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Prevalence of Cardiovascular Diseases in District Buner Pakistan

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ABSTRACT

Background: Cardiovascular disease (CVD) is a general term that describes a disease of heart and blood vessels. It includes four main types of diseases which are coronary heart disease, stroke, peripheral arterial disease, and aortic disease.
Objective: This study aimed to assess the prevalence of cardiovascular diseases in district Buner. and to make the people aware of the cardiovascular diseases.
Methods: This study was conducted with the objective of exploring the prevalence of CVDs in district Buner, KP, Pakistan from September 2022 to September 2023. A total of 850 patients' data were recorded from different hospitals inhibiting in district Buner through specifically designed questionnaire with the help of already available literature on the topic. These medical centers were frequently visited with proper consent from the physicians. Data was collected randomly on weekly basis from each and every medical center.
Results: Results revealed that among CVDs, the most prominent disease was myocardial infarction (MI) affecting 36% of patients, followed by acute coronary syndrome (ACS) affecting 25.65% of patients, ischemic heart disease (IHD) affecting 7.40% patients, angina affecting 6.70%
patients, atrial fibrillation (AF) affecting 5.90% patients, left ventricular failure (LVF) affecting 5.65% patients, coronary artery disease (CAD) affecting 5.55% patients, supraventricular tachycardia (SVT) affecting 5.05% patients, and cardiomyopathy (CMP) affecting 2.10% patients.
Conclusion: This study also reported that patients with CVDs represent 58% male whereas the remaining 42% were female. Most of the people affected by CVDs were having age 61-70 years accounting for 494 (58.15%) patients. The most affected Tehsil was Daggar, with 270 (31.80%)patients, and the rarest cases were reported in Tehsil Khudokhail, with 19 (2.23%) patients. The ultimate reason for this prevalence of CVDs may be due todiabetes mellitus, high blood pressure, obesity, high cholesterol level, and sedentary life style.

INTRODUCTION

Cardiovascular diseases are defined as "a class of diseases that affect the heart and blood vessels (arteries and veins)". In most cases, this is due to the progressive effects of atherosclerosis in the arteries. Currently, cardiovascular disease is the largest single contributor to global mortality and will continue to dominate mortality trends in the future. Globally mortality from cardiovascular disease mainly from coronary heart disease, stroke and rheumatic heart disease increased from 14.4 million to 17.5 million in 2005 where more than 80 percent of the deaths in low and middle income countries are from cardiovascular disease(1).

Cardiovascular disease (CVD) is an umbrella term for several linked pathologies, commonly defined as

coronary heart disease (CHD), cerebrovascular disease, peripheral arterial disease, rheumatic and congenital heart diseases, and venous thromboembolism. Globally, CVD accounts for 31% of the mortality, the majority of which occurs in the form of CHD and cerebrovascular accidents (2).

Cardiovascular diseases (CVD) are the diseases of heart or blood vessels present in heart or body. It is associated with the heart and blood vessels, but can also damage arteries in the kidney, brain, lungs, stomach, and other organs in the body. It is the leading cause of death worldwide. Once a cardiovascular disease occurs, it will significantly impact daily work, everyday life, and the patient's psychology and physiology(3).

CVD includes a wide range of disorders, such as cardiac muscle and vascular system diseases. Potential risk factors for CVD include hypertension, tobacco use, physical inactivity, elevated low-density lipoprotein cholesterol level, diabetes, and a cluster of interrelated metabolic risk factors. The Framingham Heart Study in 1961 was the first to introduce the concept of risk factors that links high cholesterol, tobacco use, hypertension, and diabetes mellitus to future CVD. Mostly CVDs are due to atherosclerosis as well as due to infections (4).

The burden of CVD further extends as it is considered the most costly disease, even ahead of Alzheimer's disease and diabetes, with calculated indirect costs of $237 billion dollars per year and a projected increased to $368 billion by 2035 (5).

Cardiovascular disease (CVD) is a leading cause of death worldwide. An estimated 17 million people die of CVD. Currently CVD is the leading cause of death worldwide. According to projections for 2020, the largest increase in the number of CVD will occur in Southeast Asia (6).

The rate of CVD worldwide is predicted to increase as the prevalence of CVD risk factors for CVD rises in previously low-risk countries. Currently, 80% of CVD mortality occurs in developing countries. CVD is not only a leading cause of mortality, but also the leading cause of loss of disability-adjusted life years globally. CVD is expected to be the major cause of mortality in most developing nations by 2020, surpassing infectious diseases (7).

