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INCIDENCE OF HYPERTENSION PATIENTS IN CHRONIC KIDNEY DISEASE: A HOSPITAL BASED STUDY IN ODISHA

Epidemiology

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ABSTRACT

Hypertension is considered a public health problem and the risk factor of Chronic Kidney Disease (CKD). In the year 2014 American Society of Hypertension, recommended the ideal level of blood pressure (BP) of CKD patient should be <140/90mmHg. The aim of this study is to find out the incidence of BP among CKD patients without diabetes. 3000 CKD patients without diabetes visit OPD of SCB medical college were enlisted for this study during Jan-2014 to Dec-2015. It revealed a male preponderance, 26.6% hypertensive patients in CKD have BP ⩾140/90mg/mm and 15.5% were having⩾160/100mg/mm. The prevalence of hypertensive patients among CKD was 77.8% including 1913 men in 40-70 years. According to the Kuppuswamy SES, 96% of hypertension patients aged 40-65years were the farmer and below the poverty line. Growing age and work tension might be the causes of increasing BP.

KEYWORDS

CKD, Hypertension, renal failure

INTRODUCTION

World Health Report 2002 and GBD (Global Burden Disease) project reported that Chronic Kidney Disease (CKD) is a worldwide public health problem. Globally chronic kidney disease is the 12th major cause of death.[1]It is postulated that the increase of CKD is due to the high cost of therapy and uncertainty of outcome from treatment. The burden of renal failure is alarming worldwide.[2]Diabetes Mellitus and Hypertension are shown to be two main causes of CKD. Diabetes is the commonest cause of renal failure, and responsible for 8, 95, 000 deaths every year in CKD.[1] Joseph et al (2007) reported that prevalence of CKD in United State has increased rapidly since 1988 to 2004.[3] Similarly, other studies e.g. United State renal data of 2010 and 2011 explained that the high prevalence of CKD has been identified among the population of 65years and above. The report of NHANES (National Health and Nutrition Examination Survey) stated that, the rate of prevalence has taken a leap from 18.8 to 24.5 percent in US.[4]In India, the prevalence of CKD is also emerging as a public health issue but as there is lack of data on CKD, it is evident that CKD is one of the main non-communicable diseases which increases the mortality.[5]. It is also estimated that almost one billion population are being projected to be having CKD with Diabetes and Hypertension.[6] Progression of CKD all across India is extraordinary so it could only predict that the number of CKD patients will be doubled in future.[7]

Aggarwal et al (2005) has conducted research in Delhi and depicted that low GFR (<15mg/dl) is found 0.8 percent of 4972 subjects[8] Nevertheless, in India, the Government did not recognize CKD as a major problem. [9]Similarly, in Odisha, there is lack of evidence on the prevalence of CKD patients due to the growing uncertain number of kidney patients every year. However, no such evidences have been recorded regarding renal failure patients with hypertension. Therefore, this study intends to highlight the prevalence of hypertensive Chronic Kidney Disease.

METHODS AND MATERIALS

This is an exploratory study conducted in SCB Medical College and Hospital, Cuttack during Jan-2014 to Dec-2015. Every year almost 5760 patients are being registered as chronic renal failure patients. Total Sample was 3000 hypertensive persons who visited OPD with CKD. A semi-structured questionnaire was prepared to conduct an interview to collect their basic Demographic Profile, Kuppuswamy's SES: "The modified Kuppuswamy scale is commonly used to measure SES in urban and semi-urban communities. This Kuppuswamy scale was devised by Kuppuswamy in 1976 and is based on a composite score considering the education and occupation of the head of the family along with the monthly income of the family, which yields a score of 3-29. This scale classifies the study populations into high, middle, and low SES." In this present work, Kuppuswamy scale was used to analyze their socio-economic status, clinical data such as serum creatinine and urea, Blood pressure of every patient was recorded.

RESULT

A total number of 3000 patients were diagnosed as hypertensive patients in Chronic Kidney Disease during the study period. The number of patients was divided according to three different stages of Hypertension. Table 1 depicts that sex, age and Hypertension stage. Table-2, 3 and 4 show the number of CKD patients with normal SBP and DBP.

