



RESEARCH ARTICLE

OPEN ACCESS

KIDNEY DISEASES EFFECTS ON HUMAN HEALTH AND CAUSES OF THE CHRONIC KIDNEY DISEASES IN UDDANAM AREA -SRIKAKULAM, A.P, INDIA

¹Hemasundararao, K., ²Dr. Seshagirirao, R. and ³Snehalatha, P.

¹Dept of Zoology, Govt Degree College-Baruva, Srikakulam; ²Dept of Economics, Govt Degree College-Baruva, Srikakulam; ³Dept of Botany, Govt Degree College-Baruva, Srikakulam

ARTICLE INFO

Article History:

Received 09th December, 2024

Received in revised form

26th December, 2024

Accepted 11th January, 2025

Published online 28th February, 2025

Key Words:

Causes of Chronic kidney Diseases,
Diseased sample survey,
Heredity hierarchy.

*Corresponding author: Hemasundararao,

ABSTRACT

Uddanam is the end region of the srikakulam, share with the Odessa border .Its distributed 40 villages in the Kaviti, Kanchili, Sompeta. Most of the people were died in pre ripening age, suffering with chronic kidney diseases (CKD) without based on the age period. We are visited the different village areas and collect the survey samples such as water, food habits, usage of medicals, family back grounds and other habits. The water samples are send into the laboratory and collected the water quality such as PH, Minerals like silica, led and other pollutants. Collected the people samples based on the ages who are suffering with chronic kidney diseases and what about their family hierarchy during period between spt-2022 to jun-2024, in this water sample quality PH is ~6.5\6.6 acidic, silica concentration is~40-45mg/l, led concentration is between 4.8-5.2ug(0.022-0.023). According to bureau of Indian standards fluoride permissible (1.5mg/l), but more than 40 villages fluoride (0.74mg/l) levels are identified under BIS standards. The second time collected the data approximately based on the age period (5-20 year), (20-40 year),(40-above year) who suffering with CKD. Groundwater filter with reverse osmosis (RO), its recommending for the drinking and cooking. Its best preventive measure for the decrease of Chronic Kidney Diseases in the Uddanam region.

Copyright©2025, Hemasundararao, K. et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Hemasundararao, K., Dr. Seshagirirao, R. and Snehalatha, P. 2025. "Kidney diseases effects on human health and causes of the chronic kidney diseases in Uddanam Area -Srikakulam, A.P, India". *International Journal of Development Research*, 15, (02), 67825-67829.

INTRODUCTION

Uddanam region is the north east extension costal line in Srikakulam (latitude: "18.56219–19.16563" N, longitude: "84.30934–84.76844" E).Its mostly distributed in three mandals Kaviti, Kanchili, Sompeta, majorly occupying with Horticulture along with agriculture, especially coconut, cashew, jack fruits. The high percentage of area occupied with sand and semi sand soils, in this lands the water is not stagnant for long time on earth surface and flooding, soil erosion also less due to the high horticulture. The sand soils are quickly absorbed the water in to ground level. This area mostly share with the bank of bay of Bengal and most percentage peoples are depends upon the horticulture and agriculture works, some are depends on the fish catching in the wet land area and Bay of Bengal. Above characters belonging area peoples are suffering with Chronic Kidney Diseases. In this are before one decade approximately 3500 peoples were died by this CKD. Number of medical teams not only Indian ICMR but also America, Australia, European countries...etc were visited and collected the different area water sample diseased blood samples, tested in ICMR laboratories. They were identified according to their collected samples the people using water was pollute with the high level of Silica(~40-45mg/l), led(0.022-0.023) and water acidity (~6.5\6.6) and low levels of fluoride(0.54mg/l). Above values are not alancing to the BIS values Silica (30mg/l), Calcium ((0.54mg/l), Led(Plum bum) (0.004=0.005).