Cardiovascular disease (CVD) has consistently become the most prevalent cause of mortality worldwide. Epidemiological transition in the 20th century has placed CVD as the principal cause of global disability. According to global health projections, it will remain the foremost cause of mortality by 2030. The Asian region has been documented to have a higher CVD burden than the Western populations, and the majority of this burden is held by economically disadvantaged populations that are mainly in the South Asian region (8).

Diabetes mellitus, unhealthy diets, obesity, exercise, smoking, abnormal blood lipid level, and blood pressure are the main modifiable risk factors for CVD. Strong evidence suggests that exercise improves cardiovascular-related mortality. Instead of these modifiable risk factors, depression, stress, use of medications, and use of alcohol and lipoproteins are modifiable risk factors for CVD. Stress is a part of life Stress contributes to HBP which in turn is a CVD risk factor (9).

According to the interheart study, which included subjects from 52 countries, including high-, middle, and low-income countries, nine modifiable risk factors accounted for 90% of the risk of having a first MI: smoking, dyslipidemia, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits and vegetables, regular alcohol consumption, and physical inactivity. It is important to mention that in this study 36% of the population-attributable risk of MI was accounted to smoking (Yusuf *et al*., 2004).

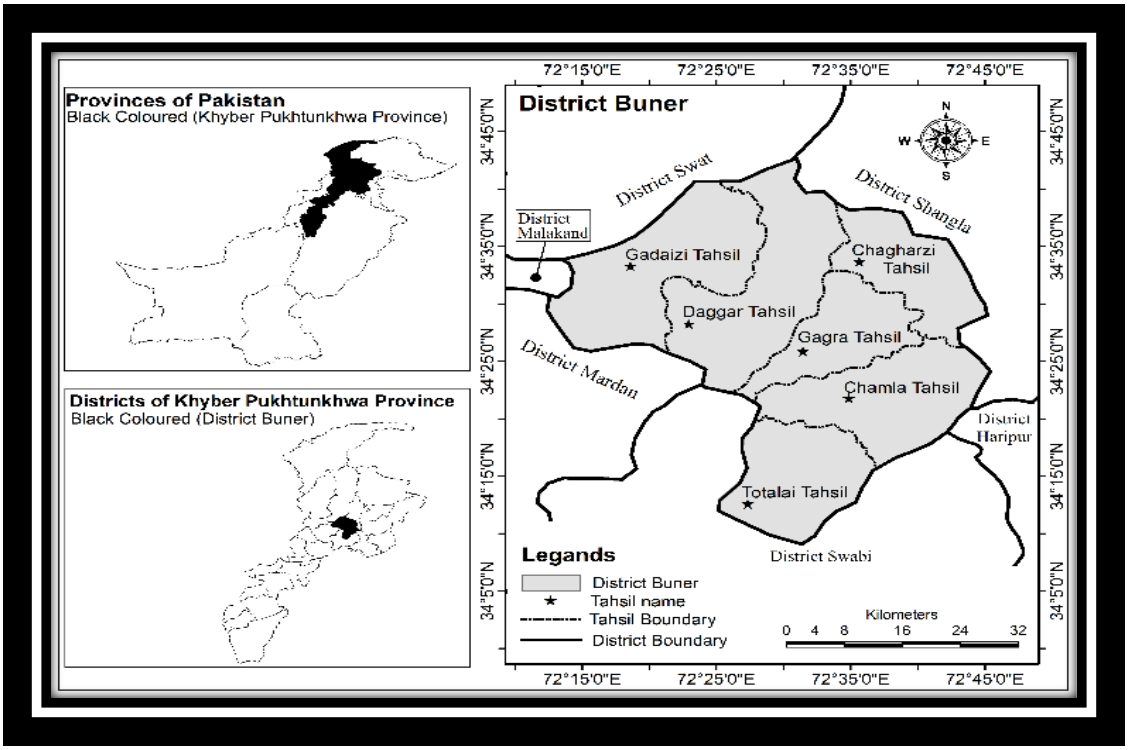
The clinical presentation of cardiovascular diseases can range from asymptomatic (e.g., silent ischemia, angiographic evidence of coronary artery disease without symptoms, among others) to classic presentations, such as when patients present with typical anginal chest pain consistent with myocardial infarction and/or acute CVA presenting with focal neurological deficits of sudden onset (10).

