Observational Study

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Factors affecting knowledge and practices towards prevention of chronic kidney disease among hypertensive patients at public hospital in Bale and East Bale zone, Oromia, Southeast Ethiopia, 2023

A cross-sectional study

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Abstract

Chronic kidney disease (CKD) is a growing health concern worldwide. It is crucial to prevent CKD to mitigate its impact and enhance health results. Recognizing and managing the risk factors of chronic kidney disease at an early stage can aid in stopping its advancement. A cross-sectional study was carried out at a hospital from March 1 to April 30, 2023, involving 422 hypertensive patients. The participants were chosen using systematic random sampling. Data on socio-demographic and clinical factors, as well as knowledge and practices, were gathered through interviews, medical record reviews using structured questionnaires. Descriptive statistics were used to determine the frequency and percentage of variables. The data was entered into Epi-data version 4.6 and analyzed using SPSS version 23 (Chicago). Variables with *P*-values < .25 were considered for multivariable analysis, and those with *P*-values < .05 were deemed to be factors associated with knowledge and practices. The study found that 42.2% (178) of hypertensive patients had good knowledge about chronic kidney disease, and 43.6% (184) had good practices. Living in urban areas (with an adjusted odds ratio [AOR] of 3.94 at a 95% confidence interval [CI] of 2.42–6.42) and having a family history of kidney disease (AOR 5.59 at a 95% CI of 3.21–9.75) were factors associated with good knowledge. Being a government employee (AOR 7.29, at 95% CI 1.79–29.58) and maintaining a normal body mass index (AOR 8.03, at 95% CI 3.54–18.19) were linked to good practices. Less than half of the study participants had good knowledge and practices toward prevention of chronic kidney disease. Identifying factors that affect knowledge and practices towards the prevention of chronic kidney disease can offer healthcare providers, governmental and nongovernmental organizations (NGOs), and policymakers' valuable insights for developing strategic interventions and education programs to promote better management of hypertension and CKD.

Abbreviations: BMI = body mass index, CKD = chronic kidney disease, ETB = Ethiopian Birr, MOH = Ministry of Health, NGOs = Nongovernmental Organizations.

Keywords: chronic kidney disease, hypertension, knowledge, practice

1. Introduction

Hypertension is a common cardiovascular disease associated with multiple disorders. It is the second most common cause of renal disease next to diabetes mellitus. Hypertension is known as a silent killer and it is a modifiable risk factor for cardiac ischemia, cerebrovascular accident and CKD.[1]

Chronic kidney disease (CKD) is kidney damage or a decrease in glomerular filtration rate (GFR < 60 mL/min per 1.73m²) for 3 or more months.[2] CKD is categorized into 5

Informed consent was obtained from all study participants included in this study before the interview. The study participants have received information regarding the research.

The authors have no funding and conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

Madda Walabu University ethical review committee granted ethical clearance for this study, with reference number 003/2/19168. All methods were carried out in accordance with relevant guidelines and regulations.

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stages.[3] In developing countries, there is a delay in the initiation of treatment for kidney failure due to increased health costs, a lack of health care providers, and a shortage of service settings for renal replacement therapy. This leads to a poor quality of life and, ultimately, premature death.[4] In Ethiopia, renal replacement therapy requires high costs, limited dialysis centers, and the absence of kidney transplantation centers. Thus, patients with CKD suffer more due to the unaffordability of the treatment. Patients with renal dysfunction are unable to know because of a lack of awareness of having CKD until 90% of renal function is lost.[5] Prevention methods for CKD include renal function tests to know the early stage of CKD, identifying high-risk groups, creating awareness among patients about the prevention of renal disease, health education, modifying the lifestyle of patients with cardiovascular disorders like hypertension, and enhancing awareness among health care providers and policymakers.[6]

Currently, around 1 billion individuals globally are affected by hypertension and the number is expected to rise, reaching an estimated 1.56 billion by the year 2025.[7] In Palestine, a significant majority, accounting for 61.8%, of patients with hypertension have a good understanding of CKD. However, the rest of the participants lack sufficient knowledge on the topic.[1] While the overall prevalence of hypertension is low in Palestine, it increases among adults and those aged 45 and above. The study shows that inadequate knowledge and practices regarding CKD can result in delayed diagnosis, increasing the risk of developing renal failure, requiring prolonged dialysis, and incurring high treatment costs.[8] In Nigeria, the prevalence of CKD was reported to be 11.4% to 18.8%. The number of patients affected by CKD is continuing to increase as risk factors from diabetes mellitus and hypertension are projected to rise in the coming years in developing economies. The rural community of south-west Nigeria had a 27.1% good level of knowledge toward the prevention of CKD.[9] In Ethiopia, the number of CKD patients among hypertensive and diabetic individuals is growing at an alarming rate.[10] In Gondar Town, North West Ethiopia, 68.7% had good knowledge and 48.4% had good practices regarding CKD.[4]

