract

Coronary heart disease, cerebrovascular illness, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis, pulmonary embolism, and a host of other conditions all fall under the umbrella term "cardiovascular disease" (CVD). Worldwide, cardiovascular diseases kill more people each year than any other condition. An estimated 17.3 million individuals died from CVDs in 2008, representing 30% of all worldwide fatalities. About 7.3 million of these fatalities were attributed to heart disease, while another 6.2 million were the result of stroke. Over 80% of fatalities from CVD occur in poor and medium income nations, and the mortality toll is roughly equal across men and women. Nearly 25 million individuals will lose their lives to CVDs such heart disease and stroke by the year 2030. These are expected to continue being by far the most lethal factors. Tobacco use, poor nutrition and obesity, lack of exercise, high blood pressure, diabetes, and high cholesterol levels are only some of the risk factors for cardiovascular disease that may be mitigated. An estimated 7.5 million fatalities annually (13% of all deaths) are caused by hypertension. This includes 45% of fatalities from coronary heart disease and 51% of deaths from strokes. Cardiac specialists and family doctors from Bangladesh's best hospitals and medical schools had their prescriptions checked. From among 1200 prescriptions evaluated at random from the National Heart Foundation and Dhaka Medical College Hospital, around 1000 were chosen to be filled outside. In the end, 700 prescriptions were chosen for the study with the right kind of patient assistance in place. All of them dealt only with heart illness and were given by cardiologists (99.99 percent) rather than general physicians (0.1 percent). This survey was conducted between January 2012 and August 2012 in the vicinity of the National Heart Foundation and the Dhaka Medical College Hospital in Dhaka, Bangladesh. All of the patients were above the age of 30, the male to female ratio was 57.14 to 42.86, and 64.28 percent of the patients were from metropolitan areas, while 35.71 percent were from rural areas. 25.0% were prescribed beta-adrenoceptor blockers, 19.57 percent were given organic nitrates, 10.42 percent were given medications that affect the renin-angiotensin system, 10.40 percent were given medications that reduce cholesterol levels, and 2.85 percent were given medications that treat other conditions. These findings may provide a new statistical strategy for the efficient treatment of cardiovascular illness in Bangladesh, as well as guidance for the most effective use of cardiovascular medicines.

Key-Words: Chi-square test, Confidence interval, Standard statistical method, Surveillance, Prescription

Introduction

The cardiovascular system constitutes one of the major coordinating and integrating systems of the body. The function of cardiovascular system is to supply oxygen, nutrients and other essential substances to the tissues of the body and to remove carbon dioxide and other metabolic and products from the tissue. The World Health Organization (WHO) has identified cardiovascular disease (CVD) as one of the leading causes of death and disability worldwide. An estimated 17.3 million individuals died from CVDs in 2008, representing 30% of all worldwide fatalities. Statistics suggest that about Nearly 25 million individuals will lose their lives to CVDs such heart disease and stroke by the year 2030. These are expected to continue being by far the most lethal factors.

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Tobacco use, poor nutrition and obesity, lack of exercise, high blood pressure, diabetes, and high cholesterol levels are only some of the risk factors for cardiovascular disease that may be mitigated. An estimated 7.5 million fatalities annually (13% of all deaths) are caused by hypertension. This includes 45% of fatalities from coronary heart disease and 51% of deaths from strokes. Among those living in poor and middle-income nations like Bangladesh, cardiovascular disease is the leading cause of mortality. Tobacco use is a major contributor to cardiovascular disease and other NCDs in low- and middle-income nations. But unlike their counterparts in high-income nations, they typically lack access to effective preventative initiatives. Stroke patients in Bangladesh who had lipid disorders were found to have abnormally high levels of cholesterol, low density lipoprotein (LDL), and triglycerides (TG) in the blood. The same research also found that 42.67 percent of patients had abnormally low levels of HDL (good cholesterol). (5) Beta-adrenoceptor blocker, organic nitrates, anticoagulant, anti-platelet, and thrombolytic medication; calcium channel blocker; diuretics; renin-angiotensin system medicines; lipid lowering pharmaceuticals; miscellaneous drugs; etc. are all viable alternatives for the therapy of CVDs. (11) The purpose of this research is to determine how patients who seek treatment for cardiovascular diseases outside of the National Heart Foundation and Dhaka Medical College Hospital are utilizing a variety of cardiovascular medicines. The purpose of this survey and statistical analysis was to compile information on cardiovascular medicines prescribed by generic name with the goal of improving the rational use of these treatments and more effectively managing cardiovascular disease. (1,2,12)

Methodology

To perform this part of research protocol, the methodology, involved for the under taking of a number of steps. A randomized representative sample was determined before the required date was collected. Over the 07 months collection period we selected randomly ideal 1000 prescriptions from 1200

prescriptions from National Heart Foundation & Dhaka Medical College Hospital outdoor and finally 700 prescriptions selected that were completely cardiac disease drugs content which were prescribed by 99% specialist and 1% general physician. This was absolutely essential for the purpose of obtaining information that actually represented the real scenario. Among the 700 prescriptions 400 were male and 300 were female, all were adults of more than thirty years

of age. Some confidential information was collected orally and some was collected in written form. Besides some information was collected observation. Two sources were basically used to collect the data. Here, all data was collected from the representative drug house, hospital and direct interview of patient.