MATERIALS & METHODS

Introduction of Study Area

The Buner is a district in the Malakand division. It consists of Tehsil Daggar, Gagra, Khudokhail, Chagharzi, Mandanr and Gadeze. Daggar is the head quarter of the district. Buner, with an area of 1760 square kilometers lies between 34°-9' and 34°-43' N latitudes and 72°-10' and 72°-47' E longitudes. It is bounded to the north by the Swat District, to the west by the Malakand agency, to the south by the Mardan District, and to the east by the river Indus and Hazara division. The elevation varies from 1200 ft in Totalai in the south to 9,550 ft in the Dosara peak. Based on physical features, Buner is divided into three independent villages. These are the Barandu Valley, Chamla Valley, and Badri Valley (11).

Figure 1
Map of the Study Area, District Buner (12).



Data Collection

For data collection, I visited the following hospitals in the District Buner.

1. District Headquarter Hospital (DHQ), Daggar Buner.
2. Buner Medical Center, Daggar Buner.
3. Buner Medical Complex, Daggar Buner.
4. Taimoor Medical and Surgical center, Daggar Buner.
5. Shifa Medical Center, Daggar Buner.
6. Awami Medical and Surgical Center, Daggar Buner.
7. Kalsoom National Hospital, Daggar Buner.

RESULTS

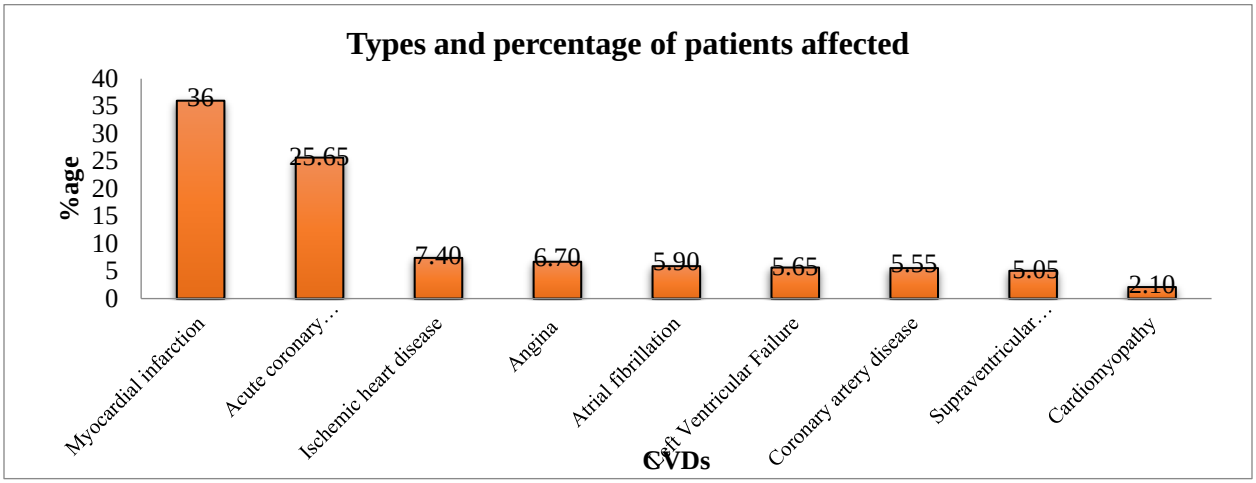
Cardiovascular diseases (CVDs) are group of diseases including ischemic heart disease, cerebrovascular disease, peripheral arterial disease, deep venous thrombosis, rheumatic heart disease and congenital heart diseases (WHO, 2007).The current study was conducted from September 2022 to September 2023 on the prevalence of cardiovascular diseases (CVDs) in the district Buner KPK, Pakistan. During the study, a total of 850 patients were interviewed through designed questionnaires in different hospitals, medical centers, and RHCs of the district Buner. Different variants of CVDs were reported in this study. In this study, males were more affected than females (males, 493 (58%); females, 357 (42%). Most of the people affected by CVDs were having age 61-70 years accounting for 494 (58.15%) patients. The most affected Tehsil was Daggar, with 270 (31.80%) patients, and the rarest cases were reported in Tehsil Khudokhail, with 19 (2.23%) patients. Obesity, fatty food, high cholesterol level, and sedentary lifestyle are the major risk factors that lead to CVDs. The other major diseases present in CVDs patients were hypertension and diabetes mellitus, and in many patients, both hypertension and diabetes mellitus were present. The discharge condition of most patients was stable 728 (85.65%), followed by referred 69 (8.10%), and expired 53 (6.25%). The treatment mode for all patients was medication in the district Buner.

