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Research Article

**ISCHEMIC HEART DISEASE IN PATIENTS OF CHRONIC  
KIDNEY DISEASE ON MAINTENANCE HEMODIALYSIS****Dr. Aijaz Ahmed<sup>1</sup>, Dr. Muhammad Nadeem Ahsan<sup>2</sup>, Dr. Pooran Mal<sup>3\*</sup>,  
Dr. Hamid Nawaz Ali Memon<sup>4</sup>, Dr. Samreen<sup>5</sup> and Dr. Sajjad Ali<sup>6</sup>**<sup>1</sup> Chief Resident, Department of Nephrology Liaquat National Hospital Karachi, Pakistan<sup>2</sup> Assistant Professor Department of Nephrology, Dow University of Health Sciences Karachi  
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Sciences Jamshoro Pakistan<sup>4</sup> Zulekha Hospital Dubai United Arab Emirates<sup>5</sup> National Institute of Cardiovascular Diseases Karachi, Pakistan<sup>6</sup> Steward Carney Hospital Boston, Massachusetts USA**Abstract:**

**Objective:** To determine the frequency of ischemic heart disease in patients of chronic kidney disease on maintenance hemodialysis **Patients and Methods:** A total of 160 patients with diagnosis of CKD in department of Nephrology, Liaquat National Hospital Karachi were recruited in this six months cross sectional study. Demographic information was recorded. Then patients were underwent ECG. Reports were assessed and ischemic heart disease was labeled while all the data was collected using the proforma.

**Results:** The mean age of the patients was  $55.97 \pm 7.27$  years. There were 102(63.75%) male and 58(36.25%) female. Frequency of ischemic heart disease (IHD) in patients of chronic kidney disease on hemodialysis maintenance was observed in 70% (112/160) cases.

**Conclusion:** A high prevalence of cardiovascular disease is observed in ESRD patients receiving dialysis therapy.

**Key Words:** Chronic Kidney disease, cardiovascular disease, ischemic heart disease.

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**INTRODUCTION:**

Chronic Kidney disease (CKD) is a common condition that is more prevalent in the elderly population. [1] In a local study conducted the reported prevalence of CKD in local population was 12.5%. [2] Cardiovascular morbidity and mortality in patients with CKD is high, and the presence of CKD worsens outcomes of cardiovascular disease (CVD). CKD is associated with specific risk factors. Emerging evidence indicates that the pathology and manifestation of CVD differ in the presence of CKD. [3, 4] CKD has been shown to be an independent risk factor for cardiovascular events. In addition, patients with pre-dialysis CKD appear to be more likely to die of heart disease than of kidney disease. CKD accelerates coronary artery atherosclerosis by several mechanisms, notably hypertension and dyslipidemia, both of which are known risk factors for coronary artery disease. [5] Whether the high incidence of ischemic heart disease (IHD) among kidney disease patients can be attributed to the same risk factors that have been identified in the general population is unclear. [6] In a study, 68% had a history of ischemic heart disease (defined as a documented history of myocardial infarction typical angina, an exercise electrocardiogram positive for ischemia, or angiographic evidence of coronary disease) in cases of CKD on maintenance hemodialysis. [7, 8] One study has showed that out of 44 CKD cases, 34 (77.3%) cases develop IHD. [9] Rationale of this study is to find the frequency of ischemic heart disease in patients of chronic kidney disease on hemodialysis maintenance. It has been observed in routine that among cases of CKD, symptoms of IHD are present and lethargic. Through literature, we also have come to know that due to CKD, cardiovascular changes may occur which may lead to cardiovascular diseases and cardiac deaths. But there is scarce data present in literature in this regard which showed the extent of the disease in CKD population. So we want to conduct this study to find the frequency of IHD in local population of CKD, as the local evidence is not available in this regard because the racial difference and routine daily life activities of local population may affect the development of IHD in CKD patients. This study will help to attain local evidence moreover, we can plan better management protocols for such delicate cases and can give them better

