Chettinad Health City Medical Journal
Volume 12, Issue 4 - 2023, Pg. No. 74-80
Peer Reviewed & Open Access Journal

Research Article

Knowledge and Practices towards Prevention of Chronic Kidney Disease in Hypertensive Patients

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DOI: https://doi.org/10.24321/2278.2044.202375

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How to cite this article:
Darekar S, Poovishnudevi T. Knowledge and Practices towards Prevention of Chronic Kidney Disease in Hypertensive Patients.Chettinad Health City Med J. 2023;12(4):74-80.

Date of Submission: 2023-05-15
Date of Acceptance: 2023-09-16

A B S T R A C T

Introduction: Hypertension is the largest and most common factor for deaths and diseases in India. One of the serious complications of hypertension is chronic kidney disease (CKD). Due to its high treatment costs and poor outcomes, CKD has become a major global health problem.

Objective: The present study was conducted to improve awareness and practices that can help prevent CKD in hypertensive patients.

Methodology: A sample size of 200 was calculated. A questionnaire was formed which included different questions regarding knowledge and form of practices to prevent CKD. The questionnaire was sent to the participants. Data were obtained based on the responses of the participants.

Result: Out of the total 200 participants, 120 (60%) had an average knowledge of chronic kidney disease with a mean score of 5.04 ± 3.13 and 160 (80%) were doing different forms of prevention practice with a mean score of 52.47 ± 0.78.

Conclusion: Based on the analysis of the obtained results, this study concluded that average knowledge was found in more than half of the population regarding chronic kidney disease. The practice for the prevention of CKD among participants was found to be good among most of the participants.

Keywords: Chronic Kidney Disease, Hypertension, Knowledge, Practices

Introduction

The largest contributor to avertable deaths and diseases in India is hypertension. It was also the leading risk factor for 23% of the total deaths and 32% of the deaths among adults having cardiovascular diseases in the years 2010–2013.[1] Prolonged tobacco consumption, unhealthy diet, poor physical activity, and excessive alcohol consumption are the modifiable risk factors of hypertension, whereas the non-modifiable risk factors include a history of hypertension, age, and coexisting co-morbid conditions.[2]

Vascular and haemorrhagic stroke, myocardial infarction, heart failure, and renal damage are the major complications of hypertension. Hypertension or high blood pressure is

classified into the following: elevated blood pressure, Grade-1, Grade-2 and Grade-3.[3] Hypertension is both a serious cause and complication of CKD. It leads to a vicious cycle of cardio-renal disease in patients suffering from CKD.[4]

CKD is a global health problem with a rise in prevalence, high treatment and management costs, and poor outcomes. Unfortunately, it is under-diagnosed and under-treated leading to severe problems related to kidney functioning.[5] The cost of treating patients with end-stage renal disease is not inexpensive and poses a great challenge to providing care. With a growth rate of 8% every year, the prevalence of CKD is increasing worldwide.[6] The five stages of CKD can be listed from mild stage-1 to severe stage-5.[7]

Around one billion people worldwide suffer from hypertension and this number is expected to rise to 1.56 billion by the year 2025. It is expected that the increase in the rate of hypertension will be 24% in developed nations and 80% in developing nations by 2025.[8] Hypertension in India, at present, accounts for 40%–60% of cases of CKD. As per the ICMR data, the occurrence of hypertension in the adult population today is 17%.[9]

Due to a significant increase in the incidence of risk factors such as diabetes mellitus, unhealthy diet, and inadequate physical activity, CKD has become a health problem. Kidney-related issues have recently been ranked as the leading cause of death and disability around the world. Of the overall population, 10%–13% are affected by CKD. Factors associated with poverty such as infections, inadequate education, as well as expensive screening methods, are causes due to which the prevalence of CKD is greater in developing countries.[10]

Some factors result in a rapid reduction in kidney function due to kidney damage such as family history, older age, diabetes mellitus, higher blood pressure, and smoking.[11] One of the leading causes of CKD is hypertension, due to the harmful effects that increased BP has on kidney supply. An increase in intraglomerular pressure resulting in reduced glomerular filtration is caused due to uncontrolled hypertension.[12]

An increase in protein filtration results in an abnormal increase in amounts of protein in the urine which is also known as proteinuria and is caused due to damage to the glomeruli.[13] The first sign of CKD is the detection of a small amount of albumin in the urine.[14] Damage to blood vessels in the kidney is due to elevated BP. This damage reduces the kidney's ability to filter the fluid and waste from the blood resulting in an increase in fluid volume in the blood and increasing blood pressure.[15]

CKD is a common condition associated with substantial mortality.[16] In comparison with other non-communicable diseases, the prevalence rate and burden of CKD are increasing rapidly.[17,18] Unfortunately, dialysis facilities and renal replacement are unavailable or expensive for the majority of people who live in low- and middle-income countries, and thus CKD, which further progresses to kidney failure, results in the death of millions of people each year in such countries.[19] Thus, early detection of CKD is important in some parts of the country where a proper treatment approach is not available.