Among CVDs, the most prominent disease was myocardial infarction (MI) affecting 306 (36%) patients, followed by acute coronary syndrome (ACS) affecting 218 (25.65%) patients, ischemic heart disease (IHD) affecting 63 (7.40%) patients, angina affecting 57 (6.70%) patients, atrial fibrillation (AF) affecting 50 (5.90%) patients, left ventricular failure (LVF) affecting 48 (5.65%) patients, coronary artery disease (CAD) affecting 47 (5.55%) patients, supraventricular tachycardia (SVT) affecting 43 (5.05%) patients, and cardiomyopathy (CMP) affecting 18 (2.10%) patients.

Figure 2 shows that there are nine types of CVDs recorded in our study: Myocardial infarction (MI), acute coronary syndrome (ACS), ischemic heart disease (IHD), angina, atrial fibrillation (AF), left ventricular failure (LVF), coronary artery disease (CAD), supraventricular tachycardia (SVT), and cardiomyopathy (CMP). The most prominent occurrence of CVD is myocardial infarction (MI).

Figure 2

Types of CVDs that Appeared and the Percentage of Patients Affected by each type of CVDs.



Myocardial infarction (MI) affected 306 (36%) patients, including 193 males and 113 females; acute coronary syndrome (ACS) affected 218 (25.65%) patients, including 123 males and 95 females; ischemic heart disease (IHD) affected 63 (7.40%) patients, including 32 males and 31 females; angina affected 57 (6.70%) patients,including 37 males and 20 females; atrial fibrillation (AF) affected 50 (5.90%) patients, including 24 males and 26 females; left ventricular failure (LVF) affected 48 (5.65%) patients, including 31 males and 17 females; coronary artery disease (CAD) affected 47 (5.55%) patients, including 23 males and 24 females; supraventricular tachycardia (SVT) affected 43 (5.05%) patients, including 20 males and 23 females; and cardiomyopathy (CMP) affected 18 (2.10%) patients,including 10 males and 8 females.

Figure 3 shows the type of CVDs, number and percentage of affected patients by each type of CVD, and number of males and females affected by each CVD type.

Figure 3

Percentage of Male and Female Patients Affected by each CVD type.

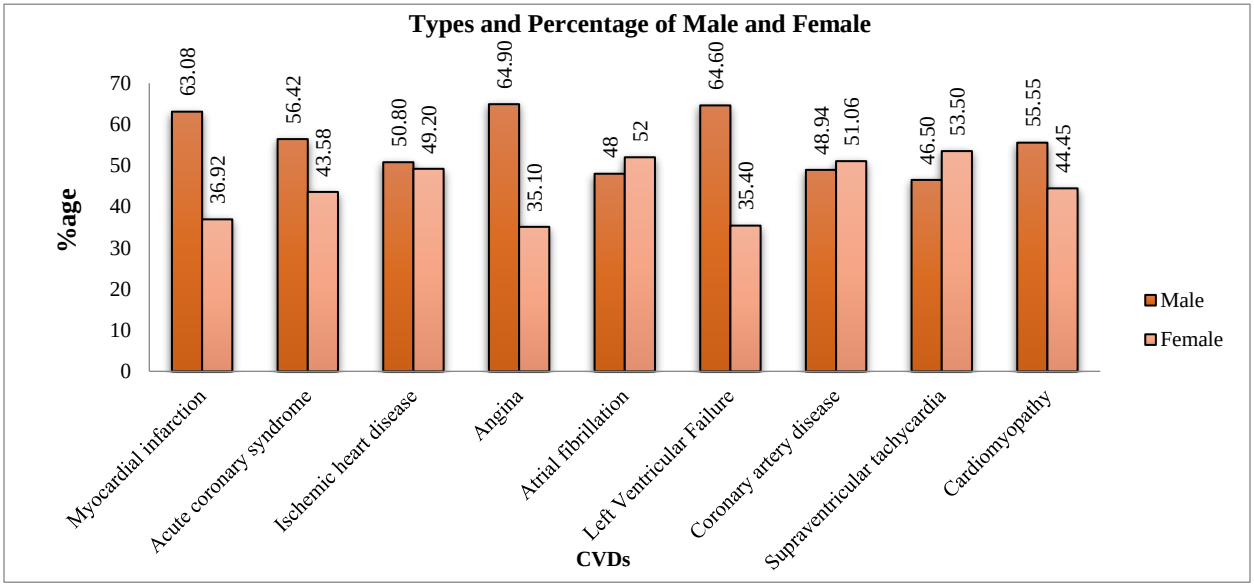


Figure 4
Percentage of Male and Female Patients in the total Sample Size.