Table: 1 Profile of CKD Patients

Factors	Total Patients	2014		2015	
CKD Patients	3000	1000		2000	
		M	F	M	F
		732	268	1566	434
Sex Ratio(M:F)		2.7:1		3.6:1	
Age Range (year)		40-60		25-70	
Blood Pressure (⩾140/90)		347(34.7%)		919(45.95%)	

Table: 1 revealed that in the year 2014 the diagnosed CKD patients are less than that of the year 2015. A male preponderance has been observed, indicating male are more vulnerable than women and more health-seeking behavior. Almost 50% of registered patients are in the age group of 25-70yrs having ⩾140/90mm/Hg in 2015.

Table: 2 Blood Pressure (BP)

Year	≤120/80 mg/mm		≥140/90 mg/mm		≥160/100 mg/mm		Total
	Male	Female	Male	Female	Male	Female	
2014	101	85	164	81	467	102	1000
2015	330	150	584	134	652	150	2000

Table no- 2 shows the increasing rate of CKD patients during the years Jan-2014 to Dec-2015. According to the blood pressure level of patients in the year 2015, the rate of incidence has increased than in 2014.

Table: 3 ***Number of cases with Normal BP (120/80)***

Factors	Total Patients	2014		2015	
Identified CKD Patients	666 (22.2%)	186		480	
		M	F	M	F
		101	85	330	150
Sex Ratio(M:F)		1.1:1		2.2:1	
Age Range(year)		30-50		25-40	

Blood pressure is the pressure of circulating blood on the wall of blood vessels. It is usually expressed in terms of the systolic pressure (SP) and diastolic pressure (DP).

It is observed that from table-3; there is 22.2% out of total patients 3000 with optimal blood pressure are diagnosed as CKD patients the age group is 25-50yrs, in the year 2015 with a male preponderance.

Table: 4 ***Number of Cases with BP ≧ 140/90***

Factors	Total Patients	2014		2015	
Identified CKD Patients	963	245		718	
		M	F	M	F
		164	81	584	134
Sex Ratio(M:F)		2.0:1		4.3:1	
Age Range(year)		40-60		40-60	

Similarly, Table: 4 shows the incidence of patients with high Blood pressure. 24.5% in the year 2014 to 35.9 % in the year 2015 has been identified with stage-I blood pressure ≥140/90 and ≤150/90mm/Hg.

Table: 5 ***Number of Cases with stage-III ≧ 160/100***

Factors	Total Patients	2014		2015	
CKD Patients	1371	569		802	
		M	F	M	F
		467	102	652	150
Sex Ratio(M:F)		4.5:1		4.3:1	
Age Range (year)		60-75		60-75	

The above table highlights the recognized registered CKD patients with high blood pressure (160/100mm/Hg). In the year 2014, the incidence rate of high BP was found among Male (467) which was almost 50% of the total registered male patients in the year 2015. This table also indicates high male preponderance.

Table: 6 Economic Status :(As per Kuppuswamy's SES scale 2017)

Economic Status Range	Monthly Income	No. of Family
Upper	>41430	100 (3.33%)
Upper Middle	20715-41429	400 (13.3%)
Lower Middle	15536-20714	523 (17.4%)
Upper Lower	10357-15535	625 (20.8%)
Lower	<10357	1352 (45%)

Figure-1

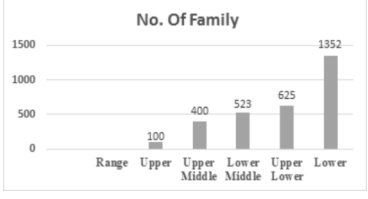

Table-7

Economic Status Range	Monthly Income (in Rs.)	No. Of Patients						
		Optimal Range 120/80 mg/mm		Moderate Range 140/90 mg/mm		High Range1 60/100 mg/m	Total	
		M	F	M	F	M	F	Patients
Upper	>41430	60	50	30	35	60	15	250
Upper Middle	20715-41429	200	150	190	30	140	20	730
Lower Middle	15536-20714	30	30	100	100	160	50	470
Upper Lower	10357-15535	55	10	125	30	273	37	530
Lower	<10357	40	20	510	100	325	25	1020
Total		385 (59.6%)	260 (40.3%)	955 (76.4%)	295 (23.6%)	958 (86.6%)	147 (13.3%)	
		645		1250		1105		

