

## Reasons and Social Effects of Chronic Kidney Disease (CKD) Patients in North Central Province Sri Lanka (With Special Reference to Padawiya Area)

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**Abstract:** Chronic kidney disease is a one of worldwide public health problems. Chronic Kidney Disease (CKD) also known as chronic renal disease or chronic renal failure is a degenerative, progressive condition marked by the gradual loss of kidney function. The experience is traumatic not only for the patients but also for their families who are frequently unable to provide the medical services needed due to the high cost of treatment. Optimally, CKD are treated with dialysis or kidney transplant. Chronic kidney disease of unknown etiology has emerged as a major health care problem in the North-Central of Sri Lanka during the last few decades. The aim of this study is to determine the prevalence of kidney disease and the identifying the responsibility of the government other authorities regarding solving this burning issue. Research problem is “reasons and social impact of CKD patients in North central province?” Survey was conducted to identify the research problem and data were collected using questionnaires, key informant interviews and focus group interviews. Research area was Padawiya in Padawiya Divisional secretariat. In developed countries, the most common causes of CKD are obesity, high blood pressure and diabetes. But in Sri Lankan context, there is a significant high rate of kidney patients in north central province. Many researches were conducted to identify the causes and effects of the disease. Deferent researchers have identified different causes including insecticides, fluoride water, poisons, arsenic, dehydration, drugs, smoking, affect from hard metals. Research findings including spreading rate, sex ratio, geographical and environmental relations, food patterns, livelihood patterns, water resources are making a path to open a new discussion on these issues.

**Key words:** Chronic kidney disease, environmental impact, social responsibility, food patterns, dehydration

### INTRODUCTION

Social problems can be seen as different ways such as violation of cultural values, crimes, diseases, lack of resources and so on. Social problems can be affects to directly or indirectly to the members of the society. Social problems arise from the society itself. Some social problems relates to certain people or categories such as children, male, female, economically unsafe, unhealthy people have its target group Poverty, suicide, divorce, child abuse, child deviancy, alcohol addiction, abortion, rape are some social problems. Those are directly relates to social interactions. There are some environmental problems as air pollution, water pollution, sound pollution etc. On the other hand there is other type of social problems as cancer, dengi, high blood pressure, diabetes and cholesterol and kidney disease.

“Social problems are considered as aberrant behaviors which are held to be manifestations of social disorganizations of social disorganization and to warrant changing via some means of social engineering” (John and Gordon, 2005 Wright and Weiss, 1980). CKD is

a different kind of social problem because victim is not responsible for getting CKD but when it getting the patient, it affects to the whole family as well as the society. But, social problems do not happen spontaneously. Each problem has its own set of causes.

Chronic Kidney Disease (CKD) is one of important health issue in global level. Common causative factors of CKD are glomerulonephritis, diabetes and hypertension. But, there is a relationship between patients who have CKD and their working sector as agricultural workers in Sri Lanka. Very common symptoms of CKD are fatigue, panting, lack of appetite, nausea and anemia. The disease is introduced as chronic because it takes many years for symptoms to develop. Renal function decline is gradual and often extremely painful (Elledge *et al.*, 2014; Jary and Jary, 2000). Categories of kidney failures are Urinary Tract Infection, Nephritis, Chorionic nephritis, renal calculi, Bladders calculi, renal cancers and Poly cyststic kidney decease. Kidneys are the main body organs related to the CKD. Task of kidneys are balancing water level of the body, control blood pressure, excretion of organic matters in the body.

**MATERIALS AND METHODS**

Many researches have been done relevant to this area. It is becoming as a burning issue in Sri Lanka. According to the literature review CKD have emerged in Guatamala, Mexico, Bulgaria, Serbia, India and Sri Lanka as a big socio-medic problem. In Sri Lankan context, first CKD patient reported in 1990. North Central and Western Province are the most vital areas related to the high number of CKD patients. Most of patients are paddy farmers. On the other hand Uva, Eastern and Northern Provinces also have CKD patients. But, it is comparatively low when it compare with North Central Provincial Statistics. But, the main affected sector is we know as paddy workers are same in those other provinces in dry zone. Collectively theses five provinces have a resident population of over 2.5 million people. Researchers estimated CKD patients in the endemic areas were 20336 and it reaches over 25000 by the end of 2013 (Elledge *et al.*, 2014). Within the last 15 years prevalence of the disease has increased dramatically.

