Knowledge, Attitude and Practice Regarding Kidney Diseases among Primary Care Physicians working in Nepal

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Abstract

Background: Medical officers and resident doctors as primary care physicians (PCPs) are the first contact health care providers to most of the kidney disease patients in Nepal. This study intends to assess knowledge, attitude and practice regarding kidney diseases among these non-nephrology doctors, working in different health institutes all over Nepal.

Methods: This was a descriptive, cross sectional, questionnaire based study, conducted over the span of 12 weeks among the primary care physicians. The Ethical Review Board of Nepal Health Research Council had approved our protocol prior to starting the study (Reference number: 2807). An arbitrary scoring system was used to classify knowledge, attitude and practice scores as: 0 to <50% - Poor score, 50% to <75% - Moderate score, ≥ 75% - Good score. Data was entered in Microsoft Excel and analyzed using IBM Statistical Package for the Social Sciences version 25.

Results: Out of 239 PCPs enrolled in our study, 41 (17%) obtained good knowledge scores, 124 (51.8%) obtained good attitude scores and 198 (82.8%) obtained good practice scores. None of the study participants had negative attitude towards kidney diseases. The mean scores obtained in our study were 23.03±4.49 for knowledge, 17.64±2.30 for attitude and 6.27±1.24 for practice domains out of total score of 37, 24, and 8 respectively.

Conclusions: Our study demonstrated that the majority of PCPs had obtained moderate to poor knowledge scores regarding kidney diseases. However, the majority had a positive attitude and good practice regarding kidney diseases in our study.

Introduction

Acute kidney injury (AKI) and chronic kidney disease (CKD) contributes to end-stage renal disease (ESRD), and are associated with severe extra-renal morbidities and long-term mortality.[1] CKD is a worldwide public health problem, with adverse outcomes of kidney failure, cardiovascular disease, and premature deaths.[2]

The majority of kidney diseases are initially managed by non-specialists due to scarcity of nephrologists globally in relation to prevalence of kidney diseases.[3] There has been a large gap in knowledge and practice in several studies conducted regarding kidney diseases from different parts of the world like Malawi,[4] Pakistan,[5] Nigeria.[6]

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We have very limited studies regarding knowledge, attitude and practice (KAP) on kidney diseases from Nepal. Medical officers and residents doctors in teaching institutes are the first contact primary care physicians (PCPs) in most of the health care facilities in Nepal. We intend to study knowledge, attitude and practice regarding kidney diseases among these PCPs, working as the first contact health care providers, at different health institutes all over the country.

Methods

This cross-sectional study was conducted over the span of 12 weeks from 1st September, 2020 till 31st November, 2020. The study protocol was approved by the Ethical Review Board of Nepal Health Research Council (Reference number: 2807) prior to the start of data collection. Convenient sampling was done and data was collected through an online questionnaire, which was circulated to primary care physicians that chiefly included medical officers and resident doctors, working in different health institutes, all over Nepal. PCPs with less than six months of work experience were excluded from the study. The nephrology specialists and those who had already obtained post graduate degree in any other specialty were also excluded from the study.

All PCPs needed to answer a yes-no question before proceeding to the questionnaire to confirm their voluntary participation. After confirmation, they were directed to a questionnaire which consisted of four sections: first section had demography related questions, second section had eleven questions related to knowledge, third section had five questions related to attitude and fourth section had ten questions related to practice regarding kidney diseases. In our KAP survey questionnaire, the knowledge section consisted of questions on the updated definitions, stages and risk factors of acute and chronic kidney disease. It also had questions on nephrotoxic drugs, high and low potassium-containing foods, emergency indications for dialysis and treatment of hyperkalemia. Attitude section consisted of questions to assess promptness of primary care physicians to seek specialized care for kidney disease patients. Questions in practice section were devised to analyze the behavior of physicians for dietary counseling, measurement of urine output and weight of kidney disease patients, preservation of non-dominant arm in patients of end stage renal disease and tendency to calculate estimated glomerular filtration rate (eGFR) rather than only relying on serum creatinine to assess kidney function in a patient (Appendix 1).

