

**Supplementary Figure S1.** Flowchart of the study. CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate.



**Supplementary Figure S2.** Dose-response Relationship between lipid profiles and risk of CKD in male and female. A: Lipid profiles are linearly correlated with CKD in male. B: Lipid profiles are nonlinearly associated with CKD in male. C and D: Lipid profiles are linearly correlated with CKD in female. The solid line indicates the adjusted *HR*, and the shaded area represents 95% *CI* for *HR*. The x-axes is the level of lipid profiles, and the y-axes is the *HR* for CKD. The reference point (*HR* = 1) was the critical value (for TC, TG, HDL-C and LDL-C) or median (for TC/HDL-C, TG/HDL-C and LDL-C/HDL-C). Model was adjusted for age, sex, occupation, education, income, smoking, drinking, exercise, high-salt diet, high-fat diet, BMI, hypertension, coronary heart disease, diabetes, hyperlipidemia, family history of kidney disease and baseline eGFR (Model 3). *HR*, Hazard ratios; TC, total cholesterol; TG, triglyceride; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol.



**Supplementary Figure S3.** Dose-response relationship between lipid profiles and risk of CKD in stratified analysis by dyslipidemia. A: Lipid profiles are linearly correlated with CKD in non-dyslipidemia. B: Lipid profiles are nonlinearly associated with CKD in non-dyslipidemia. C: Lipid profiles are linearly correlated with CKD in dyslipidemia. D: Linearly (LDL-C/HDL-C) and non-linearly (LDL-C) correlated with CKD in dyslipidemia. The solid line indicates the adjusted *HR*, and the shaded area represents 95% *CI* for *HR*. The x-axes is the level of lipid profiles, and the y-axes is the *HR* for CKD. The reference point (*HR* = 1) was the critical value (for TC, TG, HDL-C and LDL-C) or median (for TC/HDL-C, TG/HDL-C and LDL-C/HDL-C). Model was adjusted for age, sex, occupation, education, income, smoking, drinking, exercise, high-salt diet, high-fat diet, BMI, hypertension, coronary heart disease, diabetes, hyperlipidemia, family history of kidney disease and baseline eGFR (Model 3). *HR*, Hazard ratios; TC, total cholesterol; TG, triglyceride; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol.



**Supplementary Figure S4.** Validity test and robust check of RDD between TC/HDL-C and CKD. (1) A: validity test and robust check in male; B: validity test and robust check in female. C: validity test and robust check in non-dyslipidemia; D: validity test and robust check in dyslipidemia. (2) a: pseudo outcome test, the x-axes is the variable for the pseudo outcome, and the y-axes is the local average treatment effect estimate value; b: McCrary's test, the x-axes is the level of lipid profiles, and the y-axes is the density function estimates; c: pseudo cutoff point, the x-axes is the level of lipid profiles (i.e. the pseudo cutoff value), and the y-axes is the local average treatment effect estimate value; d: donut hole approach, the x-axes is the percent of sample removed, and the y-axes is the local average treatment effect estimate value; e: bandwidth selection, the x-axes is the different bandwidth values, and the y-axes is the local average treatment effect estimate value; d: donut hole approach, the average treatment effect estimate value; c: bandwidth selection, the x-axes is the different bandwidth values, and the y-axes is the local average treatment effect estimate value. TC, total cholesterol; HDL-C, high-density lipoprotein cholesterol.



**Supplementary Figure S5.** Validity test and robust check of RDD between LDL-C and CKD. (1) A: validity test and robust check of RDD between LDL-C (< 2.77) and CKD in male; B: validity test and robust check of RDD between LDL-C ( $\geq 2.77$ ) and CKD in male; C: validity test and robust check of RDD between LDL-C (< 2.85) and CKD in non-dyslipidemia; D: validity test and robust check of RDD between LDL-C (< 2.85) and CKD in non-dyslipidemia; D: validity test and robust check of RDD between LDL-C (< 2.88) and CKD in dyslipidemia. (2) a: pseudo outcome test, the x-axes is the variable for the pseudo outcome, and the y-axes is the local average treatment effect estimate value; b: McCrary's test, the x-axes is the level of lipid profiles, and the y-axes is the density function estimates; c: pseudo cutoff point, the x-axes is the level of lipid profiles (i.e. the pseudo cutoff value), and the y-axes is the local average treatment effect estimate value; e: bandwidth selection, the x-axes is the different bandwidth values, and the y-axes is the local average treatment effect estimate value; estimate value. LDL-C, low-density lipoprotein cholesterol.