There are two types of kidney failure are acute renal failure and chronic kidney disease. Patient suffers gradually but usually permanent loss of kidney function eventually. Ministry of health defined CKD as follows:

- No past history or current treatment for diabetes mellitus or chronic/severe hypertension, snake bite, urological disease of known etiology or glomerulonephritis
- A 3 month average blood glucose level of <6.5%
- BP<160/100 mm Hg untreated or<140/90 mm Hg on up to two antihypertensive agents (Johnson *et al.*, 2012)

Patients with CKD mainly have to face for two matters. There are inability to work after getting CKD and they can not bare its high cost of treatments. The government also spends more money for dialysis and kidney transplantation (Table 1 and 2).

The objectives of the study were to determine the prevalence of kidney disease and the identifying the responsibility of the government other authorities regarding solving this burning issue. Research method was survey method. Data collecting techniques were questionnaires, key informants interviews and focus group interviews. Sample was selected by Random Sampling Method as used Multi Stage Cluster Sampling Method. Sample size was 100 patients. Research area is Padaviya in Padaviya Divisional Secretariat.

Table 1: Three endemic districts and administrative divisions with population

Districts	Population	No. of DS areas	Population range of DS	No. of GND areas	Population range of GND
Anuradhapura	856232	22	22227-69590	557	113-6013
Polonnaruwa	403335	07	36424-82138	292	126-5223
Badulla	811758	15	19540-100434	567	148-4315

(Jayasumana *et al.*, 2014)

Table 2: CKD patients in Anuradhapura District

MOH areas	2003 -2008	2009	2010	2011	2012	2013 up to May	Total
Medawachchiya	2025	157	260	270	195	66	2973
Padaviya	1654	325	218	167	162	28	2554
Kebithigollewa	532	151	137	66	100	34	1020
Rambewa	414	102	104	92	65	19	796
NPC (Nuwaragampalatha Central)	207	42	75	96	41	--	461
NPE (Nuwaragampalatha East)	188	29	36	57	22	--	332
Kahatagasdigiliya	184	31	63	125	89	3	495
Horowpothana	153	39	67	66	81	8	414
Galenbindunuwewa	114	19	37	62	31	--	263
Mihintale	114	28	21	18	22	1	204
Thalawa	80	14	45	33	39	2	213
Nochchiyagama	74	23	22	27	60	2	208
Thirappane	64	6	24	34	7	--	135
Kekirawa	62	9	30	32	16	--	149
Thambuthtegama	52	6	33	26	122	10	249
Galnewa	33	11	22	11	23	--	100
Ipalogama	32	6	14	21	12	--	85
Rajanganaya	23	5	17	18	35	2	100
Palagala	13	3	14	14	5	--	49
Out of the District	590	132	191	187	203	48	1351
No Address	31	5	21	2	--	--	59
SubTotal	6639	1143	1451	1424	1330	223	12210

(PRDPU-NCP, 2012)

**RESULTS AND DISCUSSION**

The research problem which was observed in the study was “Socio-Economic impact of CKD in North Central Province”. This research was done as a basic research as the prime stage of CKD patients and its impact of socio economic activities. The study paid attention on patient’s basic bio data and socio economic impact of CKD patients. Furthermore, it discussed to possible remedial actions related to CKD preventing.

Population in Padaviya is 22924 in 2013 and population density is 0.96. Total area size is Hec 24000. Among the people who are living in Padawiya are three forth of them are Sinhalese and Buddhist, respectively. There are three generations in this community. The first generation was who migrated before 30 years, respectively. The second generation was the children of first generation. The third generation was who were born in this place. For an instance some of them migrated from Western Province such as Nittambuwa, Gampaha and Kelaniya Area in 1950s for the permanent residence.

CKD has a specific geographical distribution; it is very likely that environmental and/ or genetic factors are strongly linked to the etiology and progression of the disease (Noble *et al.*, 2014). Thousands of people in the country’s North Central Province are suffering from chronic kidney disease. When consider a social problem, sex and age ratios are major variables that will be discussed. It is very important in health and socio economic related matters. Table 2 revealed that which age category is mostly affected from CKD. CKD patients have been seeing in both men and women. But, it is more prevalent among men. It reveals that there is strong association with their occupation. This majority of the patients are in age from 20. But, now it can be seen with small children also.