Each correct answer in knowledge section and safe practice was scored 1 point. Correct answers in knowledge and practice section were assigned as per current standard guidelines. Multiple correct answers in a question got points for each correct answer. Incorrect answer/ unsafe practice/ I don't know was scored 0 point. Scoring in the attitude section was done as per Likert scale from 1 to 5. Maximum scores that could be obtained for knowledge, attitude and practice were 37, 24 and 8 respectively. An arbitrary scoring system was used to classify knowledge, attitude and practice scores as: 0 to <50% - Poor score, 50% to <75% - Moderate score, 75% and above - Good score. Attitude score of <50% was regarded as negative attitude and score of more than or equal to 50% was regarded as positive attitude.

Pretesting was done with first 50 responses of the primary care physicians. Cronbach's alpha was calculated for the reliability analysis of our study questionnaire during pretesting. The value was calculated as 0.724 after which only the questionnaire was circulated to rest of the study population.

Total number of medical officers registered under Nepal Medical Council till 31st July, 2020 was 18588.[7] The formula used for calculation of sample size in our study was:

Sample size (N) =

$$\frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 n}\right)}$$

Where z score = 1.96 at 95% confidence interval,

p = standard deviation,

e = margin of error,

n = population size (taken as 18588).

With 95% confidence interval, 50% standard deviation and 7% margin of error, calculated sample size for our KAP study was at least 194. SPSS IBM version 25.0 was used for analysis. Descriptive statistics were presented using means and standard deviation for continuous variables, and frequencies and percentages for categorical variables.

Results

The study enrolled 239 primary care physicians which included 198 medical officers and 41 resident doctors working in different health institutions all over Nepal. 209 (87.5%) participants were less than 30 years of age. 172 (72%) had work experience of more than one year and 108 (42.5%) PCPs were working in province three of Nepal. 61 (25.5%) PCPs were working in province level hospitals, 70 (20.9%) in primary level hospitals, 35 (14.6%) in autonomous institutions and 21 (12.1%) were working in private hospitals. 94 (39.3%) doctors were working in centers with dialysis facilities, 81 (34%) were working in health institutes with a dedicated nephrology unit/nephrologist and 116 (48.5%) had experience of working in centers with nephrology facilities in the past (Table 1).

The mean scores obtained in our study were 23.03±4.49 for knowledge, 17.64±2.30 for attitude and 6.27±1.24 for practice domains (Table 2). Forty one (17%) PCPs obtained good knowledge scores, 165 (69%) had moderate knowledge scores, and rest 33 (14%) obtained poor knowledge scores (Figure 1). None of the respondents had negative attitude to kidney diseases. 124 (51.8%) PCPs had obtained good attitude scores and 115 (48.2%) had obtained moderate attitude scores. Around 198 (82.8%) PCPs had obtained good practice scores in our study (Figure 1).

Regarding the definition of acute kidney injury, decrease in urine output to less than 0.5 ml/hour for more than six hours was the most common AKI criteria identified by 170 (79.5%) study participants, whereas only 107 (44.5%) PCPs identified increase in serum creatinine by 0.3 mg/dl within 48 hours to be the criteria for AKI. 164 (68.6%) doctors correctly responded as three months to be the duration of functional kidney damage for diagnosis of chronic kidney disease. 216 (90.4%) study participants correctly identified the number of stages of CKD to be five (Table 4).

