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Knowledge and practice on chronic kidney disease prevention and associated factors among hypertensive patients attending in a hospital in eastern Nepal

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ABSTRACT

Introduction: The steady decrease of kidney function is referred to as chronic kidney disease (CKD) that increases the socio-economic burden. Among various factors that cause CKD, hypertension is one of the second leading causes.

Objective: To assess knowledge and practice on chronic kidney disease prevention and associated factors among hypertensive patients.

Methodology: An analytical cross-sectional study was conducted among 405 hypertensive patients, who attended medical outpatient department at Koshi Hospital, Biratnagar from 2022 April to 2022 June. Non-probability purposive sampling technique was used. The study instrument was adopted and modified into local contest from the CKD Screening Index developed by Khalil et al. Descriptive statistics (frequency, percentage, mean, median, and standard deviation) was used to explain variables. Binary logistic regression was used to determine the factors connected to knowledge and practice towards CKD prevention with p-value of <0.05 and confidence interval of 95% was considered.

Result: Based on findings mean age of the participants was 61.71 ± 11.272 years with 54.6% females. Half of the hypertensive patients had good (50.9%) level of knowledge whereas majority of them had good practice (87.4%) to prevent CKD. Furthermore, level of knowledge is associated with sex, ethnicity and educational status whereas level of practice is associated with sex, place of residence, and family history.

Conclusion: Half of the hypertensive patients had good level of knowledge whereas majority had good practice on prevention of CKD. Appropriate health promotion and health education programs are required to increase level of knowledge and practice among hypertensive patients.

Keywords: chronic kidney disease; hypertension; hypertensive patients; knowledge; practice.

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INTRODUCTION

Hypertension raises the risk to kidney disorders affecting an estimated 1.28 billion people globally. Approximately 26% Nepali suffer from hypertension.[1] Chronic kidney disease (CKD) is a condition in which kidneys are damaged and glomerular filtration rate is less than 60 ml/min/1.73m^2, persisting for three months or more.[2] Diabetes, chronic glomerulonephritis, family history of CKD, ageing, smoking, obesity, and high cholesterol are the risk factors of CKD worldwide,[3-6] hypertension is the second leading cause.[3]

The CKD prevalence is higher among newly diagnosed hypertensive patient[7] with higher rates of morbidity, death, health care utilisation, and unaffordable financial

burden.[8,9] Therefore early detection and appropriate management of CKD can prevent worsening of kidney function.[10] However, the silent features of hypertension might lose up to 90% of the kidney function.[11]

Literature showed half of hypertensive patients had good or average awareness on CKD prevention.[12,13] However, 42.2% knew the importance of checking creatinine and serum urea nitrogen.[14] Hence, this study aimed to assess knowledge and practice on CKD prevention and associated factors.

METHODOLOGY

An analytical cross-sectional study was conducted among all the hypertensive patients (age ≥18 years) currently under medical treatment for hypertension, who had come to the medical outpatient department at Koshi Hospital, Biratnagar, Morang, Nepal from 2022 April to 2022 June. Ethical approval was obtained from Institutional Review Board of Institute of Medicine, Tribhuvan University. (Reference number: 446(6-11) E2 078/079. Written permission for the data collection was taken from research management committee of Biratnagar Nursing Campus and Koshi Hospital Administration. Patients diagnosed with CKD or with a previous history of CKD were excluded in this study.

Sample size was calculated by using a single population proportion formula ($n = Z^2pq/d^2$). The proportion was taken at 50% (p) = 0.5)[15], with Z = 1.96, and d = 5%. Total sample size with considering 5% non-response rate calculated was 385+19.25= 404.25 ≈ 405. Non-probability purposive sampling technique was used.

Purpose of the study was explained to the participants and written informed consent was taken from the participants. Data were collected through face-to-face interview technique using semi-structured questionnaire. The study instrument was adopted and modified into local context from the CKD Screening Index[16] to assess the knowledge and practice of prevention of CKD. The CKD Screening Index was developed and validated to measures patient's knowledge, attitudes, and practices regarding CKD prevention and early detection in Jordan. Questionnaire was translated into Nepali language and back translated to English. For the face and content validity of Nepali questionnaire, three subject experts were consulted and tool was finalised. Data were collected by principal investigator herself through face-to-face interview.