The mean of the age is age 30-70. All are rural residents. Most of patients identified their illness after they are in age in 60s because of CKD symptoms appeared in the late stages in the disease. But, they are actively participating their farming till when they get ill. There is a trend that child below 15 years are been affecting to this CKD. Preventing unit of CKD in North Central Province has been launching clinics in these areas for finding patients. They conduct research and investigations on this issue. Therefore, children are being diagnosed as earlier (Fig. 1 and 2).

According to the sample these CKD patients engaged in different occupation sectors such as farming, small scale businesses and government workers and so on. Majority were paddy farmers or agricultural laborers. Most of them have >10 year’s experiences in agricultural

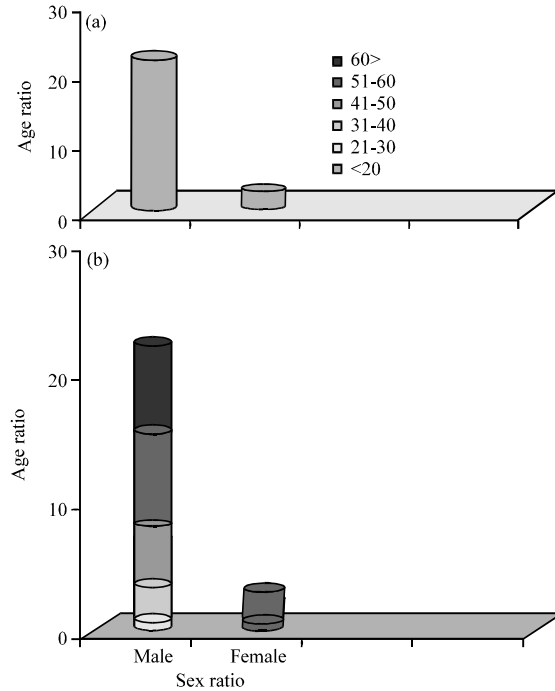


Fig. 1: CKD patients by sex ratio and age ratio. Field data, 2013

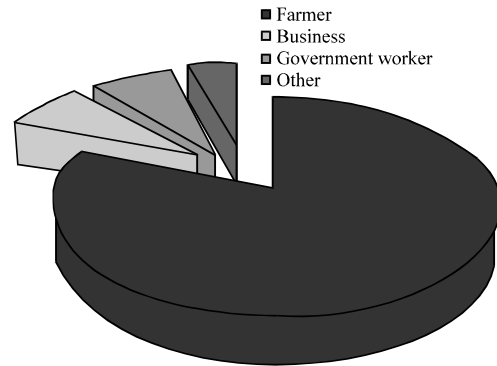


Fig. 2: CKD patients by occupations. (Jayasumana *et al.*, 2014)

workings. It is an important to note that most of families were becoming female headed as their husbands who functioned as breadwinners had been died of CKD. The noticeable feature here is that these factors coming in succession appear as vicious circle. Stable marriages and families are important to the women. Many people think that if their kidneys fail, they will die earlier and earlier. But, its depend on their life pattern and caring. They don’t have an idea to engage with their occupations as earlier. They think as well as they feel of being tired and they fall asleep during the day even after 8-10 h of sleep at night.

Most common reasons are being identified for CKD are asbelow:

- Current treatments for diabetes
- Severe hypertension
- Urinary tract infection
- Snake bites
- Drinking poison
- Eating beetle
- Using Irrigation water
- Eating fresh water fish as “thilapiya”
- Using tobacco or smoking
- Cooking using aluminum saucepan

According to the secondary data some potential causal factors have been identified:

- Asanic as toxicity: if food, water and soil has critical values of asanic is affecting
- Heavy metals: Cd, Pb, Al and as are common heavy metals. Higher concentrations of Cd (cadmium), uranium, lead, fluoride in water and food affects to kidney failure
- Pesticides and fertilizers
- Water with high amount of florid and aluminum: high groundwater fluoride levels
- De-hydration
- Medicine usage
- Alcoholism
- Smoking

**Day to day life pattern in Padawiya residents:** The people who live in Padawiya Area have raised three questions on reasons that affects to CKD as “unknown etiology”. They have questions on two sectors as environment and behavior. Environmental questions are on water, soil and food. Researchers revealed some reasons related to water, soil and food. Habitats in Padawiya use dug well water, tube water and tank water. It is harmful to health because of high levels of heavy metals. According to medical officers advices they fixed a big pot to remain and collect rain water. There is a trend that they take water from natural water spring and tap borne water. There is a place that they have natural spring. They did not sell water. People collect water from that area. People who live more far areas are coming by land masters with together. Then they can share the cost of travelling. On the other hand they have habit on drinking bottle water. They have to spend 150 rupees for 52 bottle per 1 week only for drinking purpose. Some of them don't have strength to by water. They drink what they have.

