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To Evaluate the Epidemiology, Etiology, Risk Factors and Treatment Management in Chronic Kidney Disease on Children, Adult and Geriatric Patients in a Tertiary Care Teaching Hospital in Nellore, on Study-II

Naveena.B[1], Dr. Ronald Darwin[*2]

[1]Research Schoolar, Vels institute of science, technology and advanced studies (VISTAS), Chennai-600117, Tamilnadu, India.

Corresponding author: [*2]Professor & Head, Department of Pharmacology, Vels institute of science, technology and advanced studies (VISTAS), Chennai-600117, Tamilnadu, India.

*Author for correspondence: navi.dimpu@gmail.com

ABSTRACT

Chronic renal failuredisease is a abnormal function of the kidney that lead an ckd. This research study was cited in the journal of IJPQA as Study-I. Cross sectional and prospective observational study 1 to 3 these studies are designed. The population size was 564 volunteers. The duration of this study from October 2021 to March 2024. The objectiveto assess the epidemiology, causes and pharmacological management to all 3 groups of population in research study-II. The results was conclude for adults(46%) are more effective in epidemiology factor when compared to other groups. The etiological cause in children are glomerulonephritis(42%), adults are increasing glucose levels (31%), hypertension(31%) and geriatric are pyelonephritis(32%) these causes is more effective than other causes. The risk factors on ckd in children and geriatrics are kidney disease for adults are diabetes mellitus when compared to other risks. The treatment management in all age groups of patients are preferred a hemodialysis therapy it is more effective to the adult creatinine decrease % (70%) BUN decreasing % (69%) when compared to children creatinine decrease % (35%) BUN decreasing % (30%) and geriatric creatinine decrease % (38%) BUN decreasing % (38%) ckd patients. The study was concluded that initial may diagnosis not be enter into end stage renal failure And also minimize the risk and etiological factors about on ckd that lead not enter into worsening condition of kidney functioning.

Keywords: Study-II, adults, kidney diseases, BUN and chronic kidney disease.

INRODUCTION

Chronic renal disease was a life threatening condition and it is major health problem in a world[1,2]. This condition became an intensive clinical and epidemiological research from the past decade. Belonging to the past the chronic kidney disease research literature created a definition of CKD[3]. That has to report of CKD research problematic[4].

Chronic kidney disease is refers as reduce renal function[5]. In this disease are having stages are 1 to 5. Depends on this stage the condition of end stage renal failure patients are becoming a end final stage of the function of kidney. Moreover the prevalence of ckd is more in stage 3 with 11 to 13% when compared to other stages[6].

In 2008 and 30 years before the children are more prevalent as shown as 9 million have faced renal replacement therapy[7]. Where early diagnosed the ckd children's it may prevents the dialysis or renal replacement. However, this therapy will not for all ckd children's it depends on their kidney function[8].Epidemiology factor on adults in united state are affected with renal failure because of the risk factors from 1990 to 2016[9]. In Nepal the epidemiology factor are more in adults. 6.0% of the male population is effected with end stage renal failure because of occurrence overweight, hypertension and older age etc[10].

Epidemiology factor of ckd in geriatrics are very common disease of renal failure. Mostly the elders are affected by some causes such as hypertension, diabetes age factor and life style[11]. The united state was estimated a renal failure patients of geriatrics. In 1900 year the elders are affected with ckd as 4%. In 2000 year the geriatrics are effected as 12% and to becoming at 2030 the geriatric epidemiology factor will be rises as 20% with the prevalence of ckd[12,13].

Etiological factor in children are having birth defects in chronic kidney disease on children are congenital defects, hypertension, chronic increase glucose level in the body, glomerulopathies and acute renal disease etc,[14].One of the etiological factors is protein-energy wasting syndrome in the disease of CKD the patient has a poor nutritional diet such as improper food intake, due to low appetite and some dietary restrictions these occur in dialysis in CKD patients and also become a mortality and morbidity[15]. In adults, the etiological factors are hypertension, diabetes mellitus, chronic glomerulonephritis, autosomal dominant uropathy, chronic interstitial nephritis

and obesity. These factors are occurring in a chronic renal failure disease[16]. While in geriatric the causes are cardiovascular disease, diabetes, hypertension and autoimmune disease. Some other conditionsfor the geriatric to undergo hemodialysis such as abnormal GFR, hematuria, glomerulonephritis and proteinuria[17].

