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PATTERN OF CARDIOVASCULAR DISEASES ACCORDING TO AGE AND GENDER IN A RURAL DISTRICT OF PAKISTAN

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Date Received:June-20, 2013
Date Revised:August 20, 2013
Date Accepted:September 01, 2013

Contribution
All the authors contributed significantly to the research that resulted in the submitted manuscript.

All authors declare no conflict of interest.

ABSTRACT

Objective: To determine pattern of CVDs according to age and gender in patients attending a district hospital in rural Sindh.

Methodology: This was a cross-sectional study. Data was available for Jan 2009 –May 2010 on variables including patients' date of admission and discharge, area of residence, age, gender and diagnosis.After data cleaning and excluding entries with missing information, data for 1764 patients were included in the final analysis.

Results: Ischemic heart disease was most common diagnosis (72.5%) followed by left ventricular failure (3.8%), cardio-myopathy (3.17%) and congenital heart defects (4.8%). Higher proportion of males had CVDs compared to females. Hypertension and diabetes mellitus were commonly reported comorbidsties.

Conclusion: Hypertension and diabetes mellitus prevalence was slightly lower than urban counterparts. More research is warranted in order to determine the prevalence and variation of risk factors.

Key Words: Cardiovascular diseases, IHD, Gender, Rural

INTRODUCTION

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.[1,2]

More people die from cardiovascular diseases (CVDs) every year globally than any other cause. Accounting for 17.3 million deaths (30% of total deaths),CVDs are the leading cause of mortality worldwide. [1,3] Earlier, considered to be the problem of developed countries, CVDs have become more common in developing countries. Currently, 85% burden of CVDs is contributed by low and middle income countries. This increase is preceded by a rise in risk factors for CVDs including raised blood pressure, obesity, diabetes mellitus, dyslipidemia, lack of physical activity, smoking and alcohol consumption.[4] South Asian populations have been found at an increased risk for CVDs and are affected at an age 10 years earlier than other populations. This risk remains higher as evidenced among immigrant Pakistanis and Indians living in western regions compared to the native western populations.[5] The burden of CVDs in South Asians is expected to double in 20 years. [6-8]

Risk factors for CVDs are also on the rise in Pakistan and increasing urbanization has resulted in sedentary lifestyles. According to National Health Survey of Pakistan (NHSP), approximately 17.9% Pakistanis are hypertensive with a higher prevalence observed in urban areas (21.5% vs. 16.2%). Prevalence of overweight is also high among urban populations (in men: 9% in rural vs 22% inurban;in women: 14% in rural vs 37% in urban) and 12.6% population has high cholesterol. About 54% males and 20% females use tobacco in one form or another. [9]

Although no nationally representative and reliable data on physical inactivity is available in Pakistan, according to WHO estimates Eastern Mediterranean region (that includes Pakistan) along with American region has the highest prevalence of physical inactivity and higher proportion of females are insufficiently physical active. [10,11]

NHSP (1990-94) was conducted about two decades ago. Given the high prevalence of these risk factors, CVDs were expected to rise Pakistan. A number of studies conducted to determine prevalence of CVDs in Pakistan have reported higher prevalence among females and among people of age >75 years.[12,13] But these studies were conducted in urban mega cities of Pakistan. Rapid urbanization has affected the lifestyles of people living in small towns and cities. Therefore, objective of this study was to determine the pattern of CVDs by age and gender in a rural district of Sindh Pakistan.

METHODOLOGY

This cross sectionl study was conducted in Civil Hospital Mirpurkhas. Mirpurkhas is a district situated in southeast of Sindh province with total population of 905935. Mirpurkhas district is predominantly rural. Approximately 33% population resides in urban area and 67% lives in rural areas. Literacy rate in males is 46% and in female is 25 %. The district comprises of 3 talukas and 40 union councils. [14]

The civil hospital is the only tertiary care hospital in the district situated in the middle of Mirpurkhas city. The hospital caters health needs of large number of patients from district Mirpurkhas and adjacent villages of other districts. The hospital has a well-established cardiology unit with outpatient, inpatient and emergency services.

