

## 5.5 AGRICULTURAL RISK FACTORS OF CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY IN NORTH CENTRAL REGION OF SRI LANKA

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### **Introduction**

Health professionals in Sri Lanka have noticed worryingly high incidence of a new form of chronic kidney disease of unknown etiology (CKD-U) in farmers of North Central Region (NCR). Aim of the study is to identify the risk factors related to farming as it is useful in prevention.

### **Methods**

Potential agricultural risk factors and other information were collected from 315 CKD-U patients and 321 healthy controls that were randomly selected. The relative risk of each factor was compared in terms of Odds ratios (ORs) & 95% CI by applying the linear logistic model.

### **Results**

Involvement in paddy farming activities (OR=1.945, 95%CI-1.256-3.010), usage of agrochemicals (OR=2.034, 95%CI-1.297-3.190), low preventive measures against agrochemicals (OR=2.845, 95%CI-1.788-4.527), high operated paddy extent without exchange of labour (OR=4.734, 95%CI-2.586-8.665) were identified as significant contributory risk factors for CKD-U (P<0.005).

Cultivating a larger land extent with low labour exchange was a significant risk factor for the disease (p<0.05). Cultivating a lower land extent with low labour exchange (OR=1.558, 95%CI, 0.47-1.56) had higher risk than larger land extent with high labour exchange (OR=1.40, 95%CI, 0.42-1.42). In addition to the agricultural activities being a male, age > 60 years, smoking, alcoholism, family history of CKD-U, history of malaria and snake bite (P<0.05) were identified as other contributory factors.

**Conclusion** There is a strong occupational risk factor in the pathogenesis of the disease where the male farmers age > 60 at a high risk probably due to long term exposure to the etiological agents (risk factors). Some agricultural activities indicating intense physical activity are related CKD-U. Further studies are indicated to identify the effect of dehydration and physical exertion on the renal functions of these individuals. Low levels of preventive measures in the agrochemical usage related to the disease indicates interventions to educate the farmers on safe agrochemical usage.

## 5.6 AGRICULTURAL RISK INDEX FOR CHRONIC KIDNEY DISEASE OF UNKNOWN ORIGIN

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**Introduction** Chronic Kidney Disease due to unknown etiology (CKD-U) is one of the growing health problems in Sri Lanka. About eight thousand diagnosed CKD-U patients are enduring treatment in country largely in the North Central Region (NCR). Ninety percent (90%) of the patients are farmers.

**Objectives** The study is designed to calculate an agricultural risk index for an individual who lives in high risk areas of the country.

**Methods and materials** The study is a case control study and 315 CKD-U patients and 321 normal healthy individuals were randomly selected from NCR. Age, sex and agriculture related risk factors from both patients and controls were collected. Multiple linear logistic models were applied to calculate the risk index.

**Results** The gender of the individual (male, female), age category (<45, 45-60, 60>years), cultivating area (>1, <1hecteres), exchange of labour (high or low), protective measures against agrochemicals (low or high) were considered for index calculation. According to the multiple linear regressions logistic models the maximum and minimum risks were calculated as 1.0 and 0.0 respectively. The male individual who's age is greater than 60 years, low exchange of labour and low protective measures against agrochemicals had the highest risk of getting CKD-U the disease disregarding cultivating area (probability =0.87). Females with age less than 45 years with high labour exchange and high protective measures had the lowest risk (probability= 0.14)disregarding cultivating area.

### **Conclusion**

The calculated risk index will be useful to identify the individuals at risk of developing CKD-U and to implement the preventive strategies for the disease in the high prevalent area. The individuals with age greater than 60 with sloppy agricultural activities had the maximum possibility of getting CKD-U probably due to long term exposure to the etiological agents & risk factors in this area.