Risk factors of chronic renal failure onNAPRTCS registry in children with ckd was identify as a several risk factors of CKD such as hypertension, proteinuria, anemia and dyslipidemia and nonmodifiable such as stage of renal failure, age and primary disease of risk factors in renal failure childrens[18].

Chronic renal disease from 10 years onwards explore the risk in adult population. This disease is a more effective to the females when compared to males. In I,II,III stages of ckd in these stages the adult population are affecting more because of the causes are hypertension, diabetes, obesity, hematuria, GFR, serum lipids, smoking status and consumption alcohol[19].

In geriatric population diabetes, anemia, high blood pressure, advancing age and concomitant these are high risk factor to lead an end stage renal failure. Especially diabetes mellitus type-2 are very high risk to the geriatric subjects[20].

The **Treatment management** in end stage renal failure are in the Greek word, dialysis is derived as a Dia means 'through' and lysis means 'loosening or splitting'. Dialysis is the kidney replacement therapy. It is equipment artificial to filtrate the blood in chronic renal failure patients to remove excess water, toxins and solutes. End stage condition their prefered dialysis therapy this dialysis is a better outcome to the ckd people[21].

Hemodialysis therapy is the better treatment management to control the body levels for end stage renal disease. This disease is more affected to the geriatrics when compared toother age groups of population. The goal of renal replacement therapy is to provide some physical activities, psychological attention and social activities thatwill helpful to the patients to be strong in the therapy of treatment[22].

In the childrensrenal failure condition is a worsening condition to the children to enter in the end stage chronic treatment with hemodialysis. Mostly the chidrens are lead a ckd by the causes of protein energy malnutrition and chronic diseases[23].

The young populationwho are ageing in their life decreases their organ function, which leads to worse conditionsfor the subjects of ckd patients. In adult patients, reducing the body mass index, controlling the serum albumin, maintaining a glomerular filtration rate and controlling liver blood flow may not be followed this particular person may face acute and chronic kidney disease[24]. The treatment of geriatric chronic kidney disease patients have a particular treatment for a particular condition of disease especially for cardiovascular disease, cerebrovascular disease and hypertension in that condition this treatment of hemodialysis will reduce the blood pressure[25] and also acute kidney disease the higher risk for the geriatrics to enter into end-stage renal failure[26]. The guidelines of the pharmacological treatment of chronic kidney disease it is useful for CKD patients they will help them not enter into hemodialysis condition[27]. In the Udhanam region of AP in India there conducted a study and the study determined that chronic kidney disease can be terminated in case before the patients of chronic diseases (diabetes, hypertension, hereditary and cardiovascular disease) there been screened initially may terminated the ckd[28].

AIM AND OBJECTIVE

The aim of the study to analyse the epidemioloy , causesfsctors and pharmacological treatment in all 3 groups of population in the research study-II.

OBJECTIVE

➢ Monitoring the subjects to identify the causes in the children, adult and geriatric patients

➢ Assessing the prevalence factor in 3 age group of volunteers are childrens, adult and geriatrics with renal failure disease.

➢ Monitoring the CKD patients in the hemodialysis therapy by using creatinine and BUN values of chronic renal failure.

➢ Collecting the data from the patients by communicate with volunteers.

MATERIALS AND METHODS

Site of the study

Vijaya super speciality hospital, nellore , AP. In the nephrology department. Research study is conducted from october 2021 to march 2024.

Sample size

The sample population is the 564 subjects. 91 are children, 261 are adults and geriatric 212 subjects.