The knowledge domain has 24 items with multiple-choice selections that included, correct, incorrect and unsure/don't know response. Among these 24 knowledge items, question numbers one to 16 assess knowledge on prevention of CKD and thus were included in this study whereas items 17 to 24 were excluded because they assess early detection of the CKD.

The practice domain has 12 items on a four-point Likert scale from one (not at all) to four (always). Among these 12 practice items, item number one to nine assess practice on prevention of CKD and thus were included in this study whereas items 10 to 12 were excluded because they assess early detection of the CKD. One item about maintaining hygiene was added and one item about regular blood pressure and blood sugar monitoring was modified.

The questionnaire was divided into four parts. Part I consisted of Socio-demographic related information. Part II consisted of clinical factors related information (duration of hypertension, number of co-morbidities, family history of kidney disease, diabetes mellitus and hypertension, and cardiac disease). Part III consisted questions consisted for knowledge on CKD. Part IV consisted practice related questions consisted. It was measured with a four-point Likert-based scale ('Never,' 'Rarely,' 'Sometimes,' and 'Always'). Level of knowledge and practice were categorised into two categories. Median (50%) score of total score was taken as cut off point. For level of knowledge and practice, the total score was converted into percentage and score more than or equal to median (≥ 50%) as good knowledge and score less than median score (<50%) as poor knowledge.

Obtained data were analysed by using SPSS Statistics for Windows, version 17.0 (SPSS Inc., Chicago, Ill., USA). All the approached participants responded completely and 405 data were included in final analysis. Data were analysed by using descriptive statistics as mean, median, standard deviation, percentage and frequency. Inferential statistics was performed by using the Chi-square test. Binary logistic regression was used for the bivariate analysis. A p-value of less than 0.05 was used to determine statistical significance with a confidence interval (CI) of 95%, and all variables with a p-value of 0.1 in bivariate analysis were included in multivariate analysis.

RESULT

Mean and standard deviation of the age of the respondents was 61.71 ± 11.272 years. More than half (221, 54.6%) of them were female. Regarding ethnicity, more than half (221, 54.6%) of them were Brahmin/Chhetri. Almost all (387, 95.6%) of the respondents were

Hindu. Furthermore, 337(83.2 %) were married and 68 (16.8%) were widowed. Only 43 (10.6%) respondents were graduate and above, whereas 125 (30.9%) were illiterate. Regarding occupation 143 (35.3%) of them were homemaker and 86 (21.2%) were dependent whereas only few of them were earning that is, 83.

More than one-third 139 (34.3%) of the participants had history of hypertension for >10 years, diabetes mellitus was the most common 180 (44.6%) comorbidity and 184 (45.5%) of respondents had family history of hypertension.

More than half (227, 56%) respondents have knowledge on kidney function and majority of them know 329 (81.2%) that CKD is a serious illness. Having diabetes mellitus and increased blood pressure will increase the chance of CKD was answered by 285 (70.4%). A total of 266 (65.7%) of them responded that smoking increase chances of getting CKD. Almost all of the participants 395 (96.5) were not aware about routine checkup of lab blood tests (creatinine and serum urea nitrogen) that will decrease chances of getting CKD. Majority of the participants that is, 333 (82.2%) and 320 (79.0%) did not know about injection of dye in procedures and having untreated anaemia will increase chances of getting CKD respectively (Table 1).

Regarding preventive practices of CKD, majority of the participants (82.2%) eats balanced diet and (81.5%) do regular checkups of blood pressure and blood glucose even when not sick. Most of them (92.6%) did not drink too much alcohol, and (81.5%) did not chew or smoke tobacco. Two third of the participants (67%) do visit to health institutions for screening of CKD regularly. All most all of them (96.5%) follow hypertensive and other medications regimen/treatment adherence (Table 2).