Around 205 (85.8%) PCPs responded that they attend to cases of kidney diseases in their daily practice. Only 104 (43.6%) doctors responded that kidney diseases were adequately managed in their medical practice. 26 (10.9%) participants responded that they had received no training at all and 119 (49.8%) responded that they had received some training during their under-graduation program to identify kidney diseases and provide basic/emergency management to such patients. 186 (77.8%) PCPs responded that it was possible to have kidney disease despite normal creatinine. However, only 107 (44.8%) doctors calculated estimated glomerular filtration rate (eGFR) in elderly patients with normal serum creatinine while prescribing antibiotics. The formula most commonly used by the study participants to calculate eGFR was Cockroft-Gault formula (66.1%) followed by Modification of Diet in Renal Disease equation (19.7%) and Chronic Kidney Disease- Epidemiology Collaboration equation (14.2%) (Appendix 1).

Discussion

Nephrology was known to be the disregarded specialty in clinical medicine.[8] History of nephrology services in Nepal dates to just four decades back.[9] Nephrology services in Nepal, for the diagnosis and treatment of kidney diseases, has been recently prioritized in health-related national agendas. With the exponential rise of kidney diseases in South Asia, providing specialized comprehensive care to patients of kidney disease is a challenge.10 In such a scenario, most of the patients of renal disease are attended by non-nephrology doctors.

International Society of Nephrology (ISN) had launched 0 by 25 campaign in the year 2013 with the goal to have no deaths from preventable or untreated AKI in low resource settings by 2025 A.D.[11] This necessitates early identification of AKI, avoidance of further insults and aggressive management of AKI in community settings, which requires first contact health care providers and PCPs to play active roles. Assessing knowledge, attitude and behaviors of these primary care physicians regarding kidney diseases is of utmost importance in order to identify areas of deficiencies that need to be emphasized when organizing educational programs to improve patient outcomes.

Our study showed that 198 (83%) PCPs enrolled in our survey had obtained moderate to poor knowledge scores. Only 41 (17%) doctors obtained good knowledge scores (Figure 1). These findings are somewhat similar to a study by Anees et al from Pakistan where only 18.4% non-nephrology doctors had good knowledge.[5] Another study by Ali et al from Sudan reported only 23.7% medical officers had good knowledge regarding kidney diseases.[12] None of the study participants in our study had negative attitude to kidney diseases. Likewise 198 (83%) PCPs had obtained good practice scores in our study (Figure 1). This finding was in contrast to the findings by Ali et al where 56.6% non-nephrology doctors had poor practice regarding kidney diseases.[12]

Majority of the doctors in our study had good practice scores. This was a rewarding finding in our study as most of the enrolled physicians were young Nepalese doctors, practicing in both rural and urban settings, from primary to tertiary level health institute. Majority of respondents obtained good practice scores in contrast to moderate to poor knowledge scores; this could be explained with the type of questions set in the knowledge and practice section (Appendix 1). Knowledge section consisted of questions on the updated definitions, renal diet, nephrotoxic drugs, and major risk factors for AKI; however practice questions mainly dealt with basic practice behaviors to be followed while examining a patient with renal dysfunction. Emphasis on diet, urine output, weight and fluid balance of the patient, calculation of estimated glomerular filtration rate, ordering a urine routine examination to search for active urinary sediments and preservation of non-dominant arm in an ESRD patient are basic behavioral skills that a physician need to master while approaching a patient of kidney disease. Implementing these simple yet vital practices would eventually assist doctors for early diagnosis and better management of nephrology patients. Most of the primary care physicians enrolled in our study had acknowledged these correct practices and behaviors.

Only 109 (45.6%) doctors identified chronic liver disease (CLD) and 125 (52.3%) doctors identified elderlies as the risk factors of acute kidney injury (Table 3). Prevalence of AKI ranges from 20 to 50% among hospitalized patients with cirrhosis.[13] Similarly, elderlies are prone to develop AKI due to kidney senility, presence of comorbidities and medical interventions like surgeries, drugs and use of contrasts.[14] Primary care physicians need to strongly consider elderlies and CLD as a risk factor of AKI and try to avoid any nephrotoxic practices that would increase risk of kidney damage in such group of patients. It is imperative that kidney function must be assessed with eGFR in such groups of patients to identify subclinical kidney dysfunction and avoid renal insults as much as possible.