Study design

  - ➢ For epidemiology the study design is a cross sectional study
  - ➢ Etiological causes are prospective obeservational study-1
  - ➢ Risk factors is prospective obeservational study-2
  - ➢ Pharmacological management is prospective obeservational study-3

Criteria for sample selection

Inclusion criteria:

  - ➢ Who are willing to sign in informed consent form on research area.
  - ➢ Above 6 years old age group of volunteers are included.
  - ➢ All groups of people with ckd are included but above the 6 years old
  - ➢ Who are in the end stage renal failure subjects are included.
  - ➢ The hemodialysis volunteers are included in this study.

Exclusion criteria:

  - ➢ Who are not accept the informed consent form and not able to participate are excluded.
  - ➢ Pregnancy, lactating mother, weakness patients and not in end stage renal disease are excluded.
  - ➢ Without ckd with other chronic disease are present there are excluded.
  - ➢ Below the age of 6 years volunteers are excluded

Study population

The population were selected based on criterias are inclusion and exclusion. In this study are followup the sujects are above 6 years subjects in the research study.

Methods

➢ Choosing a site for the research study
➢ Applying the proposal to the IEC department to get an approval for the research study
➢ Design a informed consent form for the patient welling in the participation in the research study.
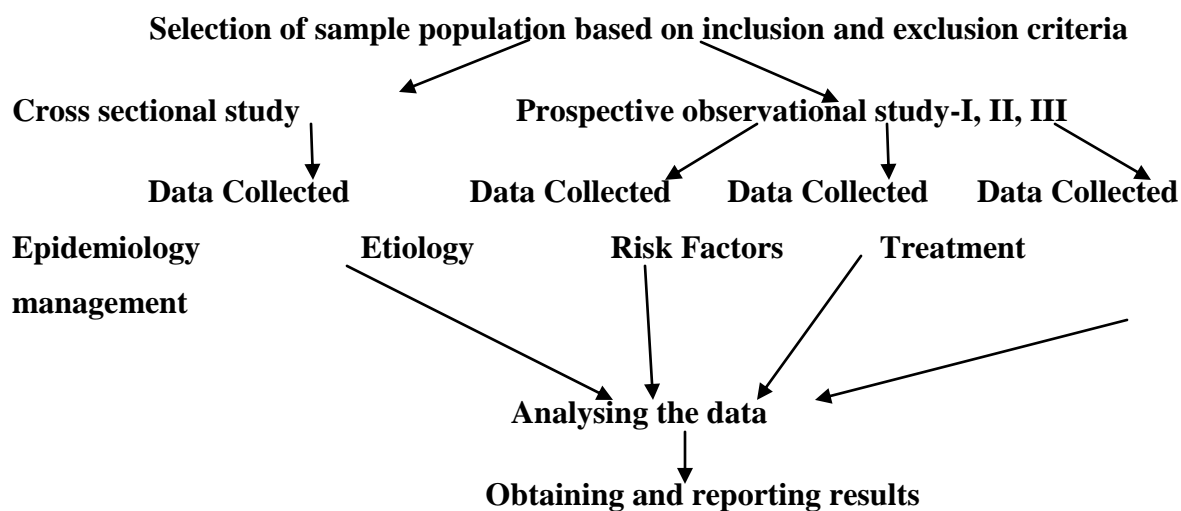➢ Design a patient data collection form for conclude the results.

Data collection

Data to be collected based upon 4 methods which includesi.,edemographic and history details for epidemiology data, the prospective observational study are following the risk factors, causes and treatment management for collecting the data.

Statistical analysis:

The statistical analysis are using in this research study by using the IBM SPSS software for showing the results were utilizing a plots, graphs pie diagrams, mean and bar diagrams in the 23.0 version of the software.

WORK PLAN

Selection of sample population based on inclusion and exclusion criteria

Cross sectional study　　　　**Prospective observational study-I, II, III**

Data Collected　　**Data Collected**　**Data Collected**　**Data Collected**

Epidemiology　　　　**Etiology**　　　　**Risk Factors**　　　**Treatment**

management

Analysing the data

Obtaining and reporting results

RESULTS

This study was published as study-I in the journal of international journal of pharmaceutical quality assurance. This study is a study-II was resulted as per the data which are collected from the patients about on epidemiology, etiology, risk factors and treatment management on chronic kidney disease.