We conducted the analysis from patients register records. In-patient registers of cardiology unit of Civil Hospital Mirpurkhas were used to extract the data regarding patients' date of admission, date of discharge, area of residence, age, gender, diagnosis and outcome. The data was taken from January 2009 till May 2010.Total of 3232 admission entries were found in register during this period with averaging approximately 190 patients admissions every month. Approximately 1468 entries were excluded due to incomplete and or missing information. Mostly, the diagnosis was missing. Finally, 1764 entries with complete information about the diagnosis were included in the analysis.

Study was given ethical approval by the Ethics committee of civil hospital Mirpurkhas. In order to maintain privacy and confidentiality, identification numbers were assigned to individual data of each patient.

Data was entered in EPI data 3.1 and analyzed in SPSS 19.Descriptive statistics were run to determine the pattern of cardiovascular diseases according to age and gender with outcome as mortality or discharge from the hospital.

RESULTS

Mean age of the patients was 54.1 ± 13.8 years, 65% were males. Approximately 20% of the patients were younger than 20 years of age. Majority of patients belonged to Mirpurkhas (62.3%) district, whereas others belonged to adjacent districts (Table 1).

Ischemic heart disease was the most common diagnosis (72.5%). Other conditions included left ventricular failure (3.8%), cardio-myopathy (3.2%), pulmonary edema (2.5%) and congenital heart defects (4.8%). Prevalence of co-morbid conditions including hypertension and diabetes mellitus was 9.8% and 2.7% respectively. Mean duration of stay at hospital was 3.4 days (±1.7). Pattern of admissions remained similar throughout the year and no seasonal variation was observed.

Generally the proportion of male patients presenting with cardiac conditions was higher in all age groups except for the ⩽30 and >60 years in which females were in higher

Table 1: Socio-demographic Characteristics of the Patients Admitted in Cardiology Unit of Civil Hospital Mirpurkhas

Variables	N (%)
Gender	
Male	1147 (65.0)
Female	617 (35.0)
Residence (districts)	
Mirpurkhas	1103 (63.0)
Umerkot	46 (2.6)
Khipro	43 (2.4)
Digri	41 (2.3)
KotGhulam Mohammad	41(2.3)
Other small towns and villages of Sindh	490 (27.4)
Age categories (years)	
⩽ 30	86 (4.9)
31-40	259 (14.7)
41-50	504 (28.6)
51-60	454 (25.7)
> 60	461 (26.1)

Figure 1: Proportion of Male and Female Patients by Various Age Groups with Cardiovascular Diseases Presenting to Cardiology Unit of Civil Hospital Mirpurkhas