To the best of our understanding, there has been no study conducted on the knowledge and practices regarding the prevention of CKD and its associated factors among hypertensive patients at public hospitals in Bale and East Bale Zones, Oromia, Southeast Ethiopia. This research introduces new variables like the body mass index (BMI) as a clinical parameter, lack of exercise and alcohol intake to evaluate knowledge. Additionally, it examines practices such as seeking medical assistance and receiving family support for CKD among participants, aspects that previous studies have not explored. There is still information gap and little is known about factors affecting knowledge and practice toward the prevention of CKD among hypertensive patients, so this study was aimed at assessing the level of knowledge and practice toward the prevention of CKD and determining clinical and socio-demographic factors that may affect their knowledge and practice.

This study can help identify gaps in knowledge and provide information for developing educational programs and interventions to improve awareness of CKD prevention among hypertensive patients. The findings can assist healthcare providers and governmental and nongovernmental organizations (NGOs) in developing targeted interventions and education programs to promote better management of hypertension and CKD.

2. Methods

2.1. Study design

A hospital based cross-sectional study design was conducted.

2.2. Setting

The study took place in selected public hospitals within Bale and East Bale Zones from March 1 to April 30, 2023. Bale and East Bale Zones comprise 6 hospitals. Our study was conducted in 3 of these public hospitals: Madda Walabu University Goba Teaching Hospital (MWUGTH), Dello Manna General Hospital (DMGH), and Gindhir General Hospital (GGH). These hospitals provide chronic illness care to their communities. Bale Robe is located 444 kilometers from Addis Ababa, with MWUGTH located in Goba Town, approximately 10 km from Bale Robe. MWUGTH is the only teaching hospital in Bale Zone, serving more than 2 million people. According to the 2022 registration book, there were a total of 1365 hypertensive patients at MWUGTH, GGH, and DMGH.

2.3. Participants

All hypertensive patients aged 18 years or older who had follow-up were included, while participants who were already diagnosed with CKD and severely ill were excluded. We selected the study participants using a systematic random sampling technique. Our source population consisted of all patients who visited the chronic follow-up unit of the selected public hospitals between March 1 and April 30, 2023. The study population consisted of randomly selected adult hypertensive patients who had follow-up care at the selected public hospitals during the data collection period. Madda Walabu University ethical review committee granted ethical clearance for this study, with reference number 003/2/19168. The study participants were invited to participate when they visited the chronic follow-up unit. The researcher gained permission from the study setting with a cooperative letter and copies of an ethical approval letter. Respondents were informed about the objective and purpose of the study, and verbal and written consent was obtained from each respondent. Besides, all the study participants were informed that they had a full right to participate or decline to participate in the study, and the study participants were assured of the attainment of confidentiality for the information obtained from them.

2.4. Variables

In this study, age was classified according to the Ethiopian Ministry of Health (MOH) adult age classification that was used in hospitals as (18–29), (30–39), 40–69), and (≥70). The monthly income of the participants was categorized depending on their mean income as < 800 Ethiopian birr (ETB) and ≥ 800 ETB. Hypertension duration was classified into 3 groups using percentiles: <4 years, between 4 and 6 years, and between 6 and 10 years. The number of comorbidities was defined as the presence of 2 or more diseases in a patient and was classified as either no comorbidity or 1 or more comorbidities. The number of drugs referred to the drugs taken by hypertensive patients and was classified as either <2 drugs or 2 or more drugs per day. The outcome variable for this study was good or poor level of knowledge and practice among hypertensive patients. Participants who scored at or above the mean score of knowledge questions were considered to have good knowledge, while those who scored below the mean score were considered to have poor knowledge. Knowledge was defined as the awareness of hypertensive patients about CKD and was measured by calculating the mean score of 26 items.[4] Each response was scored as "1" for correct knowledge and "0" for incorrect knowledge. Participants who scored at or above the mean score of knowledge questions were considered to have good knowledge, while those who scored below the mean score were considered to have poor knowledge. Practice was defined as the activities performed by hypertensive patients towards the prevention of CKD and was measured by calculating the mean score of 13 items[11]

Each response was scored as "1" for correct practice and "0" for incorrect practice. Participants who scored at or above the mean score of practice questions were considered to have good practice, while those who scored below the mean score were considered to have poor practice.