Half of the participants had good knowledge (50.9%) and whereas majority of the participants had good practice (87.4%) on prevention of CKD (Table 3).

Whereas, level of knowledge and level of practice are not statistically significant (Table 4).

There is significant association between level of knowledge and demographic variables in which age, sex, ethnicity, marital status, educational status, occupation, place of residence and economic status (OR 1.764 CI 1.186-2.625, OR 2.115 CI 1.421-3.150, OR 2.305 CI 1.402-3.789, OR 2.313 CI 1.333-4.014, OR0.117 CI 0.069-0.201, OR 5.441 CI 2.806-10.551, OR 0.360 CI 0.191-0.679, OR 0.221 CI 0.109-0.447) (Table 5).

Male participants had 2.31 times (OR 2.312, CI 1.111-4.813) more good knowledge than female and Brahmin/Chhetri had 2.3 times (OR 2.786, 0.380, CI 1.577-4.922, 0.183-0.792) more likely to have good knowledge than others. Participants who were illiterate and went to primary school had poor knowledge in comparison to those with secondary and above level of education (Table 6). Level of practice was significantly associated with sex, educational status, place of residence and family history (OR 2.192 CI 1.159-4.147, OR 0.386 CI 0.197-0.755, OR 0.490 CI 0.233-1.027, OR 3.867 CI 1.324-11.294 respectively) (Table 7).

Likewise, in multivariate analysis, male had 2.21 times (OR 2.218, CI 1.062-4.636) more likely to have good practice than female and patients who have family history of diabetes and hypertension had 7.72 time (OR 7.724 CI 2.507-23.799) better practice than those who do not have (Table 8).

Table 1: Distribution of knowledge on prevention and risk factors of chronic kidney disease, n (%)

Variables	Yes	No	Don't know
The kidneys regulate body water and chemicals in blood (sodium, potassium, phosphorus, and calcium)	213 (52.6)	3 (0.7)	189 (46.7)
The kidneys remove drugs and toxins	227 (56.0)	2 (0.5)	176 (43.5)
The kidneys release hormones to regulate blood pressure, produce red blood cells, and promote strong bones.	112 (27.7)	5 (1.2)	288 (71.1)
CKD is a serious illness	329 (81.2)	1 (0.2)	75 (18.5)
CKD is an irreversible illness	215 (53.1)	53 (13.1)	137 (33.8)
With increasing age, the function of kidney will decrease	246 (60.7)	35 (8.6)	124 (30.6)
Risk factors that increase the chances of CKD			
Having high blood pressure	247 (61.0)	27 (6.7)	131 (32.3)
Having diabetes mellitus	285 (70.4)	5 (1.2)	115 (28.4)
A family member with CKD	88 (21.7)	89 (22.0)	228 (56.3)

High lipid in blood	198 (48.9)	20 (4.9)	187 (46.2)
Smoking	266 (65.7)	17 (4.2)	122 (30.1)
Obesity	234 (57.8)	8 (2.0)	163 (40.2)
Untreated anaemia	83 (20.5)	2 (0.5)	320 (79.0)
Procedures: cardiac catheterisation and computed tomography (CT) scan that require dye	58 (14.3)	14 (3.5)	333 (82.2)
Kidney stones, recurrent urinary tract infection	248 (61.2)	4 (1.0)	153 (37.8)
Routine checkup of blood tests (creatinine and serum urea nitrogen) will decrease chances of getting CKD.	14 (3.5)	-	391 (96.5)

Table 2: Distribution of practice on prevention of CKD, n (%)