Findings of the study

Seven hundred prescriptions were surveyed under this protocol. The doctor prescribed these prescriptions. Analyzing the prescription the findings that were obtained presented in this chapter in both tabular and graphical form. Here Standard statistical method and chi-square test were used to correlate the obtained results gathered from survey.

Table 1: Comprehensive list of all types of prescribed cardiovascular drugs alone (n=700)

Therapeutic class	No. of prescriptions	Percentage (%)
Organic nitrates	137	19.57
Beta-adrenoceptor blocker	175	25.00
Anticoagulant, antiplatelet and thrombolytic drug	154	22.00
Calcium channel blocker	59	8.42
Diuretics	73	10.42
Renin-angiotensin system drugs	73	10.40
Lipid lowering drugs	20	2.85
Miscellaneous	9	1.28

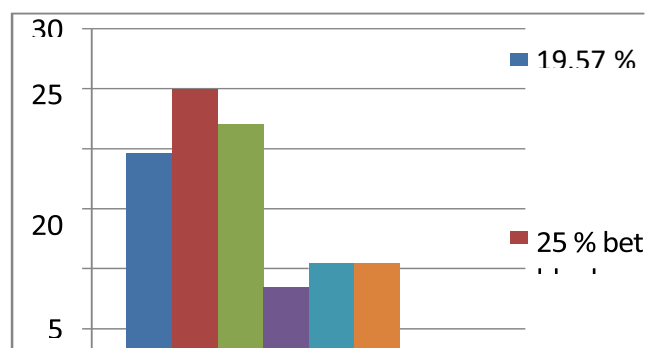


Fig. 1: Comprehensive list of different cardiovascular drugs with their classes

Table 2: Different cardiac disorder (n=700)

Disease name	No. of patients	Percentage (%)
Lipid disorder	293	41.86
Ischemic Heart Disorder	158	22.571
Hypertension	255	35.714
Heart failure	193	27.571
Stroke	150	21.428
Angina	60	8.571
Myocardial infarction	175	25.0



Table 3: Different therapeutic classes of prescribed combine drugs among cardiac disorder patients (n=700)

Therapeutic class with example	No. of prescription	Percentage (%)
Organic nitrates(Antianginal)	499	71.2857
Nitroglycerine	181	25.8571
Iso-Sorbide mononitrate		
Beta-adrenoceptor blocker:	210	30
Atenolol	101	14.42857
Metoprolol	179	25.57142
Propranolol	35	5
Carvedilol		
Anticoagulant antiplatelet and thrombolytic drug:		
Aspirin	229	32.714
Clopidogrel	49	7
Warfarin	20	2.8571
Calcium channel blocker: Amlodipine	201	28.714
Diltiazem	99	14.1428
Verapamil	135	19.2857
Nifedipine	95	13.5714
Diuretics:		
Thiazide	65	9.2857
Loop diuretic	105	15
K ⁺ - Sparing diuretics	20	2.8571
Renin-angiotensin system drugs: Captopril	200	28.5714
Lisinopril	105	15
Ramipril	45	6.4285
Enalapril	103	14.7142

Lipid lowering drugs:		
Fluvastatin	110	15.7142
Atorvastatin	293	41.8571
Simvastatin	98	14
Fenofibrate	105	15
Gemfibrozil	86	12.28571

Table 4: List of organic nitrates

Drugs	No. of prescription for Organic nitrates (137)	Percentage (%)
Nitroglycerine	82	59.8540
Iso-Sorbide mononitrate	55	40.1459