This area peoples are indiscriminately using the pesticides and herbicides to the crops (agriculture, vegetables, horticulture). These chemicals are mixing in to the water and increasing of the water pollution, this pollutants are extra work on the nephrons in the kidney. According to Global Burden of Disease Study CKD India rank is 8th position (Jha and Modi, 2017) comparison to among all fatal diseases. This Uddanam region is cluster of the CKD in Srikakulam, Andhra Pradesh, India (Ganguli, 2016). High polluted mixing to water along with Silica, Led, acidic water, nitrate, aluminum and iron. [Moreover, chromium, led and cadmium were found in trace concentration and these can be harmful to the kidney if such water is consumed for several years in heat stressed geographical regions like Uddanam (Gharibi et al.,). Above polluted water is entering in to the body through drinking water and cooking foods. Its accumulate in the body as bio magnification and more effect to the nephric renal tube walls at the time of Urine formation and filtration. This process has been going on long time, its more burden to the kidneys and kidney function is slowly decrease, finally cause to CKD.

METHODS AND MATERIAL

We are visited the different areas randomly making as 3groups along with my college students, each group was selected particular areas in every week , monthly four time . We are interact with the local people

and their localities, asked to them different type of questions what we will need like any family history (hierarchy) coming from old generations, food habits, usage of medicines' and based on the age diseased data who are suffering with CKD infections. After we are collected the different samples like water, soil around their localities. We were collected the around 40 samples, out of 40 again taken 20 samples randomly. These samples are send in to the laboratory identified the concentrations of Silica, Led, Fluoride, Water PH and other metals like Iron, Chromium, and Manganese etc. We were did the second survey total diseased persons where we are visited 40 villages (approximately) and collected based on the Heredity hierarchy (Family history) [Moreover, chromium, lead and cadmium were found in trace concentration and these can be harmful to the kidney if such water is consumed for several years in heat stressed geographical regions like Uddanam (Gharibi et al.,)].

RESULTS AND DISCUSSIONS

Silica, Led, Water PH and Fluoride levels in the water samples: We are collected 20 water samples randomly form different areas of the Kaviti, Kanchili, Sompeta in both seasons monsoon and summer. Data (1.0) was collected from the laboratory. The values of Silica, Led, Water-PH, Fluoride following below villages Manikya puram [(39),(4.8),(6.5),(0.8)], Borivanka [(41),(5.3),(6.6),(0.9)], Kusum puram [(43),(5.7),(6.7),(0.8)], Gokarnpuram [(40),(6.2),(6.5),(0.9)], Bejjiputtuga [(42),(6.3),(6.6),(0.8)], Baliyaputtuga [(40),(4.9),(6.5),(0.9)], Baruva [(39),(5.6),(6.5),(0.8)], Gollagandi [(42),(4.8),(6.6),(0.8)], Korlam [(44),(5.3),(6.8),(0.9)], Talatampara [(45),(6.5),(6.6),(0.8)], the avarage value of the uddanam region Silica, Led, Water-PH, Fluoride [41.5\5.34\6.59\0.84].

Pesticides and other metals data: We were collected the 20 water sample the different areas in uddanam region by the random process. Detect the below pesticides in the laboratory. Pesticides and herbicides are entering in to the body cells through food chain after they can transform slowly to other organisms through Biomagnification. It also effect to the reanaL tubes of the nephron. Other metals like Iron, Chromium Manganese and other metals also traced in this samples.

age 40 above (116), (total200)], Kusumapuram [(0),(20)(60),(80)], Varaka [(1),(20)(79),(100)], Manikyapuram [(5),(67)(196),(268)], Borivanka [(4),(75)(142),(221)], Bejjiputtuga [(0),(14)(71),(85)], Jagathi [(3),(51)(111),(165)], Kothaputtuga [(1),(53)(146),(200)], Konduputtuga [(0),(39)(82),(121)], Kaviti [(2),(54)(101),(157)], D.Gonapaputtuga [(0),(27)(51),(78)], Narthuputtuga [(0),(27)(68),(95)], Rajapuram [(2),(51)(104),(157)], Silagam [(1),(19)(32),(52)], Jalluputtug [(0),(37)(68),(105)], Kanchili-Talatampara [(5),(61)(156),(222)], Landaputtuga [(1),(43)(104),(148)], Bairipuram [(0),(31)(72),(103)], Pedda Srirampuram [(1),(57) (141),(199)], Salinaputtuga [(1),(54)(123), (178)], Korikanaputtuga [(0),(8)(50),(58)], Kojjiria [(0),(15)(47), (62)], Tanniputtuga [(0),(6)(29),(35)], Kattivaram [(0),(7),(40),(47)], Makarampuram [(1),(43),(104),(148)], Dolagovindapuram [(0), (22)(34),(6)], Kokkiliputtuga [(0),(21)(35),(56)], Konnaiputtuga [(0),(23)(45),(68)], Rusikudda [(0),(16)(28),(44)], Sompeta-Korlam [(1),(17)(33),(51)], Gollagandi [(0),(16)(31),(47)], Benkili\Zinkbadra [(0),(15)(32),(47)], Sompeta(4 streets) [(2),(8)(34),(44)], Baruva\kotturu [(0),(19)(36),(55)], Jegathikesapuram [(1),(13)(21),(35)].