2.5. Data sources/measurement

The data collection tool was adapted from the study done in Gondar and Jimma, and the CKD screening index was reviewed. Finally, questions were generated to assess knowledge and practice toward the prevention of CKD.[4,10] To maintain consistency, the tool was created in English, translated into Amharic and Afaan Oromo with the help of a language expert, and then returned to English by a second expert translator who works in the medical field. The assessment tool contained 4 parts with closed-ended question. The first part deals with the socio-demographic characteristics of the study participants with 7 items (age, sex, marital status, educational status, residence, occupation, and monthly income). Part 2 is related to clinical factors with 7 items (number of drugs, number of comorbidities, duration of hypertension, family history of renal disease, family history of diabetes mellitus, family history of cardiac disease, BMI). Part 3 deals with knowledge toward the prevention of CKD with 26 items, and part 4 is about practice toward the prevention of CKD with 13 items. 3 data collectors and 3 supervisors facilitated the data collection process. Data collectors, who were chosen for their qualifications as BSc nurses and their experience, received 3 consecutive days of study training from the principal investigator. Data collectors reviewed the charts of the patients to determine who was included and excluded at the time of subject selection. Data collectors reviewed patient charts to identify study participants who met the inclusion criteria and were willing to participate in the data collection process. Information regarding socio-demographic aspects, knowledge, and practices was gathered through face-to-face interviews, while clinical data was obtained by reviewing medical records. Two weeks prior to the actual data collection, the questionnaire was pretested on 21 patients at Bale Robe General Hospital to ensure its acceptability and consistency. Data collectors and supervisors received training regarding the data collection process for 2 days duration. Primary investigators and supervisors performed continuous oversight and daily checks of the collected data for completeness. The reporting of this study conforms to the Equator network guideline statement of reporting cross-sectional studies.[12]

2.6. Study size

The sample size was calculated using a single population proportion formula to determine the minimum sample size required for estimating the true proportion as follows: considering a 95% of confidence level, 5% margin of error and 48.4% population proportion.

$$n = \frac{(Z\sigma 2/2)2\ \ (p)\,(1-p)}{d^2}$$

Where n = sample size required, $Z\sigma 2 = 1.96$ (standardized normal distribution curve value for the 95% CI), $P = .484$ (proportion of good practice), $D = 0.05$ (degree of margin of error.

$$\frac{(1.96)^2\,(0.484)\,(0.516)}{(0.05)^2} = 384$$

The sample size for the second objective was determined using Epi Info V.7.2.5. Once a 10% (38.4) nonresponse rate was taken into consideration, the final sample size was 422 since the sample size for the first objective (384) was greater than the sample size for the second objective (370) using the same formula by considering the proportion of urban residency (59.4%). From the total of 6 hospitals found in Bale and east Bale zones, 3 hospitals were selected such as MWUGTH, GGH, and DMGH. The study participants were selected from each the study area using a systematic random sampling technique, with a skip interval of 3 (dividing total hypertensive patients by sample size which is 1365/422 = 3) and the first study subject among the 3 was selected by lottery method. Allocating the number of participants from the selected hospitals using the formula:

$$ni = \frac{n \times Ni}{N}$$

Where n = total sample size to be selected (422), N = total population of all selected hospitals (1365), Ni = total population in each selected hospital (608 in MWUGTH, 432 in GGH, and 325 in DMGH), then sample size (ni) for each hospital was (188 for MWUGTH, 134 for GGH, and 100 for DMGH).

2.7. Statistical methods

Data for the study was coded, entered, and cleaned using Epi-data version 4.6.0.6, and then exported to SPSS version 25 (Chicago) for analysis. Descriptive statistics, including frequencies and percentages, were used to summarize the characteristics of the study participants, and continuous variables were expressed as means and standard deviations (SDs). A logistic regression model was used to analyze the data, with bivariate logistic analysis performed to identify candidate variables for multivariate logistic regression at P-values < .25. The odds ratio and corresponding 95% CI were used to indicate the presence and strength of any associations, with a P-value of < .05 in the multivariable analysis considered significant.