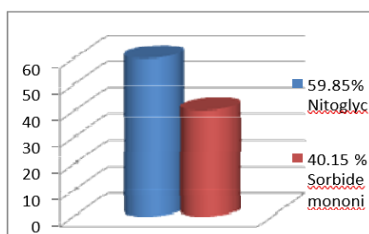


Fig. 2: Most used nitrate drugs according to generic name

Table 5: Various Generics of Beta blockers

Fig. 5: Calcium channel blocker according to their generic name

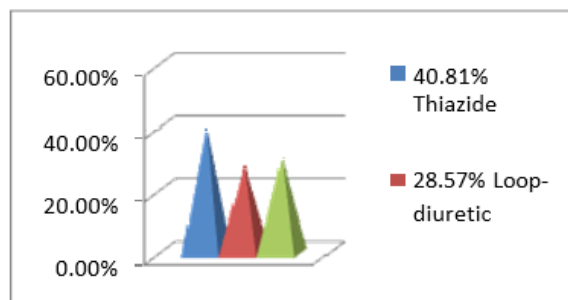
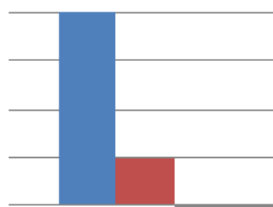


Fig. 4: Widely used Anticoagulant, antiplatelet and Fibrinolytic drugs

Table 7: Various generics of Calcium channel blockers

Generic name of Drugs	No. of prescription Calcium channel blocker (59)	Percentage (%)
Amlodipine	29	50.00
Diltiazem	24	40.00
Verapamil	2	4.00
Nifedipine	4	6.00

Table 8: Various diuretic groups according to their class

Generic name of Drugs	No. of prescription for Diuretics alone (73)	Percentage (%)
Thiazide,	30	40.81
Loop	21	28.57
diuretic	22	30.62
K ⁺ - Sparing diuretics		

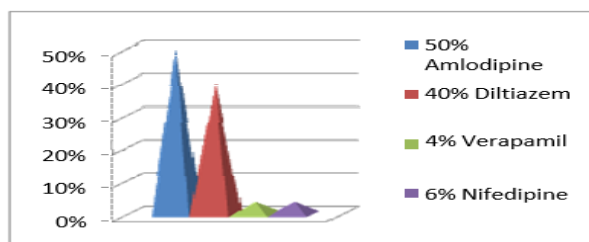
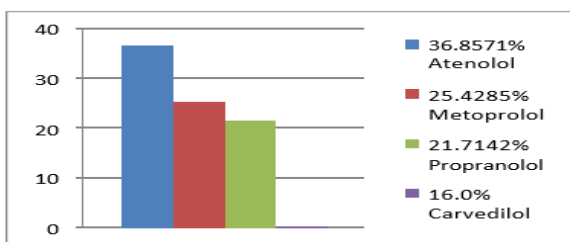


Fig. 3: Comparison of various Beta blockers according to their generic name



Discussion and Results

Men made up 57.14 percent of the 700 patients seen at National Heart Foundation and the Dhaka Medical College Hospital, while women accounted for 42.86 percent. Chi-square analysis showed no statistically significant difference between patients from urban and rural areas (64.285% CI*:58.92% to 69.64%), with a P value of >0.05. All patients above the age of 30 achieved a perfect score.

Disorders in Medicine

Patients with heart disorders were prescribed a wide variety of treatments based on the findings of various cardiologists and experts. More than 41.86 percent (CI*:38.24 percent to 45.55 percent) of patients had a lipid disease, and 35.71 percent (32.1 percent to 39.25 percent) had hypertension. About 22.517 percent (confidence interval [CI]: 25.66

Conclusion

Beta-blockers and anticoagulants have been shown to be the most often prescribed medication classes. The treatment and medication used for cardiovascular disease are constantly evolving. Other often used medications include calcium channel blockers, diuretics, renin-angiotensin system pharmaceuticals, lipid-lowering drugs, organic nitrates, and anti-platelet and thrombolytic agents. There are a number of problems with this survey, including the fact that it is often impossible to obtain the most recent information about drugs because of the demand for payment for new journals and the fact that medical representatives from different companies conduct this type of presentation survey on a regular basis, causing the drug housekeeper to feel unsettled. As a result, it's not uncommon for prescriptions to be filled in an erratic way, causing inconvenience for both patients and pharmacists. The current strategy for cardiovascular disease focuses mostly on prevention rather than treatment. Antioxidants and anti-lipidemic drugs are two such examples that have been shown to be effective in lowering illness risk. Unfortunately, cardiovascular illness cannot be cured. Consequently, anyone using the medication should exercise caution. When patients report feeling better, they often quit taking their prescribed medications. Therapy is hampered by such an approach. Although cardiovascular medicines are so potentially lifesaving, it was shown in this poll that only a minority of respondents really take them. In addition, the demographic information and statistical methodology

used in this study came from the National Heart Foundation and the Dhaka Medical College Hospital in Bangladesh's capital city. Furthermore, the results of the research conducted in a tertiary care facility may not translate to lower-level facilities. In addition, this research methodology will determine what further assessment and

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