Figure-1 and Table-7 represent the distribution of socioeconomic status among the visited patients. Among all 45% of families are below the poverty line. According to Kuppuswamy's Socio-Economic Status scale (SES-2017), every family's monthly income has been categorized into five Ranges. Where Upper-class Patients visit hospital OPD less frequent. 835 male and 125 female are in lower economic status (< Rs.10357/-) having 140/90mg/mm and 160/100mg/mm indicating that lower socio-economic population suffer more maybe they ignore or delay initial treatment. The hypothesis is incompliant to medical advice.

DISCUSSION:

Hypertension is shown as one of the major cause of CKD in Odisha. The findings of this study are in agreement with the observation of Abram Gorgi et al (2017) that *"Hypertension is recognized as a strongly attributed cause of renal Failure".*[10] Present study represents the incidence of hypertension patients in CKD of Odisha during the year Jan-2014 to Dec- 2015. A study by Tozawa et al (2003) explained that blood pressure level has been categorized into three sections i.e. optimal (120/80), mild (140/90) and moderate (160/100), when mild and moderate blood pressure compared to optimal blood pressure, are important risk factors for end-stage renal failure.[11] In this present study, it is estimated that 131 CKD patients in 2014 and 305 in 2015 have optimal (120/80mmHg) blood pressure. But ≧140/90 and 160/100 blood pressure was noted among 26.6 percent and 15.5 percent of patients in CKD respectively. In SEEK (Screening and Early Evaluation of Kidney Disease), India noted that BP≧140/90 hypertension was found among 64.5percent with CKD patients.[12]Similarly, another study KIDS, which was conducted in Rural India, reported that the incidence rate of hypertension with CKD is 59.54 percent.[13]

Worldwide the attributed causes of chronic Kidney Disease are the same, as it has been observed that the incidence of CKD is consistently occurring due to diabetes and hypertension. However, this present study highlights that out of total patients the incidence rate (77%) of CKD with hypertension in Odisha. In 2014-2015 among the CKD patients 702 women and 2298 men have been registered with only hypertension.[11]This study also reports men are more in number than women, having high blood pressure in CKD, in the age group 26-50yrs.

To treat hypertension, American Society of hypertension(2014) and the Canadian Hypertension Educational Programme(2014) recommended that the ideal level of blood pressure good for kidney patients should be <140/90mmHg. But due to the increasing incidence of Albuminuria among the CKD patients, the 2014 National Institution for Health and Care Excellence recommended a level of 120/80(optimal pressure) as ideal for renal failure patients.[10]

Worldwide poverty is prevalent in both developing and developed countries in different proportions. Poverty is also a health care marker affecting a number of Chronic Diseases. In this present study 875(12.5%) men and 145(4.5%) women were from lower socioeconomic status. Mohammed P.Hossain et al (2009) reported that poverty and social deprivation are emerging as a major risk marker of CKD in both developing and developed countries.[14] According to E Regidor et al (2006) prevalence of high blood pressure found among patients of low economic status is high than those in high social class.[15,17] Among the risk factors of increased incidence of hypertension; socioeconomic status is a major cause which influence increases blood pressure among patients and inversely related to chronic kidney disease.[16] This study estimated that 65.8% of persons belonging to lower socioeconomic status.

CONCLUSION

The present study estimates the burden of hypertensive patients in

CKD is a mixed rural and urban population without diabetes across Odisha. High male preponderance of hypertension in CKD than the female population (p=.05) is found. The incidence of CKD is increasing very fast. The prevalence and incidence of hypertension among them. Majority of the patients are males, belonged to an age group of 40-70 years and lower economic strata of the society, which are a marker of risk for progression of CKD. Further large scale study is required to find out the facts with the progression of CKD.

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