Table-1: The study on Epidemiology factoronckd patients

S.NO	STUDYDESIGN	STUDY DURATION	AGE GROUPS OF POPULATION (IN YEARS)	NO OF PATIENTS	EPIDEMIOLOGY %
1	Cross sectional study	OCT 2021 to MARCH 2024	Children (Above 6-14)	91	16%
2			Adult (19-64)	261	46%
3			Geriatric (Above 65)	212	38%
TOTAL				564	100%

Fig-1: The frequency of epidemiology in ckd patients
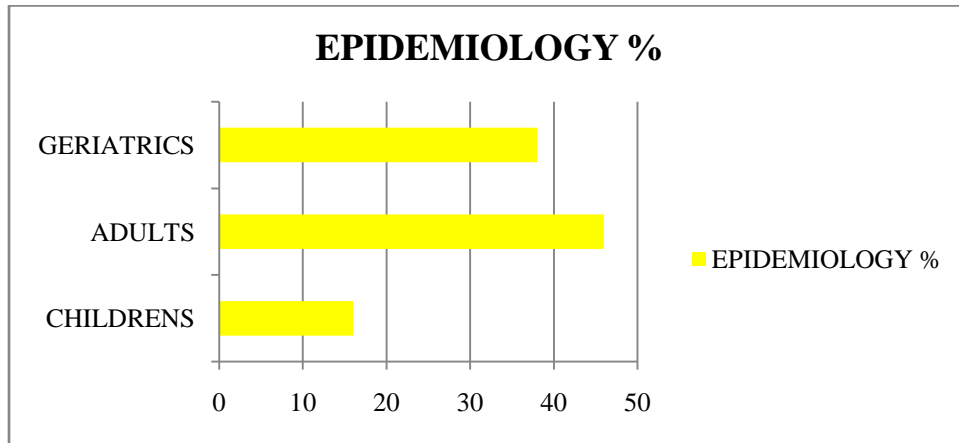
Table-2: The Frequency of sex parameter in CKD patients

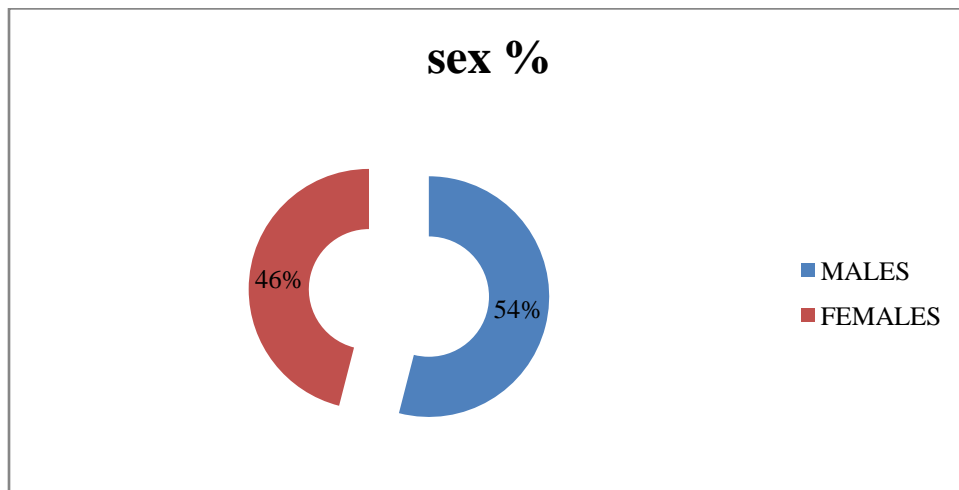| SEXGROUPS	SEX PARAMETERS(%)	
	NO	%
MALES	303	54%
FEMALES	261	46%
TOTAL	564	100%

