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Case Study

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A CASE STUDY ON ANTHROPOGENIC ACTIVITIES TO EFFECT CHRONIC KIDNEY DISEASES IN UDDANAM COSTAL BELT, SRIKAKULAM, ANDHRA PRADESH, INDIA

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ABSTRACT

A comparative study on causative agents related to kidney diseases were more salt consumption, pain killers, lack of proper drinking water, heat stress, consumption of tobacco, alcohol and using of pesticides at that the victims of chronic kidney diseases in Uddanam area of a coastal belt in Srikakulam Dist, Andhra Pradesh. The research oriented information related to this study obtained from 45 to 68 years aged peoples by structured questionnaire and comparison of other CKDs geographical areas. Most of the researchers published in various causative agents to effect of kidney diseases basing on that we selected 17 related questions from framed questionnaire. The study results were revealed that 62.5± 5.57% of the people were agricultural labors and the salts range from 8 to 14 ppt was recorded in vegetarian and non-vegetarian foods. Each person took on an average 3.5 glasses of water per day this is equal to 1.5±0.2 lits. of water. 63.25±7.03 candidates were approached to RMPs, 22.47±3.56 candidates were approached to ayurvedic medicines and few peoples were approached to trained doctors. The study report contains to that the CKDs affectd is not a single problem and it may leads to multiple disorders affect in the Uddanm costal belt.

KEYWORDS: Salt consumption, pain killers, heat stress, tobacco, RMPs, CKDs.

INTRODUCTION

Uddanam is a heaven of scenic beautiful green garden with gardens with lot of cashew nut and coconut trees. But this place has now turned into a living hell on this earth with chronic kidney disease of unknown etiology. The popular CKDs were effected mandalas are Itchapuram, Kaviti, Sompeta, Mandasa, Palasa and Vajrapukotturu. Unpublished cross-sectional estimates from Uddanam suggest that the prevalence of chronic kidney disease of unknown etiology is between 40% and 60% (Raviraju, 2017). This range is nearly three times higher than the national prevalence of 17.2%. As of 2015, it was estimated that more than 4500 people had died from chronic kidney disease in the last ten years and around 34 000 people had kidney diseases in Uddanam (Ganguli A. 2016., Rajapurkar 2016, Abraham 2016).

The survey by the Harvard Medical School, kidney failure is leading cause of death in our country but couldn't establish a proper cause of CKD diseases. Tchounwou et al (2012), Sunethra et al (2014) stated that it maybe because of the water they drink; some say it could be because of the geographical region, some others have also said there may be genetic factors at play. Yet, till date nobody in the world has been able to discover the actual cause. The impact of environmental chemicals on public health and clinical well-being has long been recognized, with a historical focus on heavy metals and molecules that are produced in the work place.

This predominantly affects the young and middle-aged population with a lower socioeconomic status. The hotspots of CKD of undiagnosed etiology in South Asian countries including the North, Central and Eastern provinces of Sri Lanka and the coastal region of the Uddanam, state of Andhra Pradesh. The nephrology care provided in various countries in South Asia, including India, Bangladesh, Pakistan, Nepal, Bhutan, Sri Lanka and Afghanistan reported by Abraham et al, (2016).

Unpublished cross-sectional estimates range is nearly three times higher than the national prevalence of 17.2% (Ganguli 2016), (Rajapurkar 2012). As of 2015, it was estimated that more than 4500 people had died from chronic kidney disease in the last ten years and around 34 000 people had kidney diseases in Uddanam (Abraham et al 2016). The high prevalence of CKD among the population in village-A could be attributed to the synergistic effect of chronic exposure to silicon and strontium through drinking water and prolonged consumption of NSAIDs. (Arjun et al 2015). The present study was helpful to the further investigations to search in details reasons CKDs.