The knowledge and understanding of CKD are important for its prevention and screening programmes' success. Improving awareness regarding the influence of CKD among individuals who are suffering from hypertension and are at a high risk of developing CKD could reduce economic and health burdens. Prevention of disease progression in its early stage can be done by early detection and management of CKD.[10,20]

Methodology

The objective of this cross-sectional study was to assess knowledge and practices regarding CKD in people suffering from hypertension. This study was conducted for 6 months (May 2022 to October 2022) at Krishna Institute of Medical Sciences, deemed to be University (KIMSDU), Karad. The study was approved by the Ethics Committee of KIMSDU.

Sampling Method

Simple random sampling

Inclusion Criteria

The study population included both males and females and those who were suffering from hypertension in the age group of 20–80 years.

Exclusion Criteria

Individuals below the age of 20 years or above 80 years and those who were already suffering from CKD or had any mental health problems or any other critical illness were excluded from this study.

Sample Size

The formula $n = \left[\frac{4pq}{L^2}\right]$ was used to calculate the sample size, which came out to be 200.

Questionnaire

The knowledge and prevention practices were assessed by a questionnaire that included 3 main parts and 23 contents (the first 9 included the subject's sociodemographic information, 10 questions were regarding knowledge, and 4 questions were regarding prevention). Data were obtained from the responses that were received. The participants who scored 50% or more were considered to have good knowledge and practice, and the participants who scored less than 50% were considered to have poor knowledge and practice. The Instat software was used for

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202375

the analysis of this study.

Results

This study was done to assess the knowledge and prevention practices regarding chronic kidney disease in hypertensive patients. Table 1 includes the demographic variables of subjects who participated in this study. A total of 200 participants completed the questionnaire. As described in Table 1, 148 (74.0%) subjects were male and 52 (26.0%) were female. The majority of participants (126, 63.0%) were in the age group of 41–60 years, 77 (38.5%) had diabetes mellitus co-morbidity, and 83 (41.5%) had been suffering from hypertension for less than 5 years.

Out of a total of 200 participants, 120 (60%) participants had average knowledge regarding CKD with a mean score of 5.04 ± 3.13. Half (101, 50.5%) of the total population responded that they had heard of CKD before, 129 (64.5%) knew the risk factors, and 153 (76.5%) knew that the disease could be diagnosed and cured (Table 2). 168 (84%)

Table 1.Demographic Variables of the Study Population

Demographic Variables	Categories	Frequency (n)	Percentage (%)
Age (in years)	20–40	60	30.0
	41–60	126	63.0
	> 60	14	7.0
Gender	Male	148	74.0
	Female	52	26.0
Educational status	Cannot read and write	22	11.0
	Can read and write	17	8.5
	Primary education	20	10.0
	Secondary education	68	34.0
	College or university	73	36.5
Marital status	Single	26	13.0
	Married	156	78.0
	Widowed	8	4.0
	Divorced	10	5.0
Residence	Urban	175	87.5
	Rural	25	12.5
Occupation	Private business	29	14.5
	Government employee	33	16.5
	Private employee	26	13.0
	Daily labourer	14	7.0
	Student	56	28.0.
	Unemployed	30	15.0
	Housewife	12	6.0
Diagnosed with any other disease(s) other than hypertension	Diabetes	77	38.5
	Stroke	0	0.0
	Asthma	17	8.5
	HIV/ AIDS	0	0.0
	High cholesterol level	35	17.5
	Malaria	0	0.0
	Tuberculosis	0	0.0
	None	71	35.5
Duration of hypertension (years)	< 5	83	83.0
	5–15	65	65.0
	> 15	52	52.0

HIV: Human Immunodeficiency Virus, AIDS: Acquired Immune Deficiency Syndrome

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202375

Table 2.Knowledge Assessment of CKD in Hypertensive Patients among the Study Population

Knowledge Assessment	Yes	No
Have you heard of CKD before?	101	99
Do you know the risk factors of CKD?	129	71
Do you know the effect of the use of medication on CKD?	80	120
Do you know the effect of hypertension on CKD?	95	105
Do you know the effect of unprescribed medicines on CKD?	96	104
Do you know that CKD can be detected and cured?	153	47
Do you know the signs and symptoms of CKD?	88	112
Do you know the effect of CKD on other body organs?	98	102
Do you know the effect of regular exercise on hypertension?	136	64
Do you know the effect of smoking/ alcohol on CKD?	168	32

subjects were aware of the effect of smoking/ alcohol on the disease, but only 96 (48%) were aware of the effect of unprescribed medicine.