3. Result

3.1. Socio-demographic characteristics of the study participants

A total of 422 patients were participated in the study yielding a response rate of 100 %. The mean age of participants was 54 years with a SD of ± 14 years. Of the participants, 280 (66.4%) were male, 216 (51.2%) lived in urban areas, and 141 (33.4%) were unable to read or write (Table 1).

3.2. Clinical characteristics of the study participants

Of the hypertensive patients, 185 (43.8%) had been living with the disease for less than 4 years. A majority of 317 (75.1%) had no family history of renal disease, while 347 (82.2%) were being treated with 1 drug. Additionally, 263 (62.3%) had a normal BMI (Table 2).

3.3. Level of knowledge among the study participants

Out of the 422 participants, 244 (57.8%) had poor knowledge, while 178 (42.2%) had good knowledge, with a mean knowledge score of 4.48 and a SD of 4.82 (Fig. 1). Among the participants, 58 (13.77%) were aware of the function of the kidney, and only 130 (30.8%) knew that CKD is a serious disease. Regarding the risk factors for CKD, 63 (14.9%) reported that increased blood pressure increases the likelihood of developing CKD. Additionally, 100 (23.7%) and 60 (14.2%) identified obesity, kidney stones, and recurrent urinary tract infections as risk factors. However, a majority of 350 (82.9%) were unaware of the relationship between CKD and family history. Only 55 (13.0%) recognized swollen feet and ankles and puffiness around the eyes in the morning as signs and symptoms of CKD (Table 3).

3.4. Level of practice among the study participants

Of the total study participants, 184 (43.6%) had good practices towards CKD, while 238 (56.4%) had poor practices, with a mean practice score of 5.35 and a SD of 1.81 (Fig. 2). The majority of respondents, 344 (81.5%), did not eat a balanced diet, and 215 (50.9%) did not undergo regular checkups for CKD. Only 41 (9.7%) adhered to their hypertension medication regimen, while 374 (88.6%) did not follow food restrictions prescribed by their physician (Table 4).

Table 1

Socio-demographic characteristics of the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variables	Category	Frequency	Percentage
Age (yr)	18 to 29	23	5.5
	30 to 39	48	11.4
	40 to 69	289	68.5
	≥70	62	14.7
Sex	Male	280	66.4
	Female	142	33.6
Marital status	Single	51	12.1
	Married	293	69.4
	Divorced	27	6.4
	Widow/er	51	12.1
Education status	Unable to read and write	141	33.4
	Read and write without formal education	125	29.6
	Primary (1–8) school	38	9.0
	Secondary (9–12) school	69	16.4
	College (university) and above	49	11.6
Place of residence	Rural	206	48.8
	Urban	216	51.2
Occupation	Unemployed	104	24.6
	Farmer	188	44.5
	Merchant	86	20.4
	Government employee	29	6.9
	Other*	15	3.6
Monthly income (ETB)	<800 ETB	227	53.8
	≥800 ETB	195	46.2

ETB = Ethiopian Birr.
*Daily laborer, student, private worker.

3.5. Factors associated with knowledge among the study participants

In the bivariate logistic regression, variables such as sex, age, educational status, place of residence, occupation, family history of renal disease, and hypertension duration were considered at a *P*-value < .25 and entered into the multivariate logistic regression. However, only place of residence and family history of renal disease showed a significant association with good knowledge at a *P*-value < .05. Urban residents were 4 times more likely to have good knowledge compared to rural residents (AOR = 3.94 at 95% CI = [2.42–6.42]). Participants with a family history of kidney disease were 5.6 times more knowledgeable than those without (AOR = 5.59 at 95% CI = [3.21–9.75]) (Table 5).

3.6. Factors associated with practice among the study participants

In the bivariate logistic regression, variables such as knowledge, age, educational status, place of residence, occupation,

Table 2

Clinical characteristics of the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variables	Category	Frequency	Percentage
Number of drugs	<2	347	82.2
	≥2	75	17.8
Number of comorbidities	None	280	66.4
	≥1	142	33.6
Duration of hypertension	< 4 yr	185	43.8
	4 to 6 yr	134	31.8
	6 to 15 yr	103	24.4
Is there family history of renal disease	Yes	105	24.9
	No	317	75.1
Is there family history of diabetes mellitus	Yes	56	13.3
	No	366	86.7
Is there family history of cardiac disease	Yes	59	14.0
	No	363	86.0
Body mass index (BMI)	<18.5 kg/m^2	16	3.8
	18.5–24.9 kg/m^2	263	62.3
	25 to 29.9 kg/m^2	94	22.3
	≥30 kg/m^2	49	11.6

