EARLY DETECTION OF CHRONIC KIDNEY DISEASE

LITERATURE SURVEY

Q.-L. Zhang & D. Rothenbacher [1] proposed a machine learning methodology for diagnosing CKD. Chronic kidney disease is becoming a major public health problem worldwide. This article reviews the published evidence of prevalence of CKD in population-based study samples that used the standardized definition from the kidney disease outcomes quality initiative of the National Kidney Foundation (K/DOQI) practice guideline and particularly focus on performance of serum-creatinine based equations for GFR estimation.

W. M. McClellan et. al [2], ''Albumin- uria and racial disparities in the risk for ESRD proposed a machine learning methodology for diagnosing CKD. Socio Economic status (SES) is independently associated with chronic kidney disease progression however the association with other CKD outcomes is unclear. In particular, the potential differential effect of SES on mortality among blacks and whites is understudied in CKD.

M. K. Haroun [3] said that chronic kidney disease is an increasing cause of morbidity and mortality in the United States. Prospective data on risk factors for CKD are limited to men, and few studies examine the importance of smoking. All cases were confirmed as CKD by medical chart review. Adjusted relative hazards of CKD were modeled using Cox proportional hazards regression including age as the time variable and baseline BP, cigarette smoking, gender, and diabetes status as risk factors. The adjusted hazard ratio (95% confidence interval) of developing CKD among women was 2.5 (0.05 to 12.0) for normal BP, 3.0 (0.6 to 14.4) for high-normal BP, 3.8 (0.8 to 17.2) for stage 1 hypertension, 6.3 (1.3 to 29.0) for stage 2 hypertension, and 8.8 (1.8 to 43.0) for stages 3 or 4 hypertension compared with individuals with optimal BP.

W. D. Souza et. al [4], said that Chronic Kidney Disease is one of the most critical illness nowadays and proper diagnosis is required as soon as possible. Machine learning technique has become reliable for medical treatment. The important feature selection technique was also applied to the dataset. For each classifier, the results have been computed based on full features, correlation-based feature selection, Wrapper method feature selection, Least absolute shrinkage and selection operator regression, synthetic

minority over-sampling technique with least absolute shrinkage and selection operator regression selected features.

W. Mula-Abed et. al [5], explained that chronic kidney disease is an important epidemic and public health problem that is associated with a significant risk for vascular disease and early cardiovascular mortality as well as progression of kidney disease. Currently it is classified into five stages based on the glomerular filtration rate as recommended by many professional guidelines. Radio labelled methods for measuring GFR are accurate but not practical and can be used only on a very limited scale while the traditional methods require timed urine collection with its drawback of inaccuracy, cumbersomeness and inconvenience for the patients.

A. S. Levey et. al [6], explained that Changes in proteinuria have been suggested as a surrogate outcome for kidney disease progression to facilitate the conduct of clinical trials. This report summarizes a workshop sponsored by the National Kidney Foundation and US Food and Drug Administration with the following goals to evaluate the strengths and limitations of criteria for assessment of proteinuria as a potential surrogate end point for clinical trials in chronic kidney disease to explore the strengths and limitations of available data for proteinuria as a potential surrogate end point and to delineate what more needs to be done to evaluate proteinuria as a potential surrogate end point.

S. Gerogianni [7] explained that Chronic Renal Failure (CRF) is a public health problem that has serious impact on mental and psychological health of patients undergoing haemodialysis. The aim of this quantitative research study was to investigate the psychological impact of dialysis on the quality of life of patients with End Stage Renal Failure (ESRF). The sample study included 100 patients undergoing haemodialysis in four hospitals in Athens. Data was collected by the completion of a questionnaire KDQOL-SF, incorporating the tool overview of the SF-36 Health and an additional questionnaire that included demographic characteristics.

K. R. A. Padmanaban & G. Parthiban [8] proposed a machine learning methodology for diagnosing CKD. This paper aims at predicting the early detection of chronic kidney disease also known as chronic renal disease for diabetic patients with the help of machine learning methods and finally suggests a decision tree to arrive at concrete results with desirable accuracy by measuring its performance to its specification and sensitiveness. On comparing the classification algorithms with respect

to Naive Bayes and Decision tree, we came to conclusion that the accuracy is up to 91% for Decision tree classification.

W. Gunarathne et. al [9], explained that chronic kidney disease is considered as kidney damage which lasts longer than three months. Identifying CKD in the initial stage is important to provide necessary treatments to prevent or cure the disease. These models have applied on recently collected CKD dataset downloaded from the UCI repository with 400 data records and 25 attributes. Results of different models are compared. From the comparison it has been observed that the model with Multiclass Decision forest algorithm performed best with an accuracy of 99.1% for the reduced dataset with the 14 attributes.

S. Drall, G. S. Drall et. al [10], proposed a machine learning methodology for diagnosing CKD. Chronic kidney disease also recognized as Chronic Renal Disease, is an uncharacteristic functioning of kidney or a failure of renal function expanding over a period of months or years. Habitually, chronic kidney disease is detected during the screening of people who are known to be in threat by kidney problems, such as those with high blood pressure or diabetes and those with a blood relative Chronic Kidney Disease(CKD) patients. So the early prediction is necessary in combating the disease and to provide good treatment.