Out of the total study population, 160 (80%) participants with a mean practice score of 52.47 ± 0.78 had good practice towards CKD. The majority (129, 64.5%) of study participants had well-balanced meals, whereas only 96 (48%) performed regular exercise and 99 (49.5%) followed regular blood pressure check-ups. However, 153 (76.5%) participants were non-smokers (Table 3).

Table 3.Practice Assessment of CKD in Hypertensive Patients among the Study Population

Practice Assessment	Yes	No
Balanced diet	129	71
Regular exercise	96	104
Regular blood pressure check-up	99	101
Smoking cigarette	153	47

Table 4.Association of Responses to Knowledge-based Questions with Sociodemographic Variables

Variables	Category	Knowledge		p Value
		Good	Poor	
Gender	Male	76	72	< 0.001
	Female	30	22	
Educational status	Cannot read and write	15	7	< 0.001
	Can read and write	9	8	
	Primary education	12	8	
	Secondary education	36	32	
	College or university	38	35	
Residence	Urban	85	90	< 0.001
	Rural	12	13	
Duration of hypertension (years)	< 5	48	35	< 0.001
	5–15	29	36	
	> 15	25	27	
Age group (years)	20–40	50	10	< 0.001
	41–60	63	63	
	> 60	9	5	

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202375

Table 5.Association of Responses to Practice-based Questions with Sociodemographic Variables

Variables	Category	Practice		p Value
		Good	Poor	
Gender	Male	75	71	< 0.001
	Female	25	27	
Educational status	Cannot read and write	14	8	< 0.001
	Can read and write	9	8	
	Primary education	15	5	
	Secondary education	33	35	
	College or university	37	36	
Residence	Urban	100	75	< 0.001
	Rural	20	5	
Duration of hypertension (years)	< 5	50	33	< 0.001
	5–15	35	30	
	> 15	23	29	
Age group (years)	20–40	40	20	< 0.001
	41–60	100	26	
	> 60	11	3	

Tables 4 and 5 show the association of sociodemographic variables of participants with their responses to knowledge and practice-based questions.

Discussion

The findings of this study show an average knowledge and good prevention practices among the study population. Of the 200 participants, 120 (60%) had an average level of knowledge. These results were greater than the study reported by Oluyombo et al.,[21] Ng et al.,[22] and Yusoff et al.[23] The difference may be because the participants had better access to health education. However, the results of this study were less compared to the study reported by Asmelash et al.,[20] and Khalil and Abdalrahim.[24]

About 101 (50.5%) participants had heard of CKD before. The result of this study was less than that of a study done by Ng et al. (69.5%).[22] In the present study, only 88 (44%) study subjects identified the signs and symptoms of CKD, which was lower as compared to a study by Khalil and Abdalrahim, in which about half of the participants (50%) identified the signs and symptoms of CKD.[24]

Among the participants, 95 (47.5%) knew about the impact of hypertension on the disease. This was lower as compared to Asmelash et al., where 56.2% knew about it.[20] However, in a study conducted by Stanifer et al., 17% were aware that hypertension can lead to CKD,[25] whereas 129 (64.5%) participants were aware of the risk factors of CKD. This was slightly greater than that observed in a study reported by Khalil et al., with a score of 50%.[24]

Of the total, 160 (80%) study participants had good practice with CKD. This result was higher than the study conducted by Asmelash et al., where only 48.4% of the study population had poor practice scores.[20] However, the practice score of this study was almost equal to the study conducted by Yusoff et al., where the participants had a good practice score of 88.3%.[23]

Out of the total study participants, 129 (64.5%) took a balanced diet. These results were higher than that of a study conducted by Khalil and Abdalrahim, in which 60.6% of participants had a balanced diet.[24] However, 99 (49.5%) participants in this study had regular blood pressure check-ups, which was lower than that reported in a study conducted by Asmelash et al., where 89.6% of the study population had regular blood pressure check-ups.[20]

Conclusion

More than half of the population had average knowledge and good prevention practices regarding chronic kidney disease and its risk factors. However, the level of preventive practice among participants was found to be more than the level of knowledge.

ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202375

Acknowledgements

The authors express their gratitude towards the participants for their voluntary participation.

Source of Funding: None

Conflict of Interest: None

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ISSN: 2278-2044
DOI: https://doi.org/10.24321/2278.2044.202375