Based on the Heredity hierarchy (Family history) Diseased number from different areas: We are collected diseased persons based on the Heredity hierarchy (Family history) visited villages out of 40,selected the 35 villages written below following villages Kaviti- Balliputtuga

[age between 10-20(1), age between20-40(11), age 40 above (24),(total-36)], Kusumapuram [(0),(9)(10),(19)], Varaka [(0),(8),(21),(29)], Manikyapuram [(2),(21)(32),(55)], Borivanka [(1),(20)(24),(45)], Bejjiputtuga [(0),(4)(15),(19)], Jagathi [(1),(12)(22),(35)], Kothaputtuga [(0),(13)(25),(38)], Konduputtuga [(0),(8)(19),(27)], Kaviti [(0),(17)(26),(43)], D.Gonapaputtuga [(0),(8)(18),(26)], Narthuputtuga [(0),(13),(16),(29)], Rajapuram [(1),(21)(41),(63)], Silagam [(0),(7)(26),(33)], Jalluputtuga [(0),(9)(24),(33)], Kanchili-Talatampara [(1),(31)(27),(59)], Landaputtuga [(0),(14)(21),(35)], Bairipuram [(0),(11)(15),(26)], Pedda Srirampuram [(0),(13)(20),(33)], Salinaputtuga [(0),(11)(16),(27)], Korikanaputtuga [(0),(2)(14),(16)], Kojjiria [(0),(3)(5),(8)], Tanniputtuga [(0),(0)(2),(2)], Kattivaram [(0),(0)(5),(5)], Makarampuram [(1),(10)(21),(0)], Dolagovindapuram [(0),(4)(7),(11)], Kokkiliputtuga [(0),(2)(6),(8)],

s.no	Name of the area	Pesticides/herbicides names	Other metals (Trace)
1	Bejjiputtug	Endosulfon,2.4.D,Monocrotophos	Iron,Chromium,Aluminium
2	Kanchili	Endosulfon,2.4.D,Monocrotophos	Iron,Chromium,Aluminium
3	Borivanka	Monocrotophos,2.4.D	Iron,Chromium,Aluminium
4	Kavity	Endosulfon,2.4.D,Monocrotophos	Iron,Chromium,Aluminium
5	baruva	Endosulfon,2.4.D,Monocrotophos	Iron,Chromium,Aluminium

The Average values of Silica, Led, Water-PH, Fluoride Uddanam different areas random samples