Fig-2: Frequency of sex in CKD patients

Table-3: The study of Etiological Factor in CKD patients

STUDY	CAUSES	YEAR	NO OF PATIENTS WITH ETIOLOGICAL FACTORS %					
			CHILDRENS		ADULTS		GERIATRICS	
			NO	%	NO	%	NO	%
Prospective observational study –I	Diabetes mellitus	OCT 2021 to MARCH 2024	9	10%	81	31%	30	14%
	Hypertension		-	-	81	31%	55	26%
	Glomerulonephritis		38	42%	26	10%	10	5%
	Pyelonephritis		3	3%	-	-	68	32%
	Renal artery stenosis		-	-	8	3%	-	-
	Renal calculi		7	8%	22	8%	10	5%
	Polycystic kidney disease		5	5.5%	8	3%	8	4%
	Congenital defects of the kidney or bladder		25	27.5%	-	-	-	-
	Secondary causes (SLE, rheumatoid arthritis, HIV, drugs-gold, heroin use etc.)		-	-	10	4%	11	5%
	Drugs (NSAIDS, Aminoglycoside etc.)		4	4%	25	10%	20	9%
Total			91	100%	261	100%	212	100%

Fig-3: The Frequency of Etiological Factors in CKD patients
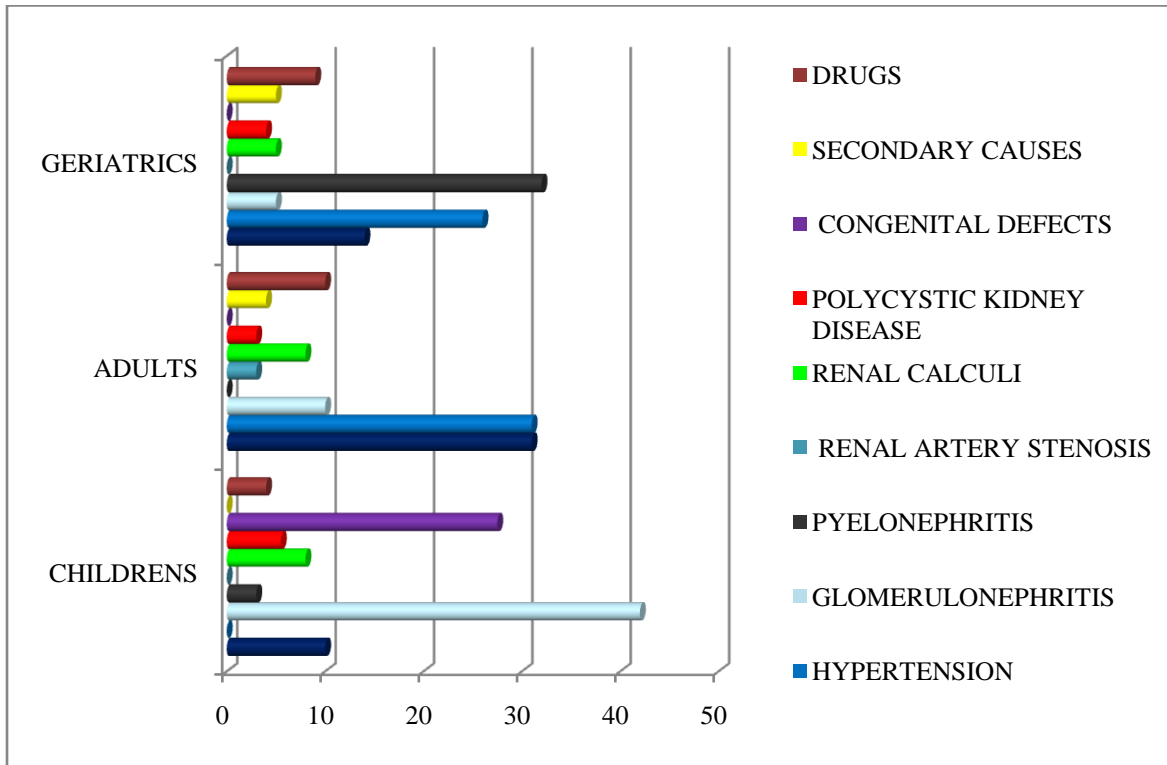
Table-4: The study of Risk Factors in CKD patients