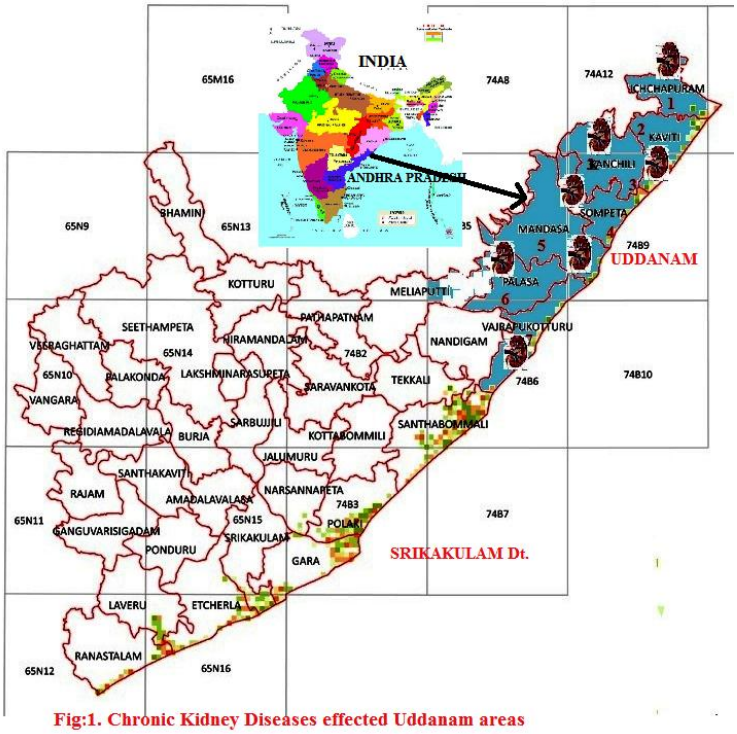

Fig:1. Chronic Kidney Diseases effected Uddanam areas

Fig 2: Salinity testing.

Fig 3: Observing bore water.

Fig 4: Interaction with CKDs Persons.

Fig 5: Data collection.

Fig 6: Various species of dried salt sea fishes.

Fig 7: Reverse smoking (Addapoga) 64 and 56 years aged people

METHODS AND METERIALS

The sample survey was conducted oral interview through questionnaire in between 35 to 62 years age group both male and female in four mandalas. Sompeta, Mandasa, Vajrapukotturu, Palasa (Fig 1). Mainly focused on agriculture land, income resources, crops, work length, type of food, Dried salt fish, smoking tobacco, drinking water source, Temperature, Habit of drinking arrack, oral interviews with RMPs using of non-steroidal anti-inflammatory drugs. Chlorides concentration observed by Salinity refractometer (Fig 2, Fig 3, Fig 4, Fig 5) Statistical data was analysed and calculated by using formula of standard deviation.

RESULTS

The survey results were reveled that the 65 percentage of the villages are agricultural workers in the four mandals. According to questionnaire data results were analyzed

1. Most of the agriculture land is dried and growing on coconut trees, Anacardium trees were largely distributed and few species of other trees. There are no canal systems for water resources. But during rainy seasons from June to September water is available. The water is logging in small ponds in some extent and the water was seepage in ground within few months. During summer the ground water levels are usually decreasing few meters and also some villages there is no water. People are walking to bring water from far places that are 3 to 4 kilometers away their native village.
2. The survey results were reveled that the 62.5± 5.57% of the villagers are agricultural labors, 6.5± 1.01% are business, 19.5± 3.21% income resources from coconuts and cashew products, 11.5±2.32% are vegetables and dried fish sellers (mostly women's Fig 6).
3. The main crops are coconuts and Anacardium, seasonal crops like Tobacco, corns and legume plants cultivated in this mandals. Few tree species

like *Moringa oleifera*, *Mangifera* sps, *Artocarpus* sps are being grown in this region.

4. The results expressed that the elder people were done 8±0.5 hours per day for agricultural work during monsoon and 6±1.0 hours for worked at cashew and coconut farms.
5. Earlier period the people mostly to took the millets type of food like Finger millets, foxtail millets etc.,
6. The survey results were revealed that the comparison of consumption of salts and the salinity range from 8 to 14 ppt was recorded in vegetarian and non-vegetarian foods. 72.5± 9.72% of people they eat salt fish in their regular food. In this 22.83± 4.02% of the people to take 7 times per week, 53.92± 6.39% to take 5 times per week and 23.25± 4.11% 4times per week. Dried fishes are carangidae species, Sardinella sps, Trichiurus sps, Protonibea sps, Herrings etc.
7. The results were indicated that most of the farmers cultivated tobacco to their daily usages and selling for local people. They can make round and long pipes with tobacco dried leaves (Cigar) for smoking and some of chewing tobacco leaves. 28.35± 3.50% of the male and females smokers were lightened the pipes at reverse side in their mouth (Adda poga) of the total population (Fig 7, 8).
8. Relief of body pains majority males to take arrack (alcohol) regularly at the time of agricultural works. The paste-like tobacco (Gudakhu) was also used both males and females for mild anesthesia.
9. There is no road and transport facilities and the peoples walk 2-3 miles for their daily needs including drinking water. During summer the temperature is high and the warmed soil reflected more radiation during midday. Prolonged dehydration was noted because generating high heat reflecting from the sandy soils. Lack of drinking water peoples were postponed their thrust and to take little amount of water. The survey results were reveled that each person to take on an average 3.5 glasses of water per day this is equal to 1.5±0.2 lits. of water. Some of the persons at working places to take Coconut water and Anacardium fruit liquid during summer seasons.
10. There are no proper canals, ponds or drinking water reservoirs in the uddanam belt, most of the small ponds filled with rain water and it can store limited period from June to December months. Due to post-monsoon period lack of rains and the storage of water drastically seepage and dried up in summer season. The ground water levels are almost dried up in several meters depth at end of January.
11. Survey was conducted on medical treatment for day to day problems like fever, stomach upset, headache, pains and other minor injuries. The results were reveled that 63.25±7.03 candidates were approached to RMPs (Registered Medical Practitioners), 22.47±3.56 candidates were approached to ayurvedic medicines and few peoples were approached to trained doctors. In these villages there are no primary health care centers and these persons approached to RMPs to any type of pains and given to painkillers like non-steroidal anti-inflammatory drugs (brufen etc).
12. 54.32± 5.22% farmers were used agricultural pesticides to spray on inflorescence of cashew plantation and other crops.