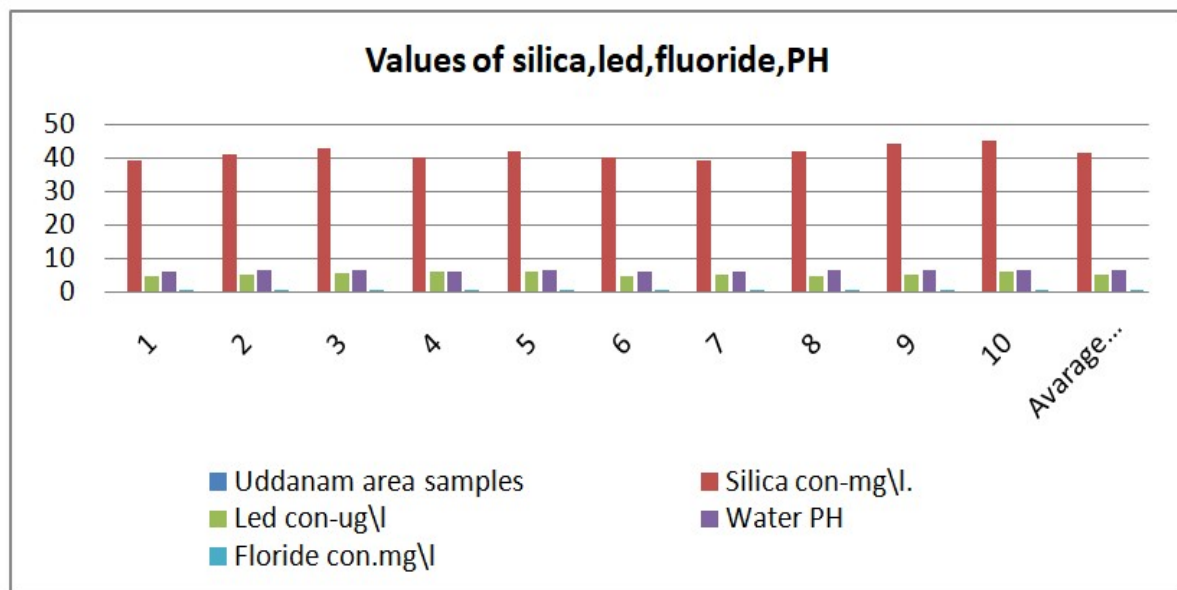
S.NO	Uddanam area samples	Silica con-mg\l.	Led con-ug\l	Water PH	Fluoride con.mg\l
1	Manikya puram	39	4.8	6.5	0.8
2	Borivanka	41	5.3	6.6	0.9
3	Kusum puram	43	5.7	6.7	0.8
4	Gokarn puram	40	6.2	6.5	0.9
5	Bejjiputtuga	42	6.3	6.6	0.8
6	Baliyaputtuga	40	4.9	6.5	0.9
7	Baruva	39	5.6	6.5	0.8
8	Gollagandi	42	4.8	6.6	0.8
9	Korlam	44	5.3	6.8	0.9
10	Talatampara	45	6.5	6.6	0.8
Average value		41.5	5.34	6.59	0.84

S.NO	Name of area sample	Silica con-mg\l.	Led con-ug\l	Water PH	Fluoride con.
1	Uddanam average samples	41.5-mg\l	5.34-ug\l	6.59-PH	0.84-mg\l

Number of diseased visited 35villages based on the age period: were visited out of 40 villages, information was gathered from34 based on the age period 3 type 1st age between 10-20 years,2nd age between 20-40 years'3rd age above 40 years following the given villages Kaviti -Balliputtuga [age between 10-20(4), age between20-40(80),

Konnaiputtuga [(0),(3)(8),(11)], Rusikudda [(0),(7)(5),(12)], Sompeta-Korlam [(0),(1)(3),(4)], Gollagandi [(0),(2)(6),(8)], Benkili\ Zinkbadra [(0),(3)(5),(8)], Sompeta (4 streets) [(1),(3)(24),(88)], Baruva\kotturu [(0),(5)(7),(12)], Jegathikesapuram [(1),(1)(2),(4)].