Variables	Always	Sometimes	Rarely	Never
Eat balanced diet (low salt, vegetables in large proportion, low saturated fat, low red meat)	333 (82.2)	48 (11.9)	5 (1.2)	19 (4.7)
Involved in at least >30 minutes physical activities (walking and jogging) five days a week	228 (56.3)	88 (21.7)	57 (14.1)	32 (7.9)
Did regular checkups (blood pressure and blood glucose) even when not sick	330 (81.5)	57 (14.1)	13 (3.2)	5 (1.2)
Kept body weight within normal range	291 (71.9)	83 (20.5)	24 (5.9)	7 (1.7)
Smoking or chewing tobacco	60 (14.8)	14(3.5)	1 (0.2)	330 (81.5)
Drinking too much alcohol	7 (1.7)	19 (4.7)	4 (1.0)	375 (92.6)
Maintained personal hygiene to prevent infection	393 (97)	11 (2.7)	-	1 (0.2)
Follow hypertensive and other medications regimen/treatment adherence	391 (96.5)	11 (2.7)	2 (0.5)	1 (0.2)
Followed food restrictions as advised by physicians (low salt diet and diabetic diet)	338 (83.5)	46 (11.4)	8 (2.0)	13 (3.2)
Visited to health institutions for screening of CKD regularly	273 (67.4)	107 (26.4)	14 (3.5)	11 (2.7)

Table 3: Level of knowledge and practice on prevention of CKD, n (%)

Variables	Good	Poor
Level of knowledge	206 (50.9)	199 (49.1)
Level of practice	354 (87.4)	51 (12.6)

Table 4: Association between level of knowledge and level of practice

Variables	Level of practice		p-value
	Good	Poor	
Level of knowledge	**Frequency (percent)**	**Frequency (percent)**	
Good	177 (43.7)	22 (5.4)	0.359
Poor	177 (43.7)	29 (7.2)	

Table 5: Association of level of knowledge with socio-demographic and clinical factors

Variables	Level of knowledge		Unadjusted OR	Confidence interval	p-value
	Good, n (%)	Poor, n (%)			
Age (years)					
≤60	100 (24.7)	75(18.5)	1.764	1.186-2.625	0.005*
>60	99 (24.4)	131 (32.3)	Ref		

Sex					
Male	109 (26.9)	75 (18.5)	2.115	1.421-3.150	<0.001*
Female	90 (22.2)	131 (32.3)	Ref		
Ethnicity**					
Brahmin/Chhetri	140 (34.6)	81 (20.0)	2.305	1.402-3.789	0.001*
Madhesi	20 (4.9)	73 (18.0)	0.365	0.192-0.697	0.002*
Adiwasi/janajati	39 (9.6)	52 (12.8)	Ref		
Religion					
Hindu	188 (46.4)	199 (49.1)	0.601	0.228-1.583	0.303
Others***	11 (2.7)	7 (1.7)	Ref		
Marital status					
Married	177 (43.7)	160 (39.5)	2.313	1.333-4.014	0.003*
Widow/widower	22 (5.4)	46 (11.4)	Ref		
Educational status					
Illiterate	27 (6.7)	98(24.2)	0.117	0.069-0.201	<0.001*
Primary	50 (12.3)	56 (13.8)	0.381	0.231-0.628	<0.001*
Secondary and above	122 (30.1)	52 (12.8)	Ref		
Occupation					
Employee	82 (20.2)	24 (5.9)	5.441	2.806-10.551	<0.001*
Homemaker	64 (15.8)	79 (19.5)	1.290	0.720-2.312	0.329
Dependent	26 (6.4)	60 (14.8)	0.690	0.355-1.343	0.275
Others	27 (6.7)	43 (10.6)	Ref		
Place of residence					
Rural	15 (3.7)	38 (9.4)	0.360	0.191-0.679	0.002*
Urban	184 (45.4)	168 (41.5)	Ref		
Economic status					
Enough for 6 months	13 (3.2)	42 (10.4)	0.221	0.109-0.447	<0.001*
Enough for 1 year	102 (25.2)	104 (25.7)	0.701	0.456-1.076	0.104
Enough for 1 year and surplus	84 (20.7)	60 (14.8)	Ref		
Duration of hypertension					
≤5 Years	91 (22.5)	91 (22.5)	1.065	0.720-1.575	0.753
>5 Years	108 (26.7)	115 (28.4)	Ref		
Comorbidities					
No disease	56 (13.8)	58 (14.3)	1.095	0.649-1.849	0.733
Diabetes Mellitus	91 (22.5)	89 (20.0)	1.160	0.722-1.863	0.539
Others****	52 (12.8)	59 (14.6)	Ref		
Family history					
No disease	54 (13.3)	83 (21.5)	1.193	0.417-3.416	0.743
Diabetes mellitus/hypertension	139 (34.3)	112 (27.7)	2.275	0.816-6.344	0.116
Others****	6 (1.5)	11 (2.7)	Ref		

p-value significant at <0.05* = bivariate logistic regression

Table 6: Association with level of knowledge with socio-demographic characteristics