DISCUSSIONS

There is little literature available on the CKD effects of Uddanam costal belt. Indian Council of Medical Research institutes have sampled patients' blood and urine, tested soil, water and food, and surveyed and mapped the population of the affected region. Several hypotheses, such as high levels of silica in water, prolonged dehydration, heat stress nephropathy, nonsteroidal anti-inflammatory drug use, gene mutations, high pesticide use, heavy metals in water and others have been suggested as possible causes. (Raviraju, 2017). Present survey results stated that the conditions matched to the other CKDs effected countries.

People were consuming brined dried fishes in their daily diet and use of salt was 8 to 14 ppt in foods, it is comparatively to higher than the non effected villages. Hiddo et al 2012 stated that the deleterious effects of salt concentration on renal and cardiovascular health are necessary to raise awareness of the importance of reduction of the salt content in food products. Therefore, high salt intake exerts damaging effects, provide an assessment of recent observational studies linking dietary salt intake to the progression of renal and cardiovascular disease and discuss the interaction between salt intake and rennin–angiotensin–aldosterone-system inhibitors.

According to oral interview more heat waves reflected from sandy soils and the similar heat stress observed in this areas and less consumption of water (1.5±0.2) lits also observed during the study period. These regional nephropathies occur mostly in poor adult workers in hot tropical agricultural areas, more frequently among men than women. The most heavily affected populations are sugarcane cutters in Mesoamerica, rice paddy farmers in Sri Lanka, and cashew nut, coconut and rice farmers in India (Wegman et al 2016, Wesseling et al 2016).

Thomas et al (1994) reported to people who take analgesic drugs frequently may be at increased risk of end-stage renal disease (ESRD). Diclofenac and Ibuprofen medicines are non-steroidal anti-inflammatory drug. The administration of high doses of NSAIDs to such patients has produced acute renal failure in rare instances. The similar answers were recorded from RMPs and victim persons during study period. The existence of RMPs to provide medical relief for day to day problems like fever, stomach upset, headache and other minor injuries. In most of the villages, there was no doctor or trained/qualified paramedical either in the public or private sector to provide first aid in medical emergencies and to attend routine health problems.

Because of time and financial constraints, it is not possible for poor people to visit nearby town/urban centre for every minor problem.

Perneger (1999) studied risk of end-stage renal disease associated with alcohol consumption and the retrospective analyses found an increased risk of renal dysfunction. 28.35± 3.50% persons were take tobacco products with smoking and chewing. The relation of alcohol and cigarette consumption to blood pressure and serum creatinine levels were represented by Savdie et al 1984. About 54.32± 5.22% farmers used agricultural pesticides to spray on crops in Uddanam area. Mathieu et al., (2017) represented to pesticide exposures and chronic kidney disease of unknown etiology of globally is diabetes and hypertension.

CONCLUSIONS

According to the World Health Organization, this is one of the third regions in the world with the highest concentration of chronic kidney diseases after Sri Lanka and Nicaragua. The study report represented to that the CKDs affect is not a single problem. It may lead to multi disorders affect in the Uddanm costal belt. Prevention is carried out by providing pure drinking water, water resources, disease awareness and education were communicated to the community through professionals to adults and school children's. Preventive measures are emphasized, such as cessation of smoking, arreak drinking, control high salt diets, painkillers medications, promoting organic farming, banning certain agrochemicals and need to change life style. The government has maintained completely free dynamic professional healthcare system to the citizens. Paramedical personnel and social workers to train in renal care should also provide social and psychological support to patients, families and communities. All these interventions should be regularly evaluated to assess their impact and adapt them if needed. These measures may reduce kidney disease and related deaths in future.

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