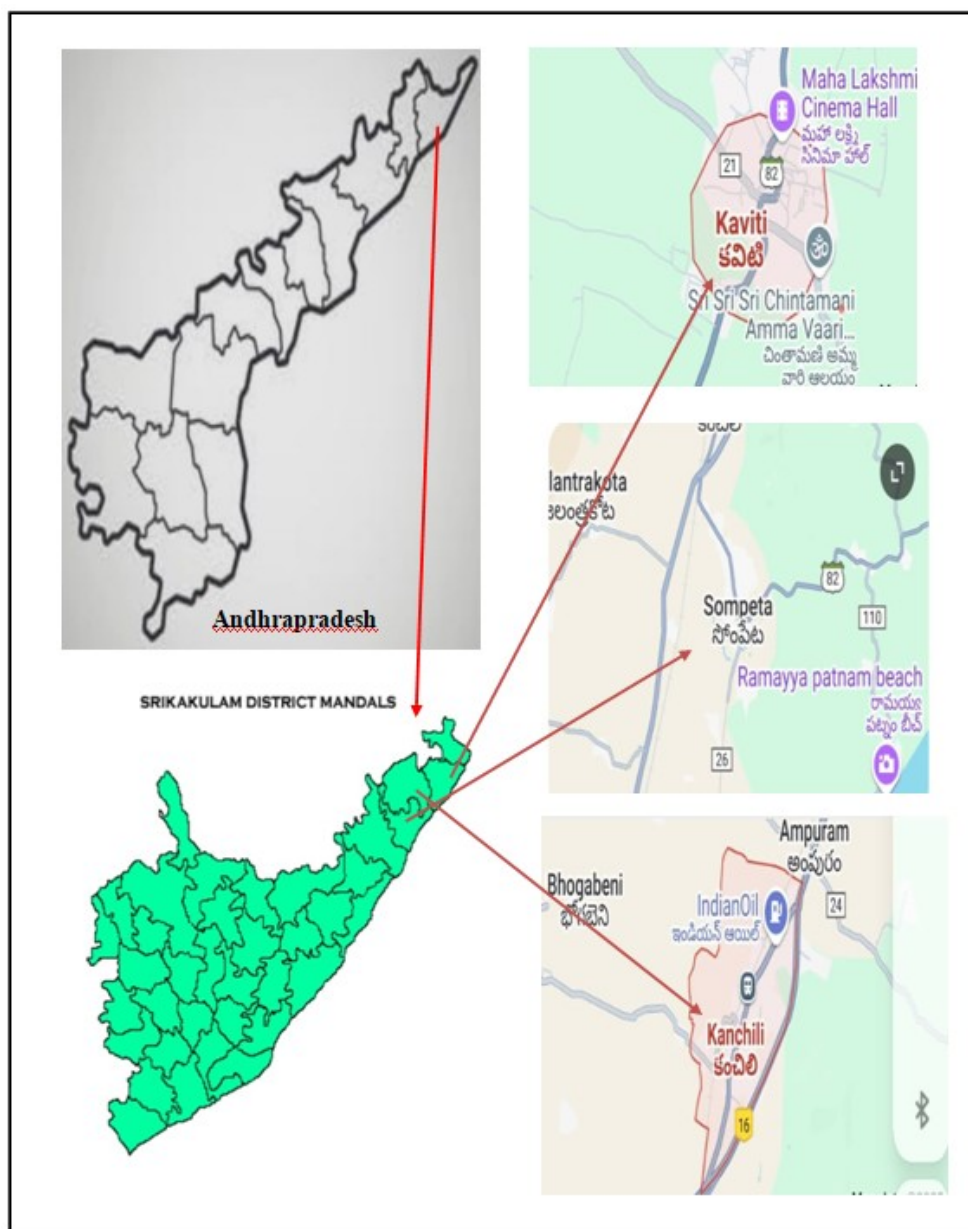
The Average values of Silica, Led, Water-PH, Fluoride Uddanam different areas random samples



The Average values of Silica, Led, Water-PH, Fluoride Uddanam different areas random samples graph

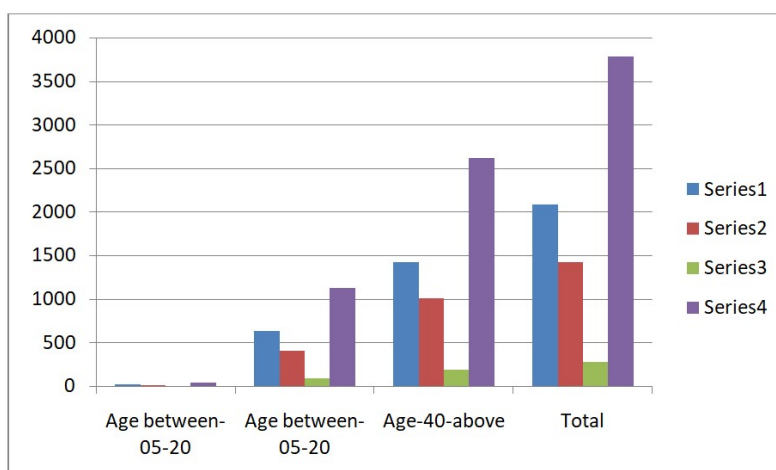
The data of overall diseased number and Diseased number Based on the hierarchy