Variables	Adjusted OR	Confidence interval	p-value
Age			
≤ 60	1.646	0.968-2.798	0.066
>60	Ref		
Sex			
Male	2.312	1.111-4.813	0.025†
Female	Ref		

Ethnicity			
Brahmin/Chhetri	2.786	1.577-4.922	<0.001†
Madhesi	0.380	0.183-0.792	0.01†
Adiwasi/janajati	Ref		
Marital status			
Married	1.373	0.706-2.668	0.350
Widow/widower	Ref		
Educational status			
Illiterate	0.258	0.130-0.513	<0.001†
Primary	0.537	0.295-0.976	0.042†
Secondary and above	Ref		
Occupation			
Employee	1.993	0.903-4.398	0.88
Homemaker	1.570	0.649-3.799	0.317
Dependent	0.679	0.292-1.582	0.370
Others	Ref		
Place of residence			
Rural	0.538	0.249-1.160	0.114
Urban	Ref		
Economic status			
Enough for six months	0.492	0.207-1.166	0.107
Enough for one year	0.712	0.419-1.210	0.209
Enough for one year and surplus	Ref		

P-value significant at <0.05†= multivariate logistic regression

Table 7: Association of level of Practice with socio-demographic and clinical factors (n=405)

Variables	Level of practice		Unadjusted OR	Confidence interval	p-value
	Good, n (%)	Poor, n (%)			
Age					
≤60	151 (37.3)	24 (5.9)	0.837	0.464-1.508	0.553
>60	203 (50.1)	27 (6.7)	Ref		
Sex					
Male	169 (41.7)	15 (3.7)	2.192	1.159-4.147	0.016*
Female	185 (45.7)	36 (8.9)	Ref		
Ethnicity					
Brahmin/Chhetri	195 (48.1)	26 (6.4)	0.926	0.427-2.008	0.845
Madhesi	78 (19.3)	15 (3.7)	0.642	0.271-1.515	0.312
Adiwasi/Janajati	81 (20.0)	10 (2.5)	Ref		
Religion					
Hindu	49 (12.1)	338 (83.5)	0.862	0.192-3.865	0.862
Others	2 (0.5)	16 (4.0)	Ref		
Marital status					
Married	296 (73.1)	41 (10.1)	1.245	0.590-2.626	0.565
Widow/widower	58 (14.3)	10 (2.5)	Ref		
Educational status					
Illiterate	99 (24.4)	26 (6.4)	0.386	0.197-0.755	0.005*
Primary	97 (24.0)	9 (2.2)	1.091	0.464-2.566	0.841
Secondary and above	158 (39.0)	16 (4.0)	Ref		
Occupation					
Employee	98 (24.2)	8 (2.0)	1.581	0.564-4.429	0.384
Homemaker	123 (30.4)	20 (4.9)	0.794	0.331-1.903	0.604
Dependent	71 (17.5)	15 (3.7)	0.611	0.243-1.538	0.295
Others	62 (15.3)	8 (2.0)	Ref		

