

**Research Article**

**Analysis of Role of Statins on Cardiac patients with Chronic Kidney Disease  
and renal failure: A research analysis**

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**ABSTRACT**

**Introduction:** Chronic kidney disease (CKD) is a major public health problem. Statins are outstanding to reduce cardiovascular (CV) occasions and mortality in patients with coronary supply route disease. **Objectives of the study:** The main objective of our study is to find the role of statin in CVD and those patient who is suffering from renal failure and kidney disease. **Methodology of the study:** The study was conducted at Sialkot medical college and community health center of Gujranwala with the permission of ethical committee and concerned department. For this study the data was collected from 50 patients who was suffering from cardiovascular disease and kidney disease. For this purpose we make two groups of study. One group was control group and the other group was suffering from CVD and kidney problems. **Results:** the values of analysis of statin therapy in patients. It shows the comparison between two groups on the basis of functional values. ROC curve explained the specificity and sensitivity of statin therapy in patients **Conclusion:** Our findings clearly indicated that patients with CKD are at high risk for CVD. Moreover, there is significant evidence showing that patients with CKD benefit from statin therapy with improvement of CV outcomes. However, in patients with stage 5 CKD or on dialysis, the benefits of statin therapy on CV outcomes are less certain, and further large RCTs may be needed to clarify this matter.

**Key words:** Chronic, CKD, Statin, Patients, renal failure

**INTRODUCTION**

Chronic kidney disease (CKD) is a major public health problem. Cardiovascular disease (CVD) keeps on being the leading cause of morbidity and mortality among individuals with CKD around the world, with rates of cardiovascular occasions and mortality reliably expanding as kidney work decays. Dialysis patients have death rates up to 40-crease higher than the overall public, with CVD being in charge of up to half of these passing.<sup>1</sup> Patients with CKD have higher commonness of various hazard factors for CVD, including lipid variations from the norm, hypertension, stoutness, and diabetes. Statins are outstanding to reduce cardiovascular (CV) occasions and mortality in patients with

coronary supply route disease.<sup>2</sup>The fundamental impact of the statins is to bring down low-thickness lipoprotein cholesterol (LDL-C). Be that as it may, statins additionally apply critical pleiotropic impacts, including calming and antithrombotic activities, and also change of endothelial capacity.

A few investigations have demonstrated the advantages of statins in patients with coronary illness (CHD).<sup>3</sup> Statins act by hindering the catalyst 3-hydroxy-3-methylglutaryl coenzyme A reductase, which catalyzes the rate-restricting advance in anew cholesterol blend. This causes a lessening in intrahepatic cholesterol levels, leading to an expansion in the movement/atomic

translocation of the interpretation factor sterol administrative element– restricting protein, which thus initiates the low-thickness lipoprotein receptor (LDLR) quality with resulting up direction of LDLRs, in the long run leading to a diminishing in circling LDL-C levels.<sup>3</sup> Statins likewise reduce low thickness lipoprotein generation by means of an impact interceded by reduced hepatic apo lipoprotein B emission.<sup>4</sup> The utilization of statins in the populace with dyslipidemia to reduce cardiovascular (CV) hazard and mortality is all around archived. Shockingly, patients with chronic kidney disease (CKD), particularly those with cutting edge renal disease, are by and large barred from huge clinical trials because of concerns in regards to high morbidity and mortality, and in addition security issues of the medications.<sup>5</sup> In this manner, the effect of statin on such patients is for the most part from some post hoc subgroup investigation in which the renal impact of statin stays disputable. Chronic kidney disease is related with dyslipidemia, including the entire range of plasma lipoproteins. The particular lipoprotein variations from the norm in patients with CKD may differ contingent upon the degree and the essential driver of renal disability, and the kind of dialysis in patients with ESRD.<sup>6</sup>

**Objectives of the study**

The main objective of our study is to find the role of statin in CVD and those patient who is suffering from renal failure and kidney disease.