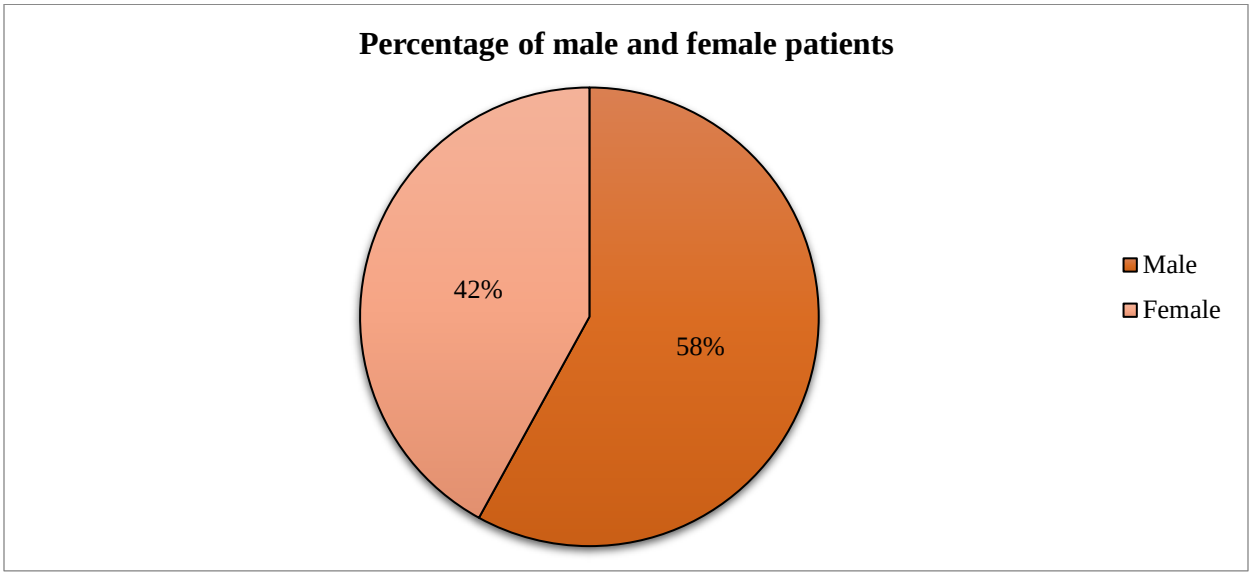
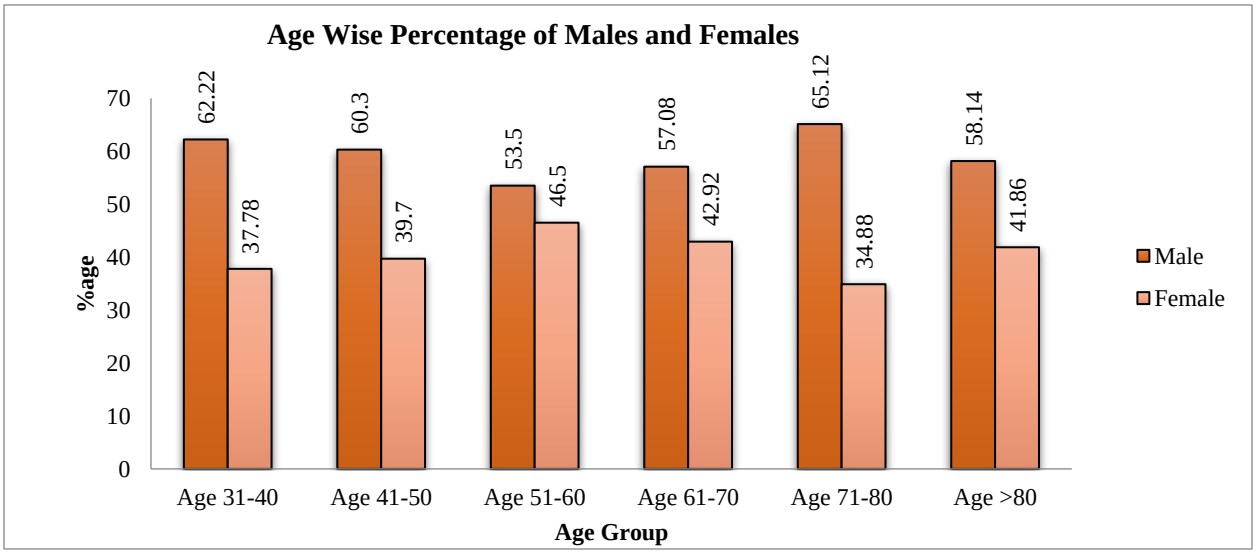