Aminoglycosides (Gentamicin) and non-steroidal anti-inflammatory drugs (NSAIDS- Ibuprofen) were the most commonly identified groups of nephrotoxic drugs in our study (Table 3). Furosemide, a loop diuretic, was identified as a nephrotoxic drug by less than one third of total respondents (Table 3). A multi-centric study in Shanghai reported diuretics to be the cause of 22.2% of all drug-induced AKI, ranked only after antibiotics.[15] It is necessary to train medical doctors to acknowledge nephrotoxic effect of loop diuretics and individualize diuretic dose in every patient depending on volume status of the patient. Similarly, pantoprazole, a proton pump inhibitor (PPI), is another drug whose nephrotoxic potential was identified by only 68 (28%) respondents in our study (Table 3). Acute interstitial nephritis related to use of pantoprazole was first reported in 2004 A.D and since then this complication is increasingly being recognized worldwide.16 It is necessary that PCPs need to have high degree of clinical suspicion in cases of unexplained renal failure ensuing few weeks to months of starting PPIs so that offending drug could be discontinued early to ensure favorable outcome in terms of renal recovery. Amlodipine, amoxicillin and azithromycin were misidentified as nephrotoxic medication by some PCPs in our study. Except for some rare case reports of interstitial nephritis induced by amoxicillin and azithromycin, these drugs are considered to be relatively safer for use in patients with renal impairment.

Hyperkalemia has been linked to cardiotoxicity and increases the odds of mortality within one day of the event in patients of CKD.[17] Current recommendations are to limit the potassium intake to less than 2000mg to 3000mg per day in CKD patients with eGFR of <30-60 ml/min/m^2.[18] Low doctor-patient ratio and lack of knowledge among treating physicians often lead to inadequate dietary counseling to patients of kidney diseases. Unable to understand the implications of renal diet, patients suffer from unnecessary pill burden to manage hyperkalemia, financial loss, adverse events, and even premature deaths. Around 227 (95%) PCPs in our study correctly identified bananas as high potassium-containing food. However, oranges, tomatoes, chocolates, nuts and legumes, milk and milk products were

identified as high potassium-containing foods by less than one half of the total respondents in our study. Apples, eggs, white meat products like chicken are low potassium-containing foods which were misidentified as having high potassium content by some doctors in our study (Table 3).

Major milestones in the field of nephrology in Nepal were the introduction of sub-specialty post-graduation nephrology programs a decade back, provision of extended government support to end stage renal disease patients with 'Free dialysis to all' program in 2016 A.D and the kidney transplant program that started in 2008 A.D.[19] With achievement of these milestones, undergraduate teaching has recently started focusing on nephrology as an indispensable specialty. However, 145 (60.7%) primary care physicians in our study responded that they had received no training at all or had only received some training during their undergraduate course for diagnosis and basic/ emergency management of kidney disease patients (Appendix 1). Focused and practical educational curriculum and subspecialty clinical rotations during undergraduate teaching should be promoted to improve knowledge regarding kidney diseases among PCPs. Targeted trainings and practice sessions must be organized at community level for these first contact health care providers for improving knowledge and practices related to management of kidney diseases. With the rising number of kidney disease patients outnumbering the number of nephrologists in current scenario, PCPs who have reached every nook and cranny of this country, could play a critical role to integrate basic nephrology services as part of primary patient care. Thus, it is high time that all stakeholders need to plan and execute programs for improving knowledge, attitude and practice of primary care physicians for better management of patients with renal dysfunction.

The main limitation of our KAP study was that it was based on a self-reported questionnaire, which may be susceptible for self-presentation bias. The study included heterogeneous group of primary care physicians working in different levels of health institute and from different provinces of Nepal. Thus, it is difficult to generalize our results to all of the primary care physicians working in Nepal.