**Methodology of the study**

The study was conducted at Sialkot medical college and community health center of Gujranwala with the permission of ethical committee and concerned department. For this study the data was collected from 50 patients who was suffering from cardiovascular disease and kidney disease. For this purpose we make two groups of study. One group was control group and the other group was suffering from CVD and kidney problems. The second group was also get the statin therapy for the cure of their problem but the control group was not get any kind of therapy they just get normal medication. Then we collect the socio economic status and therapy status of both groups. Then we analyze the data and find that either statin therapy is helpful for patients or not.

Student’s t-test was performed to evaluate the differences in roughness between groups. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

**Analysis and results**

The data was collected for further analysis. Table 01 of the data shows the basic values of control group and patients. It shows the BMI, age, Total cholesterol level and other basic values. We can find that cholesterol level is high in patients as compared to normal values. We also shows the comparison of statin group and normal group.

**Table 01:** General values of Control group and diseased group

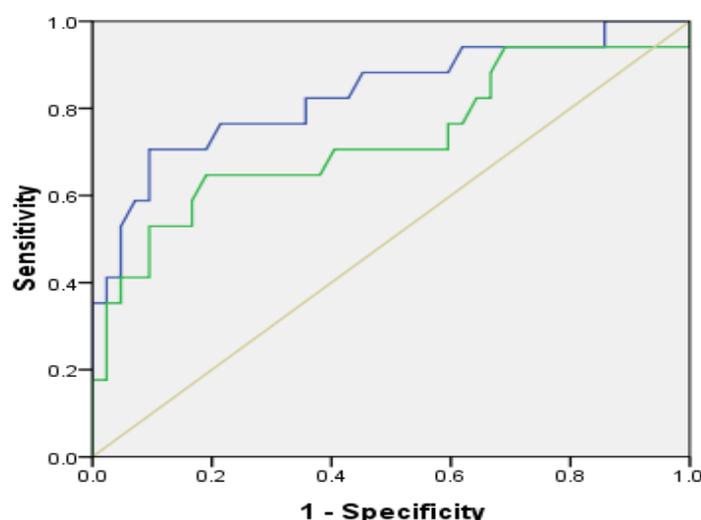
Variable	Diseases Group	Control Group	t Value	p Value
Age (Year)	56.56±8.46	53.64±8.36	1.716	0.081
BMI (kg/m <sup>2</sup> )	24.31±2.26	23.37±2.09	2.195	0.031
SBP (mmHg)	140.36±15.70	116.53±13.46	8.248	0.000
DBP (mmHg)	87.94±10.69	75.81±9.94	5.967	0.000
PP (mmHg)	52.42±12.87	40.72±8.74	5.426	0.000
FBG (mmol/)	5.12±0.65	5.06±0.49	1.764	0.081
TG (mmol/L)	1.74±0.75	1.69±0.86	1.838	0.071
TC (mmol/L)	4.95±0.76	4.88±0.82	1.712	0.090

HDL-	1.30±0.43	1.31±0.56	1.717	0.089
LDL-C	3.46±0.58	3.38±0.66	1.139	0.266
<b>Note :</b> BMI : body mass index ; SBP : systolic blood pressure ; DBP : diastolic blood pressure ; PP : pulse pressure ; FBG : fasting blood glucose ; TG : triglyceride ; TC : total cholesterol ; HDL-C : high-density lipoprotein ; LDL-C: low-density lipoprotein				

Tale 02 shows the values of analysis of statin therapy in patients. It shows the comparison between two groups on the basis of functional values. ROC curve explained the specificity and sensitivity of statin therapy in patients (Figure 01).