Figure 5 shows the total number and percentage of patients in the given age groups and their gender. The age group of 31-40 years included 45 (5.30%) patients, of which 28 (62.22%) were males and 17 (37.78%) were females; the age group 41-50 included 68 (8.00%) patients, of which 41 (60.30%) were males and 27 (39.70%) were females; the age group 51-60 years included 114 (13.40%) patients, of which 61 (53.50%) were males and 53 (46.50%) were females; the age group 61-70 includes 494 (58.15%) patients, of which 282 (57.08%) were males and 212 (42.92%) were females; the age group 71-80 includes 86 (10.10%) patients, of which 56 (65.12%) were males and 30 (34.88%) were females; and the age group greater than 80 years included 43 (5.05%) patients, of which 25 (58.14%) were males and 18 (41.86%) were females.

Figure 5
Shows the Age-wise Percentage of Males and Females.



The CVDs affected different numbers of patients Tehsil-wise in district Buner. Most patients with CVDs were reported from tehsil Daggar reporting 270 (31.80%), followed by tehsil Gagra reporting 222 (26.10%), tehsil Gadezi reporting 142 (16.70%), tehsil Mandanr reporting 110 (12.94%), tehsil Chagharzi reporting 87 (10.23%), and tehsil Khudokhail reporting 19 (2.23%).

Figure 6

Percentage of Patients from different Tehsils of District Buner.

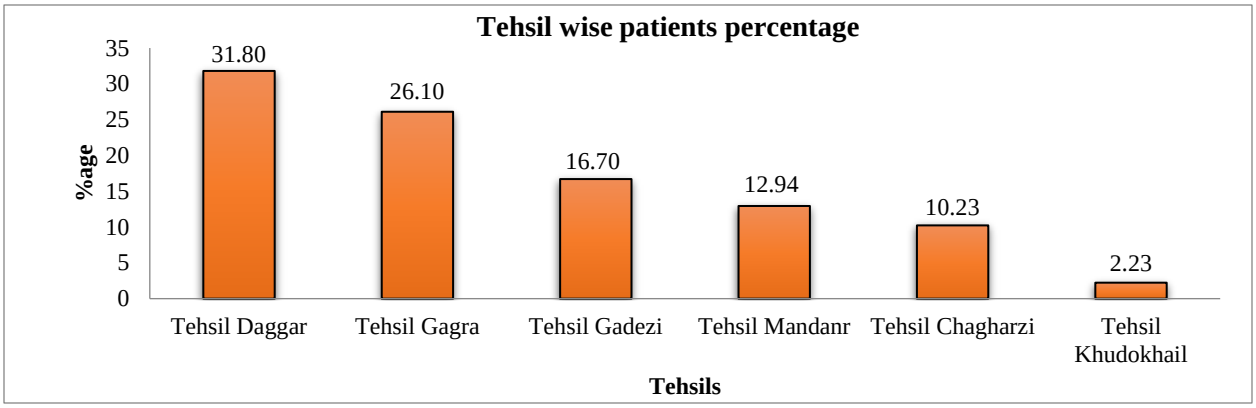
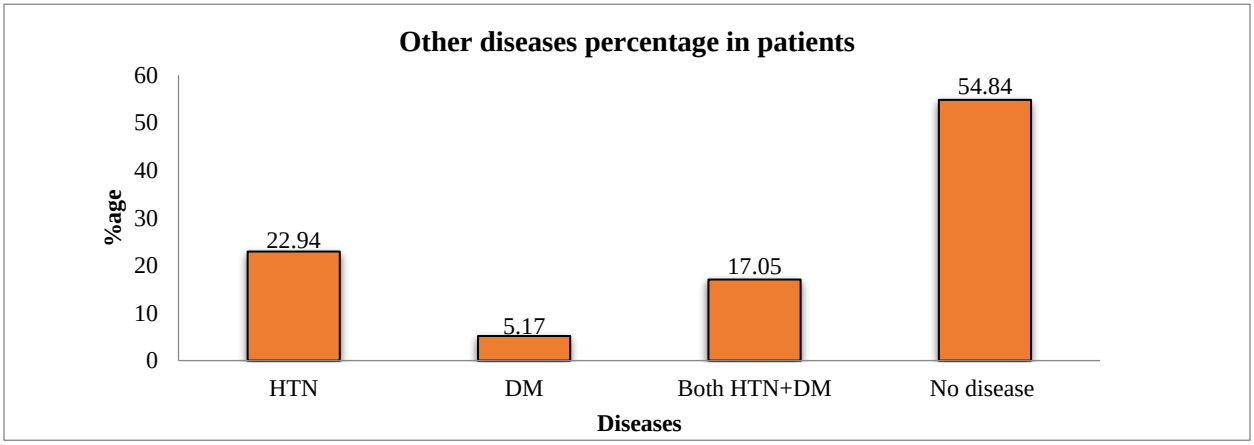