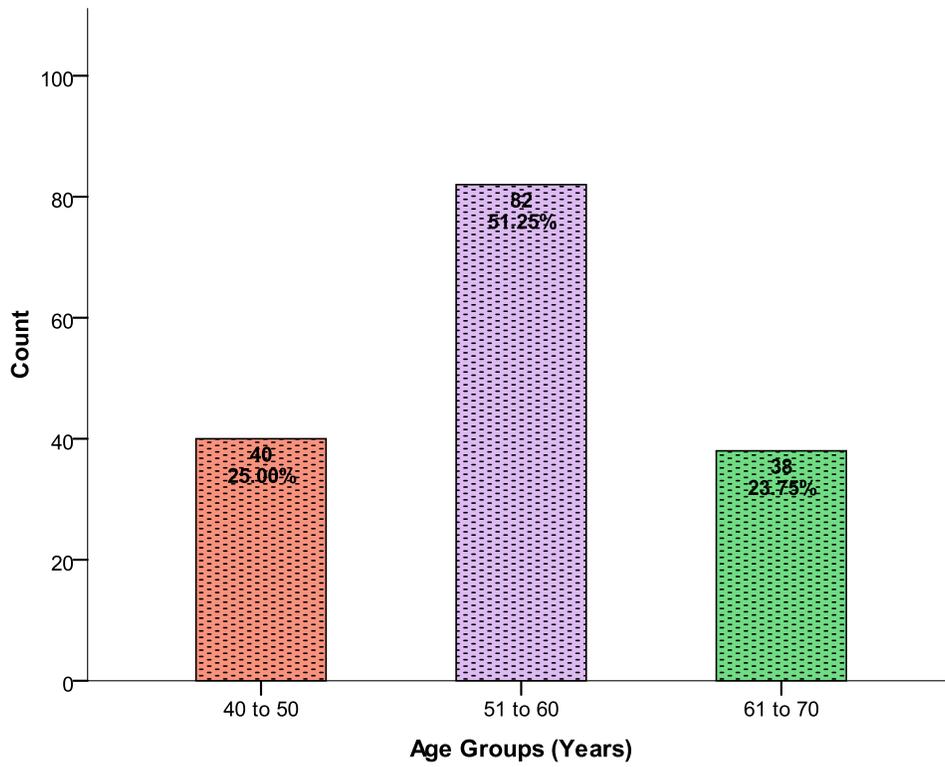
quality of life and we will recommend that proper and timely screening of CKD patients should be done for detection of IHD so that patients can be timely prevented and managed.

**PATIENTS AND METHODS:**

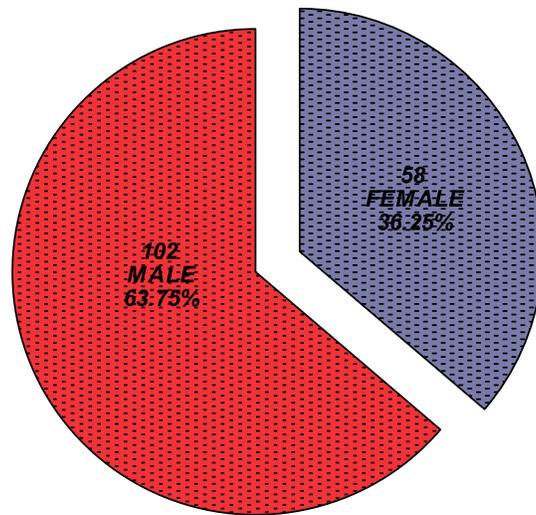
Patients of age 40-70years of either gender with diagnosis of CKD>1 year duration were enrolled and entered in this six months cross sectional study. Total 160 patients fulfilling the selection criteria were enrolled in the study from OPD of department of Nephrology, Liaquat National Hospital, and Karachi. Informed consent was taken. Demographic information (name, age, gender, BMI, duration of CKD and dialysis) were recorded. Then patients were underwent ECG by a senior cardiologist. Reports were assessed and ischemic heart disease was labelled. All the data was collected using the proforma. The serum creatinine>2.26 mg/dl or glomerular filtration rate<30 ml/min/1.73m<sup>2</sup>for ≥1 year and are on hemodialysis for ≥1 year. Dialysis is scheduled as once in 15 days while the ischemic heart disease was labeled as a documented history of myocardial infarction typical angina, presence of ST elevations or depressions >1mm on electrocardiogram and chest pain>3hours and dyspnea on exertion. The exclusion criteria of the study were, deranged LFTs (ALT>40IU, AST>40IU), anemia (Hb<10 g/dl) before initiation of dialysis and the patients with hypothyroidism (TSH>5IU) or deranged PTH level before initiation of dialysis. The collected data was entered and analyzed through SPSS version 21.