Place of residence					
Rural	42 (10.4)	11 (2.7)	0.490	0.233-1.027	0.059*
Urban	312 (77.0)	40 (9.9)	Ref		
Economic status					
Enough for 6 months	46 (11.4)	9 (2.2)	0.507	0.203-1.265	0.145
Enough for 1 year	177 (43.7)	29 (7.2)	0.606	0.303-1.210	0.156
Enough for 1 year and surplus	131 (32.3)	13 (3.2)	Ref		
Duration of hypertension					
≤ 5 Years	157 (38.8)	25 (6.2)	0.829	0.461-1.492	0.531
>5 Years	197 (48.6)	26 (6.4)	Ref		
Comorbidities					
No disease	97 (24.0)	17 (4.2)	0.961	0.459-2.012	0.916
Diabetes mellitus	162 (40.0)	18 (4.4)	1.516	0.738-3.112	0.257
Others	95 (23.5)	16 (4.0)	Ref		
Family history					
No disease	116 (28.6)	21 (5.2)	3.867	1.324-11.294	
Diabetes mellitus/hypertension	228 (56.3)	23 (5.7)	6.939	2.412-19.965	0.013*
Others	10 (2.5)	7 (1.7)	1.429		0.000
			Ref		

P-value significant at <0.05*= bivariate logistic regression

Table 8: Association of practice with socio-demographic and clinical factors

Variables	Adjusted OR	Confidence interval	p-value
Sex			
Male	2.218	1.062-4.636	0.034†
Female	Ref		
Educational status			
Illiterate	0.620	0.282-1.363	0.235
Primary	1.516	0.610-3.769	0.370
Secondary and above	Ref		
Place of residence			
Rural	0.595	0.265-1.334	0.207
Urban	Ref		
Family history			
No disease	4.753	1.529-14.776	0.007†
Diabetes mellitus/hypertension	7.724	2.507-23.799	<0.001†
Others	Ref	Ref	

p-value significant at <0.05†= multivariate logistic regression

DISCUSSION

In this study, mean age of participants was 61.71 ± 11.272 years, majority were females (54.6%) and the highest percentage among all the participants (35.4%) were homemaker, which is consistent with various studies done in Palestine and Rowanda city Africa respectively.[17,18] Near about half of the participants (44.6%) had diabetes mellitus along with hypertension which is supported by study done in Palestine[17] where 57% had more than two chronic diseases with hypertension and in Ethiopia 35.9% had diabetes mellitus along with hypertension.[19]

Furthermore, only 61.0% of the participants identified that hypertension is one of the causes of CKD, which is the second leading cause of kidney disease. Similarly, they told that the most common cause was diabetes mellitus 70.4% which is consistent with global scenario.[3] Other common causes as responded were family member with CKD, high lipid in blood, being a smoker and obese person (21.7%, 48.9%, 65.7% and 57.8% respectively). These findings are also consistent with many other literatures from Palestine (61.2%) and Rwanda, Africa.[17,18]

A study done in Malaysia, there was substantial lack of understanding on CKD, with 73.7% of participants scoring less than 4 out of 7.[20] Also poor knowledge of CKD which is in support of this study where half of the participants had poor level of knowledge (49.1%).[16,18, 21]

Similarly, a study conducted in Nigeria, none of the CKD patients with diabetes or hypertension knew they had the condition.[22] According to a study, knowledge about cardiovascular health enhances attitudes and behaviors; consequently, a lack of knowledge is surely a hindrance to those activities.[23] If the patients have more knowledge about hypertension, screening for secondary prevention would be more effective. This is simply explained by the fact that human conduct is influenced by their attitudes about certain behaviors.[24]

Hypertensive patients (82.2%) were found to have balanced dietary habit along with low salt intake, 92.6% did not drink alcohol and 81.5% did not chew or smoke tobacco. Likewise, 67% practice regularly health checkup at health institution and almost all of them adhere to antihypertensive and other medications which is consistent with the study done in Rwanda, Africa.[19] In contrast study, only 48.4% of participants had good practice towards prevention of CKD, 87.3% did not eat balanced diet, 92.6% did not exercise regularly and 82.9%) did not visit health institutions whereas 95.2% adhere to the medications, and 94.0% were correctly follow food restrictions from doctors.[18] This disparity might be seen from frequent hospital visit due to higher percentage of (88.7%) of health insurance facility utilisation in Nepal.[25]