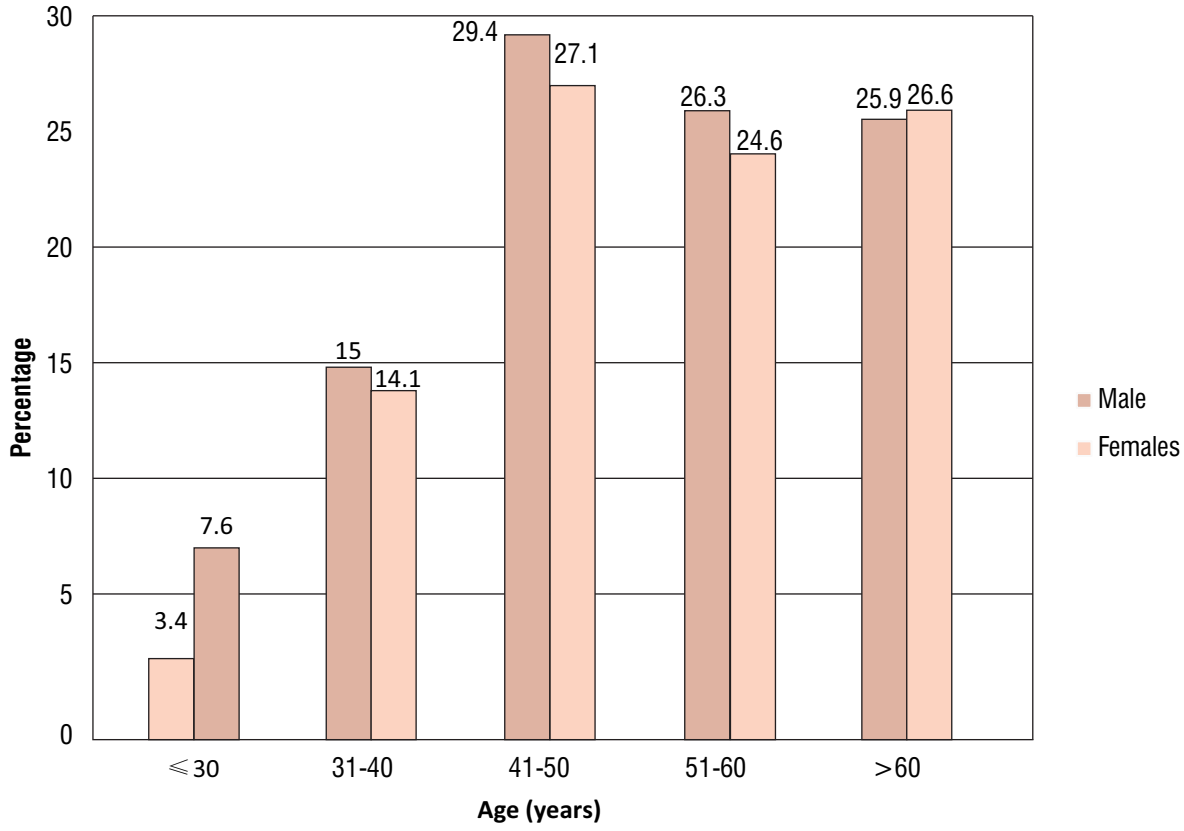

Table 2: Treatment at Hospital

Variables	⩽ 30 years N 86 (%)	31-40 years N 259 (%)	41-50 years N 504 (%)	51-60 years N 454 (%)	>61 years N 461 (%)
Diagnosis					
Ischemic heart diseases	33 (39.3)	188 (72.6)	373 (74.0)	346 (76.2)	335 (72.7)
Hypertension	4 (4.7)	14 (5.4)	45 (8.9)	35 (7.7)	22 (4.8)
Valvular Heart Diseases	26 (30.2)	21 (8.1)	25 (5)	5 (1.1)	6 (1.3)
Left Ventricular Failure	5 (5.8)	3 (1.2)	13 (2.6)	21 (4.6)	25 (5.4)
Cardiomyopathy	7 (8.1)	8 (3.1)	13 (2.6)	14 (3.1)	22 (4.8)
Cardiomegaly	4 (4.7)	2 (0.8)	2 (0.4)	1 (0.2)	2 (0.4)
Conduction defects	5 (5.9)	13 (5)	17 (3.3)	19 (3.3)	24 (5.2)
Congestive cardiac failure	2 (2.3)	6 (2.3)	4 (0.8)	2 (0.4)	8 (1.7)
Pulmonary edema	0 (0)	4 (1.5)	12 (2.4)	11 (2.4)	17 (3.7)
Comorbids					
None	84 (97.7)	234 (90.3)	432 (85.7)	385 (84.8)	404 (87.6)
Hypertension	2 (2.3)	17 (6.6)	52 (10.3)	53 (11.7)	49 (10.6)
Diabetes	0 (0)	8 (3.1)	18 (3.6)	15 (3.3)	6 (1.3)
Asthma	0 (0)	0 (0)	2 (0.4)	1 (0.2)	2 (0.4)

proportions (Figure 1).

Table 2 shows the distribution of diagnosis and frequency of comorbid conditions by age.Majority of ischemic heart disease patients (76.2%) were in the age range of 51 – 60 years whereas 8.9% hypertensive patients belonged to 41 – 50 years. Prevalence of valvular heart disease was highest (30.2%) in age group ⩽30 years.