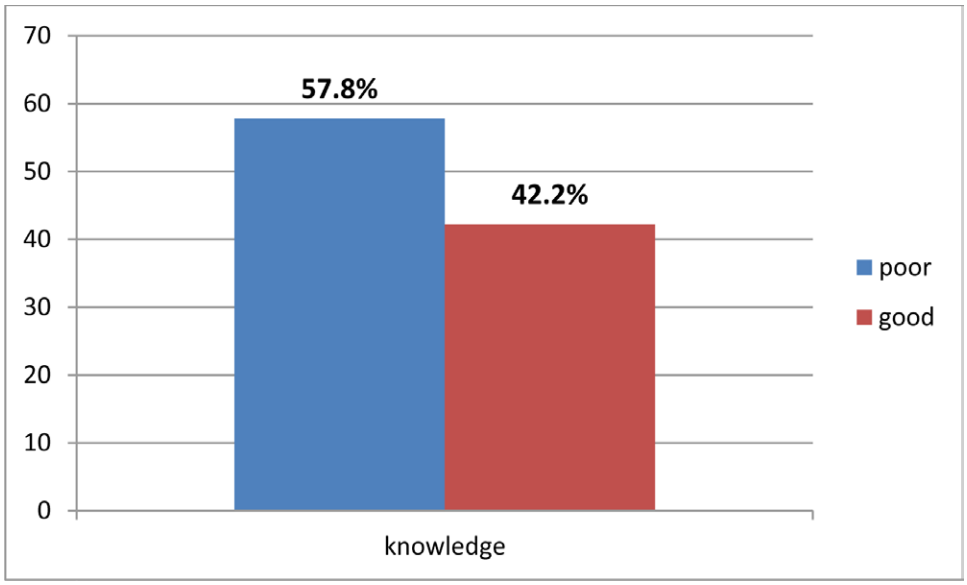

Figure 1. level of knowledge among the study participants regarding the prevention of CKD at public hospital in Bale and East Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422). CKD = chronic kidney disease.

and BMI were considered at a *P*-value < .25 and entered into the multivariate logistic regression. However, only occupation and BMI showed a significant association with good practice at a *P*-value < .05. Government employees were 7 times more likely to have good preventive practices compared to unemployed participants (AOR = 7.29 at 95% CI = [1.79–29.58]). Participants with a normal BMI were 8 times more likely to have good practices than obese patients (AOR = 8.03 at 95% CI = [3.54–18.19]) (Table 6).

Table 3

Knowledge assessment toward prevention of CKD among the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variables	Category	Frequency	Percentage
Kidneys regulate body water and chemicals in the blood such as sodium, potassium, phosphorus, and calcium	Correct	62	14.7
	Incorrect	360	85.3
Kidneys remove drugs and toxins introduced into the body?	Correct	69	16.4
	Incorrect	353	83.6
Kidneys release hormones into the blood to regulate BP, produce red blood cells, and promote strong bones?	Correct	43	10.2
	Incorrect	379	89.8
CKD is a serious illness?	Correct	130	30.8
	Incorrect	292	69.2
CKD is an irreversible illness?	Correct	98	23.2
	Incorrect	324	76.8
Becoming old will decrease the function of the kidneys?	Correct	62	14.7
	Incorrect	360	85.3
Having increased BP makes me more likely to get CKD?	Correct	63	14.9
	Incorrect	359	85.1
Having DM makes me more likely to get CKD?	Correct	61	14.5
	Incorrect	361	85.5
Having a family member with CKD will increase the chances of getting CKD?	Correct	72	17.1
	Incorrect	350	82.9
Having high lipid in the blood will increase the chances of getting CKD?	Correct	64	15.2
	Incorrect	358	84.8
Being a smoker increases the chances of getting CKD?	Correct	100	23.7
	Incorrect	322	76.3
Becoming an obese person will increase the chances of getting CKD?	Correct	100	23.7
	Incorrect	322	76.3
Lack of exercise will increase chances of getting CKD?	Correct	116	27.5
	Incorrect	306	72.5
Drinking alcohol increase chance of getting CKD?	Correct	103	24.4
	Incorrect	319	75.6
Having untreated anemia will increase the chances of getting CKD?	Correct	77	18.2
	Incorrect	345	81.8
Certain procedures like cardiac catheterization & CT scan that require injection of drugs increase the chances of getting CKD?	Correct	49	11.6
	Incorrect	373	88.4
Having kidney stones and recurrent urinary tract infection increases the chances of getting CKD?	Correct	60	14.2
	Incorrect	362	85.8
Routine checkup of laboratory tests like creatinine and serum urea nitrogen will decrease chances of getting CKD?	Correct	63	14.9
	Incorrect	359	85.1
Having CKD results trouble in concentration?	Correct	71	16.8
	Incorrect	351	83.2
Having CKD consequences sleeping trouble?	Correct	55	13.0
	Incorrect	367	87.0
Having CKD brings muscle cramps at night?	Correct	65	15.4
	Incorrect	357	84.6
Having CKD results in swollen feet and ankles & puffiness around the eyes in the morning?	Correct	55	13.0
	Incorrect	367	87.0
Having CKD makes skin dry and itchy?	Correct	66	15.6
	Incorrect	356	84.4
CKD increases the amount of urination?	Correct	71	16.8
	Incorrect	351	83.2
There are 5 stages of CKD, and every stage needs a management plan?	Correct	51	12.1
	Incorrect	371	87.9
People in the final stage of CKD need dialysis as a lifelong treatment?	Correct	66	15.6
	Incorrect	356	84.4