**Table 02:** Comparison between two groups in structural and functional parameters

Group	IMT (µm)	CC (mm <sup>2</sup> /KPa)	α	β
CVD Group	694.88±77.63	0.89±0.13	5.68±1.23	11.25±1.01
Control Group	586.87±62.12	0.96±0.08	4.77±0.62	9.24±1.24
T value	7.818	-3.115	4.712	9.004
P value	0.000	0.002	0.000	0.000



**Figure 01:** ROC curve of statin therapy in patients

**DISCUSSION**

The management of lipids in people with CKD has been an area of intense debate over recent years, particularly in those with more advanced kidney dysfunction. This large quantitative survey, incorporating 31 trials with in excess of 48 000 people, proposes that treatment with statin reduces the danger of cardiovascular occasions crosswise over various levels of kidney work.<sup>7</sup> Major cardiovascular occasions are reduced by 23%, incorporating a 22% lessening in coronary occasions, and 9% decrease in cardiovascular or all-cause passing. No noteworthy impact was seen on the danger of kidney disappointment, or on the danger of unfriendly occasions including disease mortality. End focuses for the assessment of the impact of statin treatment on renal capacity in

patients with CKD have included protein discharge and movement of CKD.<sup>8</sup> Starting examination indicated distinctive rates of expanded protein discharge with different statins. Be that as it may, clinical investigations that particularly assessed the impact of statin treatment on protein discharge yielded clashing outcomes, with some exhibiting a lessening in proteinuria and others demonstrating no impact. There are clashing information concerning the impact of statins on movement of CKD.<sup>9</sup>

A few investigations have recommended that statins may moderate the rate of decrease in renal capacity in patients with mellow to direct renal brokenness, though others have discovered that statins were not better than fake treatment and common care. In an extremely late substantial

meta-examination incorporating 57 considers with 143–888 members, statins did not reduce the hazard for kidney disappointment in patients with CKD not on dialysis but rather did unobtrusively reduce proteinuria and rate of assessed glomerular filtration rate (eGFR) decay.<sup>11-13</sup> These outcomes are reliable with the consequences of another exceptionally late meta-examination of 23 randomized controlled trials (RCTs) with 39–419 members with non– end-organize CKD, which demonstrated that statins caused a measurably critical diminishment in microalbuminuria, proteinuria, and clinical passing yet did not adequately moderate the clinical movement of non– end-arrange CKD. Besides, in another meta-investigation, which examined the viability of statins in patients with diabetic nephropathy and included 14 trials with 2866 members, it was demonstrated that statins diminished albuminuria and this decrease in albuminuria was more noteworthy in patients of sort 2 diabetes mellitus with diabetic nephropathy.<sup>14</sup>

In a vast meta-investigation, which included 8834 members with organize 1– 3 CKD and 32–846 man a very long time of development, statin treatment was appeared to be helpful for the essential CV anticipation in CKD.<sup>36</sup> More particularly, statins reduced the danger of CVD by 41% ( $P < 0.001$ ) and diminished aggregate mortality by 34% ( $P = 0.005$ ) and the danger of CHD by 45% ( $P < 0.001$ ).<sup>38</sup> For arrange 3 CKD just, statins reduced the danger of CVD by 44% ( $P < 0.001$ ) and diminished aggregate mortality by 38% ( $P < 0.001$ ), the danger of CHD by 45% ( $P < 0.001$ ), and the danger of stroke by 57% ( $P = 0.003$ ).<sup>38</sup> In another examination, minimal effort nonspecific statins were appeared to be financially savvy for the essential counteractive action of CVD in hypertensive patients with mellow to direct CKD.<sup>15-17</sup>

## CONCLUSION

Our findings clearly indicated that patients with CKD are at high risk for CVD. Moreover, there is significant evidence showing that patients with

CKD benefit from statin therapy with improvement of CV outcomes. However, in patients with stage 5 CKD or on dialysis, the benefits of statin therapy on CV outcomes are less certain, and further large RCTs may be needed to clarify this matter.

## Contribution of authors

All the authors contributed equally. Dr. Sultan conceived of the presented idea and do all the lab work and carried out the experiment with other co-authors. Dr. Jamil developed the theory and performed the computations. Dr. Sadiq supervised the findings of this work and developed the theoretical formalism, performed the analytic calculations and performed the numerical simulations. All the authors contributed to the final version of the manuscript.

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