Figure 7

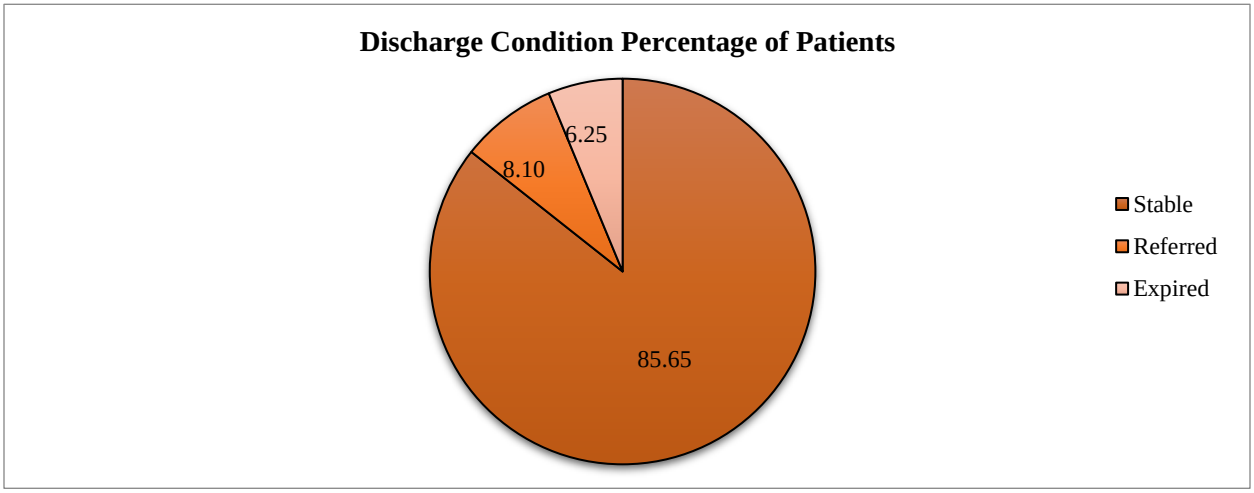
Percentage of other Diseases Present in CVD Patients.



The discharge condition of patients with CVD from hospitals was stable, referred, or expired. Among the total patients, 728 (85.65%) were discharged stable, 69 (8.10%) were referred, and 53 (6.25%) were expired.

Figure 8

Percentage of Discharge Conditions of Patients with CVD from Hospitals.