4. Discussion

This study indicated that 178 (42.2%) of participants had good knowledge about CKD. This finding was higher than the study conducted in Malaysia (30.1%)[13] and Nigeria (27.1%).[9] The discrepancy between the 2 studies might be attributed to differences in sample size and the fact that the respondents in this study were selected from a health institution, where they likely had better access to health education compared to community-based participants. However, the study finding was lower than the study conducted in Palestine (61.8%),[1] Jimma (47.9%)[4] and Gondar (68.7%).[10] This might be due to the difference in educational status and place of residence. In Palestine, 70.1% of hypertensive patients had at least a secondary school education, while in our study, 63% of participants were illiterate and had no formal education. In Jimma and Gondar, 61.4% and 82.7% of participants respectively lived in urban areas, compared to 51.2% in this study, which may have reduced their exposure to health information. The lack of organized health education programs and limited media participation in awareness creation may also have contributed to the results. Our findings are consistent with a study conducted in Tanzania, where 38.5% of participants demonstrated good knowledge of CKD.[14]

This study showed that respondents who live in urban area were 4 times (AOR = 3.94 at 95% CI = [2.42–6.42]) more likely to have good knowledge as compared to those who live in rural. This was similar to the study in Tanzania,[14] and the study conducted in Gondar.[10] This might be because urban residents generally have better access to healthcare and health information. Cultural norms and traditional gender roles may

Table 4

Preventive practice toward CKD among the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variables	Category	Frequency	Percentage
Eat well-balanced diet	Good	78	18.5
	Poor	344	81.5
Exercise regularly, such as walking and jogging	Good	64	15.2
	Poor	358	84.8
Regular checkups for diagnosis of CKD	Good	207	49.1
	Poor	215	50.9
keep weight within normal range	Good	86	20.4
	Poor	336	79.6
Smoke cigarette	Good	311	73.7
	Poor	111	26.3
Drink alcohol	Good	286	67.8
	Poor	136	32.2
Take medication with physician recommendation	Good	86	20.4
	Poor	336	79.6
Follow hypertension medications regimen/treatment adherence	Good	41	9.7
	Poor	381	90.3
Follow food restrictions by physician, such as low salt diet and diabetic diet	Good	48	11.4
	Poor	374	88.6
Personal hygiene	Good	288	68.2
	Poor	134	31.8
Seek medical help if notice signs of CKD	Good	350	82.9
	Poor	72	17.1
Get family help and support if you get CKD	Good	345	81.8
	Poor	77	18.2
Check blood pressure regularly	Good	68	16.1
	Poor	354	83.9

deter some groups from pursuing education in rural areas, especially women and girls. Household duties, agricultural work, and early marriage frequently take precedence over education. Our study found that participants with a family history of kidney disease were 5.6 times more likely to have good knowledge of CKD than those without a family history of the disease, with an adjusted odds ratio (AOR) of 5.59 and a 95% confidence interval (CI) of (3.21–9.75). This finding was consistent with the study done in Australia[15] and in Jimma.[4] This may be because participants who have lived with or are currently living with someone with kidney disease are more likely to have acquired health- related information and adopted healthy lifestyle habits.