The findings of this study revealed that 50.9% had good knowledge of CKD prevention with median score of 8 which are in consistency with 68.7% and 47.9%.[14,16,19] Whereas, preventive practice was good in majority of the hypertensive patients (87.4%) though there was poor knowledge in half of them (49.1%) and this finding is consistent with the study done in Malaysia is 88.3%.[26] The reason behind this finding might be the threatening event, reflective motivator, free essential medical care and family support was made easier in adherence to therapy.[27,28]

Though many studies from various countries reflected the association[17,19] between knowledge and practice on prevention of chronic kidney disease, this study depicted no association between knowledge and practice on prevention of chronic kidney disease. This might be due to higher utilisation of health insurance facility (88.7%)[25] and the similar tendency was observed among participants during data collection period. The other factors might be follow-up call from doctors, adherence to doctor's prescription and better access to health institution etc. may have been factors in this finding.

The study has shown that the educational status, residence, and duration of hypertension were significantly associated variables with knowledge and practice scores in multivariate logistic regression.[19] Higher score for overall knowledge and attitudes toward prevention, male sex was associated with higher scores for preventative practices among hypertension patients.[17] Study was done in Gondar Town, there was a significant correlation between participants' knowledge and practices regarding CKD and their educational status, place of residence, and duration of hypertension, i.e., participants with a college education or higher and urban residents had 2.27 times (AOR = 2.27; 95 percent CI: 1.06, 4.83) and 6.26 times more preventive practices than participants who lived in rural areas and were illiterate.[19] Another study showed that Knowledge was significantly correlated with participation in secondary education, higher education, employment in the private sector, use of three or more drugs daily, and having a family history of kidney disease.[14]

Bivariate analysis of the data revealed that the knowledge is associated with patient's age (OR 1.764, CI 1.186-2.625). This shows that patients aged less than or equal to 60 are 1.7 times more likely to have good knowledge than those above 60 years of age, which is in congruent to the study done in Palestine.[17] In Multivariate analysis, higher knowledge level are the only factors significantly associated with patient's sex ($p < 0.025$), ethnicity ($p < 0.000$) and educational status ($p < 0.000$). This finding is consistent with various studies i.e. education level is significantly associated with high knowledge score ($p < 0.009$).[17,18,19,29]

Level of practice is associated with sex (OR 2.192, CI 1.159-4.147) which shows that female patients have 2.19 times more likely to have good practice than male, which is inconsistent with the study done in Palestine that revealed higher practice to prevent CKD was significantly associated with male gender.[17] In addition, illiterate population has (OR 0.386, CI 0.197-0.755) 38% less likely to have good practice in reference to higher education. In the same way there is association of good practice with place of residence (OR 0.490 CI 0.233-1.027). Similarly, practice on prevention of CKD is significantly associated with residence of the participants (OR 2.218 CI 1.062-4.636), the patients residing in rural area has 51% less likely to have good practice than urban and family history of disease (OR 7.724 CI 2.507-23.799). This finding is consistent with the study done in Palestine.[17]

CKD can be prevented on three levels, despite being a serious disease. Prevention starts with public education and risk factor modification, moves on to screening and delaying disease development, and then best

manages CKD patients. The primary prevention is the most effective stage since it attempts to minimise CKD before it ever arises.[30] This study also showed that family history with diabetes and hypertension had more good practice on prevention of CKD, as other studies showed that prevalence of hypertension was significantly associated with family history of hypertension. It was clear that having more chronic conditions meant having more frequent check-ups at medical facilities, receiving educational materials from staff members, and going through certain laboratory testing.

Study was limited by its cross-sectional design that does not determine the cause-and-effect relationship and purposive sampling which was conducted only in hypertensive patients attended to OPD of Koshi Hospital. Questionnaire was only closed ended questions that limit to explain the reasons for certain outcomes.

CONCLUSION

Only half of the hypertensive patients had good knowledge whereas majority of them had good practice on prevention of CKD. Furthermore, age, sex, ethnicity, marital status, educational status, occupation, place of residence and economic status were associated with knowledge whereas age, sex, educational status, place of residence and family history were associated with practice. This reflects the need of health education to improve knowledge and preventive practices. In addition, efforts should be made to implement screening protocols targeting high risk patients for early detection and complication prevention.

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