Soil is the other questionable factor related CKD cause. Fertilizers and pesticides are more common item that use in agricultural sector. Arsenic and cadmium are some result of using fertilizers and pesticides. Farmers believe that Cadmium is found in some fertilizers and Arsenic is an active ingredient in some pesticides. Victims are not only human but also animals in this area. Soil again interferes to water and food. Farmers live in paddy fields more hours in the day. Famers are mostly men. Most of them don't think on their safety and they work in paddy some times in barefoot. Some of them don't use mass and hand gloves when they uses fertilizers and pesticides.

Aluminum utensils used for cooking and storing water which enhance fluoride intake into the body, Cynotoxin that comes from blue green algae have also been hypothesized as possible causes. According to medical advices they use clay pots for cooking. They had habit to eat some foods special to this area such as fresh water fish as “Thilapia”, lotus tomatoes. But now, they don't get those foods. They had as well as have habit of eat beetle as villagers. They try to change their life pattern to get recovering this bad disease. They work and spend more time in hot dry places as rice farmers. They do not take enough water at that time. But now, they try to change their home utensils, drinking more water.

**Special features of CKD patients of this area:**

- Age 30-70, most of CKD are over 60 years
- High amount of male patients
- They don't know they have a kidney failure due to delay symptoms
- 40-60% kidney damaged when they identified the disease
- Most of them were farmers
- Most of them were comparatively poor people
- They have to spent more money for related to getting treatment
- They can't engage with their early jobs
- They can't engage with community works as earlier

**Treatments:** There are no specific reasons found for CKD and as well there's still no specific treatment for CKD. CKD patients are advised to get early body checkup in North Central Province. The MOH office conducts clinics for this and gives medicines for them. There are continuing clinics for patients. Blood dialysis and kidney transplantations are the other treatments for CKD patients who are in final stage of their disease. Eight thousands patients are now undergoing dialysis treatment for late stage CKD in Sri Lanka. Nationally an estimated 4% of the public health budget is spent on renal disease

(Elledge *et al.*, 2014). Blood dialysis is much cost and people who live in remote areas have to come to the city. Patient who lives in Padaviya Area has to spend more than 12000 rupees for each visit as traveling cost. They are getting blood dialysis from the government hospitals with free of charge. They have to spend >1 day in the queue for getting a chance. Lack of dialysis facilities most of patients were died. Private dialysis service in Colombo costs approximately, \$65 (Elledge *et al.*, 2014). Most of them were poor rice farmers. When they get ill, they have to sell their early earnings to take medicines. It directly negatively affect to their family members towards their nutrition, education, health and work. On the other hand patients with a chronic kidney disease must start a special diet plan to take extra care of their kidneys. But, most of CKD patients are breadwinners in their families. Because of lack of Protein-energy malnutrition, loss of lean body mass, muscle weakness and tiredness they can't work as earlier. They are fear to be a kidney patient. There are several government programs launch to prevent CKD patients as follows:

- Special clinic for CKD family members
- Counseling for CKD patients and families
- Providing special bus season cards to the patients
- Giving resource persons for other Institutions to conduct to the awareness programs
- Giving laboratory facilities
- Giving medicines to the patients continually
- Giving financial support to the patients

### CONCLUSION

This CKD problem has multidimensional factors. Environmental, geographical, behavioral and socio-economic factors are being there. CKD are mostly seen in dry zones. There are doubtful source as asanic, cadmium, minerals, fluoride are the environmental and

geographical risks. They have their own behavioral pattern related to the environment as food pattern. It is directly affected to their life style.

This issue has two dimensions to talk as individual and national level preventing discourse. Some of them are change the food culture, change the working behavior, mental relaxation, get early treatments and caring are for individual level sub activities. There should be a well-planned program for national level preventing program as awareness program on preventing and caring, national task force for better health services, clinical treatments, drinking water supply, limitations on fertilizers and pesticide usage are the some of sub activities.

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