8	Mandal/village		Overall diseased number				Diseased number Based on the hierarchy			
S.no	Name of the area/Village	Mandal	Age between-05-20	Age between-05-20	Age-40-above	Total	Age between-05-20	Age between-05-20	Age-40-above	Total
1	Balliputtuga	Kaviti	4	80	116	200	1	11	24	36
2	Kusumapuram		0	20	60	80	0	9	10	19
3	Varaka		1	20	79	100	0	8	21	29
4	Manikyapuram		5	67	196	268	2	21	32	55
5	Borivanka		4	75	142	221	1	20	24	45
6	Bejjiputtuga		0	14	71	85	0	4	15	19
7	Jagathi		3	51	111	165	1	12	22	35
8	Kothaputtuga		1	53	146	200	0	13	25	38
9	Konduputtuga		0	39	82	121	0	8	19	27
10	Kaviti		2	54	101	157	0	17	26	43
11	D.Gonapaputtuga		0	27	51	78	0	8	18	26
12	Narthuputtuga		0	27	68	95	0	13	16	29
13	Rajapuram	Kanchili	2	51	104	157	1	21	41	63
14	Silagam		1	19	32	52	0	7	26	33
15	Jalluputtuga		0	37	68	105	0	9	24	33
16	Talatampara		5	61	156	222	1	31	27	59
17	Landaputtuga		1	43	104	148	0	14	21	35
18	Bairipuram		0	31	72	103	0	11	15	26
19	Pedda Srirampuram		1	57	141	199	0	13	20	33
20	Salinaputtuga		1	54	123	178	0	11	16	27
21	Korikanaputtuga		0	8	50	58	0	2	14	16
22	Kojjiria		0	15	47	62	0	3	5	8
23	Tanniputtuga		0	6	29	35	0	0	2	2
24	Kattivaram		0	7	40	47	0	0	5	5
25	Makarampuram	Sompeta	1	43	104	148	1	10	21	32
26	Dolagovindapuram		0	22	34	56	0	4	7	11
27	Kokkiliputtuga		0	21	35	56	0	2	6	8
28	Konnaiputtuga		0	23	45	68	0	3	8	11
29	Rusikudda		0	16	28	44	0	7	5	12
29	Korlam		1	17	33	51	0	1	3	4
30	Gollagandi		0	16	31	47	0	2	6	8
31	Benkili Zinkbadra		0	15	32	47	0	3	5	8
32	Sompeta(4 streets)		2	8	34	44	1	3	24	28
33	Baruva kotturu		0	19	36	55	0	5	7	12
34	Jegathikesapuram		1	13	21	35	1	1	2	4



S.no	Madal name	Age between-05-20	Age between-05-20	Age-40-above	Total
1	Kavity	23	634	1427	2084
2	Kavity	9	407	1008	1424
3	Sompeta	4	88	187	279
		36	1129	2622	3787

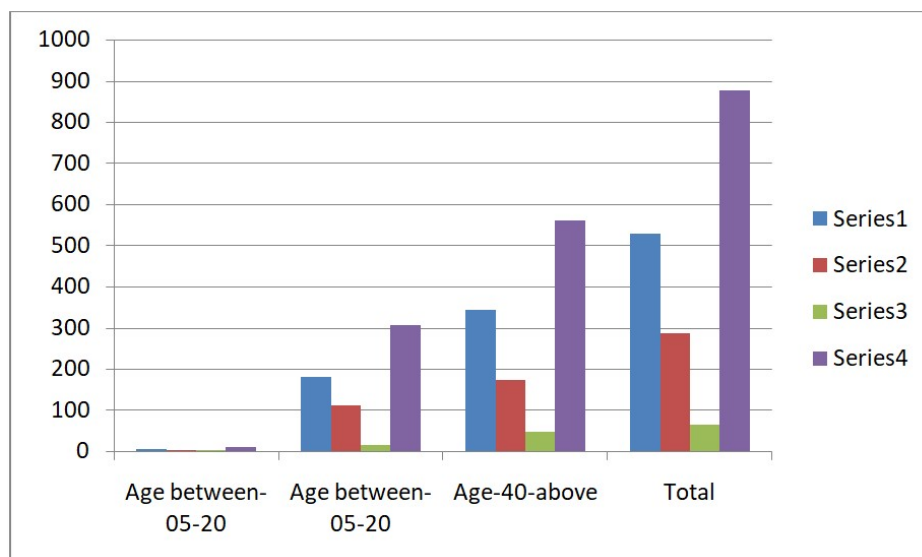
Number of diseased visited 35villages based on the age period