Of the 442 participants in the study, 184 (43.6%) demonstrated good practices in preventing CKD. This finding was lower than the study conducted in Malaysia (88.3%).[13] This might be due to difference in health education program and economic status. Our study revealed that the result of good practice was in line with the study done in Gondar (48.4%).[10] In this finding, respondents who were governmental employee were 7 times (AOR = 7.29 at 95% CI = [1.79–29.58]) more likely to have good practice than unemployed. The possible explanation

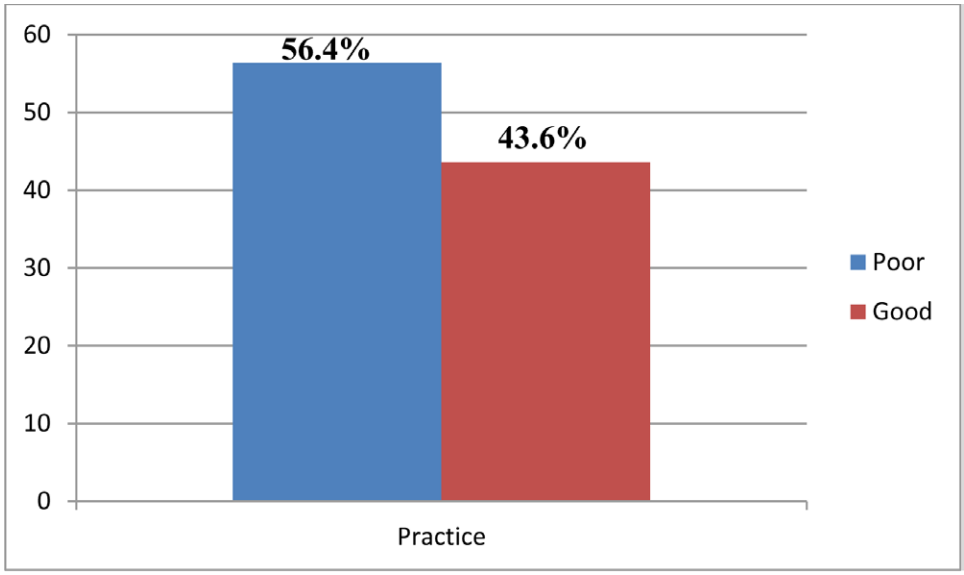

Figure 2. level of practice among the study participants toward prevention of CKD at public hospital in Bale and East Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422). CKD = chronic kidney disease.

Table 5

Bivariate and multivariate analysis of factors associated with knowledge toward prevention of CKD among the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variable	Categories	Knowledge		COR at 95% of CI	AOR at 95% of CI	*P*-value
		Poor	Good			
Sex	Male	152	128	1	1	
	Female	92	50	0.64 (0.42–0.98)	0.67 (0.41–1.11)	.119
Age (yr)	18 to 29	8	15	5.88 (2.08–16.56)	3.49 (0.98–12.45)	.053
	30 to 39	24	24	3.13 (1.39–7.05)	1.78 (0.66–4.80)	.251
	40 to 69	165	124	2.35 (1.26–4.40)	1.72 (0.84–3.53)	.139
	≥70	47	15	1	1	
Educational status	Unable to read and write	99	42	1	1	
	Read and write without formal education	76	49	1.52 (0.91–2.53)	1.12 (0.61–2.06)	.713
	Primary (1–8) school	21	17	1.91 (0.92–3.98)	1.64 (0.69–3.92)	.261
	Secondary (9–12) school	29	40	3.25 (1.79–5.92)	1.61 (0.74–3.50)	.234
	College (university) and above	19	30	3.72 (1.89–7.34)	1.66 (0.62–4.43)	.312
Place of residence	Rural	157	49	1	1	
	Urban	87	129	4.75 (3.12–7.23)	3.94 (2.42–6.42)	.000*
Occupation	Unemployed	68	36	1	1	
	Farmer	119	69	1.09 (0.66–1.81)	1.07 (0.58–1.95)	.830
	Merchant	42	44	1.98(1.10–3.55)	1.19(0.57–2.49)	.650
	Government employee	9	20	4.19(1.73–10.16)	2.38(0.72–7.92)	.156
	Other[a]	6	9	2.83(0.94–8.59)	1.99(0.52–7.66)	.312
Family hx of kidney disease	Yes	31	74	4.89(3.02–7.90)	5.59(3.21–9.75)	.000*
	No	213	104	1	1	
Hypertension duration (yr)	<4	100	85	1	1	
	4 to 6	79	55	0.82(0.52–1.28)	0.93(0.55–1.58)	.799
	6 to 15	65	38	0.69(0.42–1.13)	0.72(0.39–1.31)	.279

AOR = adjusted odds ratio, CI = confidence interval, COR = crude odds ratio.