DISCUSSION

Cardiovascular disease is the diseases of heart and blood vessels. There is a wide array of problems that may arise within the cardiovascular system, for example, endocarditis, rheumatic heart disease, abnormalities in the conduction system, among others, cardiovascular disease (CVD) or heart disease refer to the following 4 entities. 1. Coronary artery disease (CAD): Sometimes referred to as Coronary Heart Disease (CHD). 2. Cerebrovascular disease (CVD): Including stroke and transient ischemic attack (TIA). 3. Peripheral artery disease (PAD): Particularly arterial disease involving the limbs that may result in claudication 4. Aortic atherosclerosis: Including thoracic and abdominal aneurysms(13).The current study was conducted from September 2022 to September 2023 to determine the prevalence of cardiovascular diseases (CVDs) in district Buner KPK, Pakistan. During this study a total of 850 patients were interviewed through designed questionnaires in different hospitals, medical centers, and RHCs of district Buner. The different variants regarding CVDs were reported in this study. It was recorded in this study that male were more affected as compared to females that is male 493 (58%) and females 357 (42%). Among CVDs the most prominent occurring disease was myocardial infarction (colloquially known as "heart attack," is caused by decreased or complete cessation of blood flow to a portion of the myocardium) affecting 306 (36%) patients, the second prominent occurring disease was acute coronary syndrome (refers to a group of diseases in which blood flow to the heart is decreases) affecting 218 (25.65%) patients, then ischemic heart disease (refers to heart weakening caused by reduced blood flow to your heart) affecting 63 (7.40%) patients, followed by angina (a type of chest pain caused by reduced blood flow to the heart) affecting 57 (6.70%) patients, atrial fibrillation (a type of arrhythmia, or abnormal heartbeat) affecting 50 (5.90%) patients, left ventricular failure (occurs when there is dysfunction of the left ventricle causing insufficient delivery of blood to vital body organs) affecting 48 (5.65%) patients, coronary artery disease (caused by plaque buildup in the wall of the arteries that supply blood to the heart) affecting 47 (5.55%) patients, supraventricular tachycardia (a condition where your heart suddenly beats much faster than normal) affecting 43 (5.05%) patients, and cardiomyopathy (a general term for diseases of the heart muscle, where the walls of the heart chambers have become stretched, thickened or stiff) affecting 18 (2.10%) patients.Razzak*et al*., (2018) performed a study to investigate the prevalence and risk factors of cardiovascular disease in the United Arab Emirates. They observed that CVD is the leading cause of death worldwide, and risk factors include elevated cholesterol levels, obesity, physical inactivity, high blood glucose, smoking and hypertension, all of which may be controlled or prevented through the avoidance of smoking, regular exercise and healthy eating. Risk factor identification offers new opportunities to form effective strategies for treating and preventing CVD(14).In recent study we investigated the prevalence of cardiovascular disease in district Buner. We also find out the risk factors for cardiovascular diseases in district Buner. We observed that high blood pressure, diabetes mellitus, hypertension, obesity, fatty food, sedentary lifestyle, and smoking are the major responsible risk factors for CVDs in district Buner.He *et al*., (2012) investigated the epidemic pattern and risk factors of CVDs in rural district of Beijing, China. They demonstrated that the highly prevalent CVDs were CHD and strokes. All participants were classified into 10 years age bands: 40-49 years, 50-59 years, 60-69 years, 70-79 years, 80 years and above, and the numbers (proportion) for each group were 16,767 (28.8%), 21,308 (36.5%), 13,560 (23.3%), 5,755 (9.9%) and 918 (1.6%), respectively means the age 50-59 years were mostly affected by CVDs. They also described the major risk factors for CVDs which includes diabetes, hypertension and overweight/obesity(15).We also performed a study to check out the prevalence and pattern of CVDs in district Buner. We found that the most prominent CVD was myocardial infarction in our study followed by acute coronary syndrome while the least common CVD was cardiomyopathy. In terms of age we found that the patients age 61-70 were mostly affected by CVDs in our study. Diabetes, hypertension, and obesity were also founded in a large number in our study.

CONCLUSION

Cardiovascular disease (CVD) is a general term that describes a disease of heart and blood vessels. The current study was conducted to determine the prevalence of cardiovascular diseases in district Buner, Khyber Pakhtunkhwa, Pakistan. During this study we have reported different variants of cardiovascular diseases. A total of 850 patients were interviewed through questionnaires in different hospitals in district Buner. In this study we observed that males (58%) were most affected by CVDs than females (42%). The age group of 61-70 years was mostly affected by CVDs accounting for 58.15% patients. The most CVDs cases were reported in tehsil Daggar (31.80%) while the rarest cases were reported from tehsil Khudokhail (2.23%). The major diseases along with CVDs reported in patients were hypertension and diabetes mellitus. The death number in our study was 6.25%. The treatment mode for all patients was medication in the district Buner. Obesity, fatty food, high cholesterol level, smoking, and sedentary lifestyle are the major risk factors that lead to

CVDs in district Buner. In the current study nine types of CVDs were also reported among them the most prominent was myocardial infarction which was affecting 36% of the total population. The second most wide spread disease was acute coronary syndrome affecting 25.65% individuals, followed by ischemic heart disease 7.40%, angina 6.70%, atrial fibrillation 5.90%, left ventricular failure 5.65%, coronary artery disease 5.55%, supraventricular tachycardia 5.05%, and cardiomyopathy 2.10%.

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