Number of diseased visited 35 villages based on the age period graph

S.no	Madal name	Age between-05-20	Age between-05-20	Age-40-above	Total
1	Kavity	5	181	342	528
2	Kavity	2	111	172	285
3	Sompeta	2	15	47	64
		9	307	561	877

Based on the Heredity hierarchy (Family history) Diseased no. from different areas



Based on the Heredity hierarchy (Family history) Diseased no. from different areas Graph

CONCLUSION

Health is the major challenge to the present society why because according to human over exploitation, deforestation and modern technologies should major cause to the climatic disasters. The above reasons the pollution is increase day by day along with human activities. So total atmosphere has been polluting like air but also water (<http://www.nfro.cl/site>) and soil. The pollution is major cause to the present indefinite chronic diseases like chronic kidney disease Uddanam problem CKD is also one of the example to the man made chronic disease, why because the peoples were using the non degradable chemical like pesticides, herbicides. the industries are not following the preventive measures like wastages are directly releasing in to the rivers and oceans without purification. This industrial wastages are belonging to non degradable chemicals and different metal minerals like iron, Manganese, zinc, fluorine etc (P. Soderland *et al*). These are again entering in to the body through food chain and accumulate by the biomagnifications [Google Scholar]. After they finally cause to the chronic diseases like CKD. In Uddanam area the government has been supplying the RO water through pipe lines from the Gottabarrage reservoir it belonging across the Nagavali river (Developing project)., But its water not reaching to the end of the ordinary people. Present days illiterate peoples are not believe to the scientific theories, they believing old habits only. According to my survey (research) most of the village peoples are drinking only polluted local water from the water tanks, Bore wells, Wells etc. So the government should be conduct the awareness programs in their localities and motivate to them about the chronic diseases like CKD. According to my survey polluted water is major cause to the CKD.

Acknowledgement

I would like gracious thanks to the ICMR for the financial support, Commissionerate of collegiate education and principal of government degree college-Baruva, to providing the special time and specialties to this (research) survey. Special thanks to Tummidu Tejeswara Rao (APSSDC), he is one of the resident (Majjiputtuga village Kanchili

mandal) more help us to this survey (research) at the time of information gathering.

REFERENCES

1. S. Benjamin *et al*. Phthalates impact human health: epidemiological evidences and plausible mechanism of action
2. J. Hazard Mater. (2017) • R. Chandrajith *et al*. Geogenic fluoride and arsenic in groundwater of Sri Lanka and its implications to community health
3. Groundw. Sustain. Dev. (2020) • A. Ganguli Uddanam nephropathy/regional nephropathy in India: preliminary findings and a plea for further research
4. Am. J. Kidney Dis. (2016) • H. Gharibi *et al*. A novel approach in water quality assessment based on fuzzy logic
5. J. Environ. Manage (2012) • V. Jha *et al*. Uncovering the rising kidney failure deaths in India
6. Lancet Glob. Heal. (2017) • L.E. Johns *et al*. Exposure assessment issues in epidemiology studies of phthalates
7. T. Rango *et al*. Nephrotoxic contaminants in drinking water and urine, and chronic kidney disease in rural Sri Lanka Sci. Total Environ. (2015)
8. P. Soderland *et al*. Chronic kidney disease associated with environmental toxins and exposures, Chron. Kidney Dis. (2010)
9. K.M. Somashekar *et al*. Contamination of water sources in Mysore city by pesticide residues and plasticizer – a cause of health concern Aquat. Procedia (2015)
10. The official website of the Presidential Task Force of Sri Lanka [Internet]. Colombo: Presidential Task Force; 2017. Available from: <http://www.presidentialtaskforce.gov.lk/en/home.html> [cited 2017 Aug 25].
11. rld congress of nephrology (WCN) [Internet]. Santiago: Sociedad Chilena de Nefrologia; 2012. Available from: <http://www.nfro.cl/site/content.php?id=130> [cited 2017 Aug].
12. Ganguli A. Uddanam nephropathy/regional nephropathy in India: preliminary findings and a plea for further research. Am J Kidney Dis. 2016. September;68(3):344–8. 10.1053/j.ajkd.2016.04.012 [PubMed] [CrossRef] [Google Scholar]