STUDY	RISK FACTORS	YEAR	NO OF PATIENTS WITH RISK FACTORS %					
			CHILDRENS		ADULTS		GERIATRICS	
			NO	%	NO	%	NO	%
	Diabetes mellitus		10	11%	75	29%	45	21.2%
	Hypertension		-	-	66	25%	47	22.1%
	Obesity		2	2.1%	9	3%	-	-
	Age and race		-	-	6	2%	7	3.3%
	Family history of CKD		3	3.2%	15	6%	8	4%

Prospective observational study -II	Kidney diseases	OCT 2021 to MARCH 2023	34	37.4%	13	5%	62	29.2%
	kidney stones		8	9%	25	10%	9	4.2%
	Malignancy Acute kidney injury		-	-	8	3%	9	4.2%
	Congenital defects		29	32%	-	-	-	-
	Autoimmune diseases		1	1.1%	10	4%	5	2.4%
	Infections like Hep C and HIV		2	2.1%	-	-	-	-
	Nephrotoxics (NSAIDS, Aminoglycoside etc)		2	2.1%	34	13%	20	9.4%
Total			91	100%	261	100%	212	100%

Fig-4: The Frequency of Risk Factors in patients

Table-5: The study on Treatment Management in CKD patients

YEAR	STUDY	Groups	Hemodialysis	Creatinine% (0.6-1.5 mg/dl)				Bun% (17-49 mg/dl)			
				No	Increasing %	No	Decreasing %	No	Increasing %	No	Decreasing %
OCT 2021 to MARCH 2023	Prospective observational study -III	**Childrens**	91	59	65%	32	35%	64	70%	27	30%
		Adults	261	79	30%	182	70%	81	31%	180	69%
		Geriatrics	212	131	62%	81	38%	131	62%	81	38%
		Total	564								

Fig: 5 The Frequency of Treatment Management for ckd patients
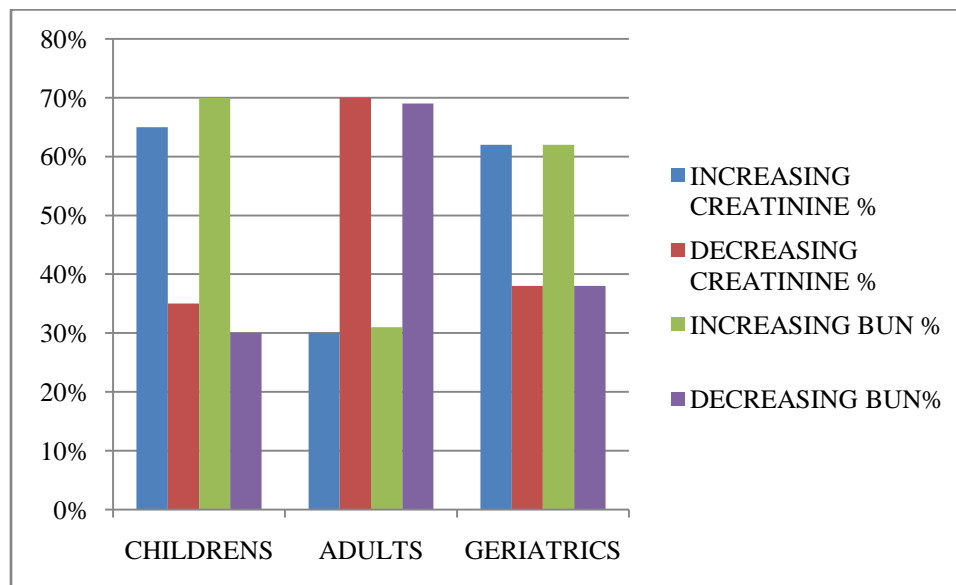
DISCUSSION

End stage renal failure is life threatening disease to all age group of peoples. This study was cited as Study-I in the international journal of pharmaceutical quality assurance. As per this study was done as study-II. This study was determined on prevlence, factors and treatment management in childrens, adults and geriatrics on chronic kidney disease. The research conducted from October 2021 to march 2024. Design of the research study is cross sectional study for epidemiology, etiology is prospective observational study-1 to 3.