**P*-value < .05 (significant association).

Table 6

Bivariate and multivariate analysis of factors associated with practice toward prevention of CKD among the study participants at public hospital in Bale and east Bale zone, Oromia, Southeast Ethiopia, 2023 (n = 422).

Variable	Categories	Practice		COR at 95% of CI	AOR at 95% of CI	*P*-value
		Poor	Good			
Knowledge	Poor	148	96	1	1	
	Good	90	88	1.51(1.02–2.23)	1.12 (0.69–1.82)	.656
Age (yr)	18 to 29	8	15	2.13(0.79–5.78)	1.78 (0.51–6.15)	.365
	30 to 39	26	22	0.96(0.45–2.05)	0.68(0.26–1.74)	.417
	40 to 69	171	118	0.78 (0.45–1.36)	0.61 (0.32–1.18)	.140
	≥70	33	29	1	1	
Educational status	Unable to read and write	85	56	1	1	
	Read and write without formal education	79	46	0.88 (0.54–1.45)	0.94 (0.52–1.69)	.836
	Primary (1–8) school	23	15	0.99 (0.48–2.06)	0.92 (0.39–2.18)	.854
	Secondary (9–12) school	29	40	2.09 (1.17–3.76)	1.48 (0.68–3.22)	.320
	College (university) and above	22	27	1.86 (0.97–3.59)	0.95 (0.33–2.680)	.916
Place of residence	Rural	123	83	1	1	
	Urban	115	101	1.30 (0.88–1.91)	0.84 (0.51–1.38)	.482
Occupation	Unemployed	55	49	1	1	
	Farmer	120	68	0.64 (0.39–1.04)	0.63 (0.36–1.11)	.112
	Merchant	50	36	0.81 (0.45–1.44)	0.75 (0.36–1.56)	.438
	Government employee	6	23	4.30 (1.62–11.44)	7.29 (1.79–29.58)	.005*
	Other[a]	7	8	1.28 (0.43–3.79)	1.22 (0.32–4.64)	.775
BMI	<18.5 kg/m^2	11	5	2.02 (0.56–7.27)	1.90 (0.47–7.67)	.365
	18.5–24.9 kg/m^2	104	159	6.79 (3.16--14.59)	8.03 (3.54–18.19)	.000*
	25 to 29.9 kg/m^2	83	11	0.59 (0.23–1.54)	0.62 (0.22–1.71)	.355
	≥30 kg/m^2	40	9	1	1	

AOR = adjusted odds ratio, CI = confidence interval, COR = crude odds ratio.

a Daily laborer, student, private worker.

*P-value < .05 (significant association).

could be governmental employers have good educational status than unemployed and so they are high likely to perform healthy life practice by exploring health care information. This study also indicated that respondents with normal BMI were 8 times more likely to have good practice than obese patients (AOR = 8.03 at 95% CI = [3.54–18.19]). This finding was supported by study done in Palestine.[1] This might be participants with normal BMI were more likely to follow healthier practice and obese respondents are more likely to have uncontrolled hypertension.

5. Strength and limitation

The strength of the study lies in its data collection method, which was a face-to-face interview. This method is particularly effective in minimizing bias for several reasons. The findings of the study may not be generalizable to other hospitals in Ethiopia due to differences in the socio-demographic status of the population, the setup of health facilities, and hospital policies. Additionally, the study did not investigate the attitudes and beliefs of hypertensive patients regarding CKD prevention, which could have provided further insight into knowledge gaps.

6. Conclusion

The study indicated that 42.2% of hypertensive patients had good knowledge of CKD, while 43.6% demonstrated good practices in preventing the disease. Factors associated with good knowledge included urban residence and a family history of kidney disease, while being a government employee and having a normal BMI were associated with good practices among participants. The MOH, Oromia regional and Bale Zone health bureaus, NGOs, and hospitals chief executive officers should design culturally appropriate educational materials and train community health workers within 6 to 12 months. Hospital managers and healthcare professionals should develop workplace health programs focusing on regular screenings, BMI monitoring, and lifestyle interventions within 3 to 6 months.

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