**RESULTS:**

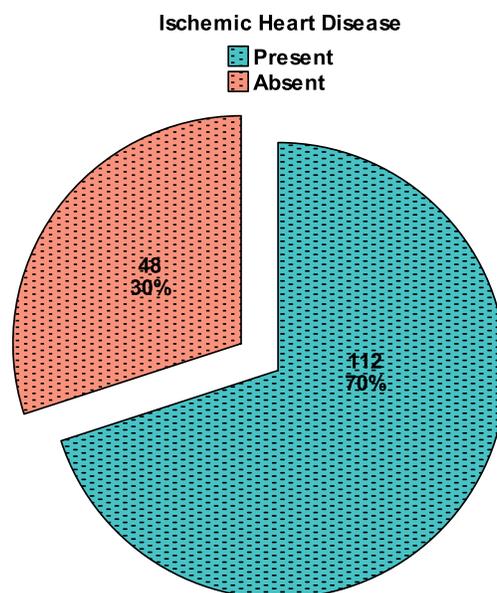
A total of 160 patients with diagnosis of CKD were recruited in this study. Age distribution showed that 25% patients were 40 to 50 years of age, 51.25% were 51 to 60 years and 23.75% were 61 to 70 years of age as shown in figure 1. The mean age of the patients was 55.97±7.27 years while there were 102(63.75%) male and 58(36.25%) female as shown in figure 2. The frequency of ischemic heart disease (IHD) in patients of chronic kidney disease on hemodialysis maintenance was observed in 70% (112/160) cases as presented in figure 3.



**FIG. 1: AGE DISTRIBUTION OF THE PATIENTS n=160**



**FIG. 2: GENDER DISTRIBUTION OF THE PATIENTS n=160**



**FIG. 3: FREQUENCY OF ISCHEMIC HEART DISEASE IN PATIENTS OF CHRONIC KIDNEY DISEASE ON HEMODIALYSIS MAINTENANCE n=160**

#### DISCUSSION:

Cardiac disease is the leading cause of death among prevalent maintenance dialysis patients, accounting for approximately 45% of reported deaths in the United States [10]. Compared with the general population, dialysis patients have a 10 to 20 time greater incidence of cardiovascular death [11]. This excess cardiac mortality is, in part, caused by a high prevalence of cardiac disease before initiation of dialysis [12], and is likely caused by the high prevalence of cardiovascular risk factors in patients with progressive kidney disease [13]. In addition, dialysis patients with cardiac disease have a higher case fatality rate than non-dialysis patients with heart disease [14]. A total of 160 patients with diagnosis of CKD were recruited in our study, there were 63.75% male and 36.25% females. Rate of IHD was significantly high in male cases as compare to female (76.5% vs. 58.6%  $p=0.018$ ). Recent data from the National Health and Nutrition Examination Surveys (NHANES) have shown that over the past two decades the prevalence of myocardial infarctions has increased in midlife (35 to 54 years) women, while declining in similarly aged men. [15] In a report from the European Heart. Survey on stable angina pectoris it was found that women are less likely to be referred for functional testing for

ischaemia and that a lower rate of diagnostic angiograms and interventional procedures are performed compared with men. [16] The under recognition of heart disease and differences in clinical presentation in women lead to less aggressive treatment strategies and a lower representation of women in clinical trials. In our study the frequency of ischemic heart disease (IHD) in patients of chronic kidney disease on hemodialysis maintenance was observed in 70% (112/160) cases. Lindner et al [17] have compared the incidence of de novo ischemic heart disease (IHD) in 39 patients on long-term hemodialysis to that of the Framingham study population [18]. Although they reported that their dialysis patients had an increased incidence of IHD and a greater mortality from IHD, the small size of their study population in contrast to the Framingham study group raises questions about the validity of such a comparison.

#### CONCLUSION:

A high prevalence of cardiovascular disease is observed in ESRD patients receiving dialysis therapy. This usually constitutes a combination of vascular and myocardial disease related to both traditional and nontraditional risk factors.

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