The frequency and determination of epidemiology factor in end stage renal failure are having more percentage to the adults(46%) when compared to geriatrics(38%) and childrens(16%) was showed in the table-1. The frequency is showed in fig-1 same differences of epidemiology factor in 3 groups.The sex paremeters are high in males compared to females.

The determination and frequency an causes of etiological factor in 3 groups are highly causing factor are shown in table-2 and fig-2 to the childrens are Glomerulonephritis(42%) when compared to other etiological causes such as hypertension(0%), Diabetes mellitus(10%), renal calculi(8%)Pyelonephritis(3%), Renal artery stenosis(0), Polycystic kidney disease(5.5%), secondary causes(0%), Congenital defects of the kidney or bladder(27.5%), drugs (4%),

Adultsare Diabetes Mellitus(31%), Hypertension(31%) when compared to other etiological causes such as renal caculi(8%), congenital defects(0%), glomerulonephritis(10%), secondary causes(4%), Pyelonephritis(0%), Renal artery stenosis(3), drugs(10%), Polycystic kidney disease(3%)and geriatrics are pyelonephritis(32%) when compared to other etiological causes such as glomerulonephritis(5%), Diabetes mellitus(14%), pyelonephritis(32%), Hypertension(26), Renal artery stenosis(0), Renal calculi(5%), congenital defects(0%), Polycystic kidney disease(4%), Secondary causes (5) and drugs (9%).

The determination and frequency of risk factors are when compared to all the risk factor some factors are reflecting to the 3 age group of population with ckd are shown in table-3 and fig-3. In the childrens are kidney disease(37.4%) are highly effected when compared to other risk factors include asage(0%), Diabetes mellitus(11%), obesity(2.1%), Hypertension(0%), Family history of CKD(3.2%), kidney stones(9%), congenital defects(32%), Malignancy Acute kidney injury(0%), Autoimmune diseases(1.1%), Infections like Hep C and HIV(2.1%), Nephrotoxics (2.1%), for adults are diabetes mellitus(29%) is highly effected to the chronic kidney disease in adults when compared to other risk factors such as Hypertension(25%), Obesity(3%), nephrotoxics(13%), Age and race(2%), Family history of CKD(6%), Kidney diseases(5%), autoimmune disease(4%), kidney stones(10%), Malignancy Acute kidney injury(3%), Congenital defects(0%) and Infections (0%), and geriatrics having high risk factor is kidney disease(29.2%) when compared to other risk factors are Diabetes mellitus(21.2%), Hypertension(22.1%), Obesity(0%), Age and race(3.3%), Family history of CKD(4%), Malignancy Acute kidney injury(4.2%), Congenital defects(0%), Autoimmune diseases(2.4%), kidney stones(4.2%), Infections (0%) and Nephrotoxics (NSAIDS, Aminoglycoside etc) (9.4%).

In the treatment management of chronic kidney disease was determined and frequency on this study are focused on hemodialysis as per this data has been collected by using BUN and creatinine values about in children, adult and geriatric patients with end stage renal failure are shown in table-4 and fig-4. In childrens the creatinine increasing(65%) and decreasing(35%) of creatinine values, the BUN values are increasing(70%) and decreasing(30%) values, Adults the creatinine increasing(30%) and decreasing(70%) of creatinine values, the BUN values are increasing(31%) and decreasing(69%) values and geriatrics the creatinine increasing(62%) and decreasing(38%) of creatinine values, the BUN values are increasing(62%) and decreasing(38%)

values. When compared to all age groups the hemodialysis therapy are more effective to the adults when compared to other groups are childrens and geriatrics ckd population.

CONCLUSION

Chronic kidney disease is a very common disease now a days and also it is having a mortality andmorbidity rate for this world.In the initial stage of chronic kidney disease patient taking a better treatment there are not enter into end stage renal failure. And also who are affected with cause and risk factors that the population has been take precaution that not lead an end stage of ckd.

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