Most of the cardiomegaly patients were young (<30 years) whereas majority of congestive cardiac failure patients were 40 years and less. Hypertension and diabetes mellitus were the frequently reported co-morbids with highest prevalence in age range of 41 to 60 years.

DISCUSSION

Our study reports the pattern of CVDs in a rural district of Sindh. Studies conducted so far have focused on urban and mega cities of Pakistan,[12,13] whereas the present study not only reports pattern of CVDs in a mixed population both urban and rural but it is also the first study to report pattern of CVDs in Mirpurkhas district.

Our study reports higher proportion of CVDs among males, a finding that is consistent with locally conducted studies.[14] A study conducted in tertiary care hospital of Karachi found higher number of males patients with cardiovascular diseases.[15] Another study conducted in order to determine the burden of ischemic heart disease (IHD) reported similar findings.[16] Whereas a study conducted in order to determine the ECG evidence of cardiac ischemia reported higher prevalence among females.[12] Because of the increased prevalence of risk factors like smoking and alcohol consumption males are considered to be more at risk of CVDs particularly the IHD. However, WHO's report on global burden of disease showed prevalence of CVDs higher among females compared to males.[3] These differences can be explained by variability in the prevalence of risk factors. Females have higher levels of physical inactivity which might explain increased prevalence of CVDs among women in some parts of the world.[10] Another explanation might be the cultural values where women are not empowered to make decisions about their own health. Therefore lack of permission from husbands or parents and lack of availability of male to accompany her to hospital are some of the reasons females present less frequently to hospitals.

Prevalence of IHD as a predominant complaint is a finding that is consistent with local and international literature. Global burden of disease report showed that major proportion of CVDs is comprised of IHD.[(3)] Proportion of those with IHD was found higher beyond the age of 30 years. These findings are consistent with the literature.[17] IHD was also found significantly at early age (⩽ 30 years) in our study and may be a result of higher prevalence of risk factors like smoking (huqqa and beeri consumption particularly among females), alcohol consumption, obesity, lack of physical activity and unhealthy diet. Study of prevalence of risk factors can be helpful in explaining this prevalence.

Civil hospital Mirpurkhas is the only tertiary care public sector hospital that caters the health needs of the population

of the district as well as nearby villages and towns. Majority of the patients coming to the hospital present late due to the issues of accessibility, distance and affordability; problems that are common to most developing countries. This is reflected by the fact that a small proportion of patients also presented with valvular heart disease at age greater than 30 years, because patients with valvular heart disease usually present early in life. About 20% of population was younger than 40 years of age showing increased susceptibility of South Asian population to CVDs at an earlier age.Prevalence of hypertension and diabetes mellitus reported in our study is comparable to that reported in national action plan for non-communicable diseases in Pakistan and is slightly lower than urban counterparts. [9-18] An explanation for this low prevalence might be self-selection, whereby only those with severe disease or those who were more conscious about their health presented to the hospital.

Our study had some limitations. Since this a hospital based record review, therefore it only captured high risk population i.e. those who might have had high levels of risk factors and were at increased risk of CVDs. Also the possibility of duplication cannot be ruled out because same patient might have presented more than once with similar or different cardiac complaints. A community based study may be more suitable for estimating the prevalence of CVDs. There was a lot of incomplete and/or missing information due to which many entries were excluded. Therefore limited data was available for analysis in the study. Since the in-patient register data was not primarily meant for research purpose, therefore information available was limited in terms of number of variables.

CONCLUSION

The study shows the prevalence of cardiac diseases among patients presenting to a tertiary care hospital in a rural district of Sindh. Findings of the study show higher prevalence of CVDs among males and predominance of IHD, the findings that are consistent with available evidence. This study provides a basis for further research on CVD prevalence in Mirpurkhas and similar rural districts. Research in order to determine the prevalence of risk factors of CVDs is recommended in order to design and implement the targeted interventions.

Hypertension and diabetes mellitus prevalence was slightly lower than urban counterparts. More research is warranted in order to determine the prevalence and variation of risk factors.

ACKNOWLEDGMENTS

Authors are thankful to administration of Cardiology unit, Civil hospital, Mirpurkhas for their support in this study.

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