Geographical distribution of chronic kidney disease of unknown origin in Sri Lanka

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Objectives
This research was carried out with the aim of studying
– demographic characteristics of the patients
– geographical distribution of the disease
– location of households of the CKD-U patients in relation to reservoirs, irrigation canals and the topography of the affected area
that would help identifying potential aetiological factor/s which could be associated with the disease.
Method and Material

• Geological Information System mapping
  – Information was collected with reference to basic demographic data (age & sex) and respective addresses of 11323 chronic kidney disease patients who attended to community renal clinics that were especially established to follow up CKD-U patients.
  – GIS mapping was done using ARC 9.2 software
Results

Age and sex distribution of the patients and the population of the study area
Results

Geographical distribution-GIS mapping
Geographical Distribution of CKD-U Patients in Sri Lanka
Medawachchiya & Padaviya
Padaviya
Giranduru Kotte
Medirigiriya
Nikawewa
Epidemiological study - Conclusions

- Three main high prevalent areas and two smaller foci identified
  - Padaviya
  - Medawachchiya
  - Giranduru Kotte
  - Medirigiriya
  - Nikawewa

- New foci are emerging & older foci are persisting
- Always centered around stagnant irrigated water
- Low prevalence was noted in villages that used natural water springs as the source of drinking water
GPS Maps

• **Objective**: To identify the location of the house holds in relation to topography and the water reservoirs

• **Method**: Information of 796 CKD-U patients from Padaviya & 67 CKD-U patients from Nikawewa collected.

• Inclusion criteria
  – no history of DM, HT, infections or other renal diseases,
  – Urine protein + or more on two occasions
  – Radiological / pathological evidence of chronic kidney disease

• Other information (age, sex, occupation, family history, water source etc) collected

• GPS map was prepared using “Thimble software”
Results: Distribution of CKD-U in Padaviya-GPS map

- Affected house holds are located in the lowest lying area of the village (below the level of reservoirs or and irrigation canals)
GPS map Nikawewa
Epidemiology study conclusions ..... 

• Water source  
  – 92% shallow dug wells  
  – 7% tube wells  
  – 1% reservoirs  
  – Boiled water/non boiled water

• Occupation  
  – 90% farmers  
  – 8% Gramarakshaka  
  – 2% other
The characteristic geographical distribution of the disease related to stagnant irrigated water indicates the possibility of an environmental factor related to water in the pathogenesis of the disease.

New foci are emerging & older foci are persisting.

Low prevalence was noted in villages that used natural water springs as the source of drinking water.

The use of water from the shallow dug wells for drinking by the affected population indicates the possibility that the aetiological agent is water soluble.
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    - Padaviya,
    - Mahiyangana,
    - Girandurukotte,
    - Medirigiriya
    - Nikawewa

- **THANK YOU**