Conclusions

To conclude, primary care physicians are the first contact health care providers in most of the health institutes of rural and urban Nepal. Our study demonstrated that the majority of primary care physicians in our study had moderate to poor knowledge scores but a positive attitude and had good practice scores regarding kidney diseases.

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Table 1. Demographic profile of the primary care physicians (N-239).

Demographic profile	Category	Frequency n (%)
Age	16-29 years	209 (87.5)
	30-44 years	29 (12.1)
	≥45 years	1 (0.4)
Gender	Male	155 (64.9)
	Female	84 (35.1)
Years of work experience	< 1 year	67 (28)
	1to 5 years	160 (66.9)
	> 5 years	12 (5)
Currently Working province	Province 1	61 (25.5)
	Province 2	18 (7.5)
	Province 3	108 (45.2)
	Province 4	18 (7.5)
	Province 5	14 (5.9)
	Province 6	12 (5)
	Province 7	8 (3.3)
Current Workplace (Level of Health Institution)	Primary Hospitals	70 (20.9)
	Province level Hospitals	61 (25.5)
	Federal Hospitals	44 (18.4)
	Private Medical Institutes	21 (12.1)
	Autonomous Institutions	35 (14.6)
Working in a center with dialysis facilities	Yes	94 (39.3)
	No	145 (60.7)
Working in a center with a nephrology unit/ nephrologist	Yes	81 (33.9)
	No	158 (66.1)
Experience of working in a center with nephrology facilities	Yes	116 (48.5)
	No	123 (51.5)
Received any trainings or attended seminars related to nephrology	Yes	29 (12.1)
	No	210 (87.9)

Table 2. Knowledge, attitude and practice scores among the primary care physicians (N-239).

Variables	Total score	Mean ± S.D.	Min.	Max.
Knowledge score	37	23.03±4.49	12	35
Attitude score	24	17.64±2.30	13	23
Practice score	8	6.27±1.24	0	8

**S.D. – standard deviation*

Figure 1. Distribution of knowledge, attitude and practice scores among the primary care physicians (N-239).

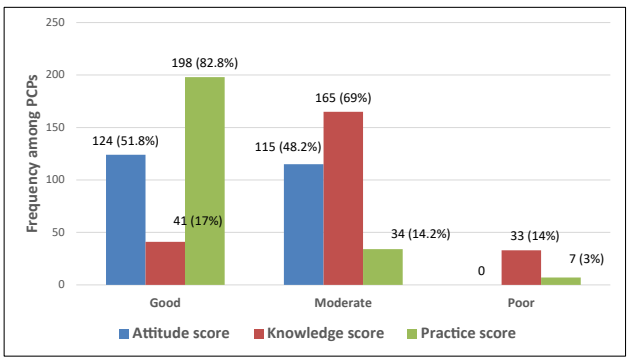

Table 3. Frequency n (%) of pertinent responses by the primary care physicians related to management of kidney diseases (N-239).

Identification of risk factors of AKI n (%)	Identification/ Misidentification of nephrotoxic drugs n (%)	Identification/ Misidentification of foods with high potassium n (%)
Elderlies 125 (52.3)	Furosemide 71 (29.7)	Banana 227 (95)
Diabetes mellitus 161 (67.4)	Ibuprofen 216 (80.4)	Orange 75 (31.4)
Hypotension 151 (63.2)	Telmisartan 62 (25.9)	Spinach 128 (53.6)
Hypovolemia 212 (88.7)	Spironolactone 45 (18.2)	Tomato 119 (49.8)
Heart failure 170 (71.1)	Gentamicin 222 (92.9)	Nuts and legumes 86 (36)
Chronic liver disease 109 (45.6)	Pantoprazole 67 (28)	Chocolate 50 (20.9)
Major surgeries 180 (75.3)	Amlodipine 25 (10.5)	Milk and milk products 47 (19.7)
Burns 216 (90.4)	Amoxicillin 46 (19.2)	Apple 16 (6.7)
Sepsis 216 (90.4)	Azithromycin 36 (15.1)	Chicken 25 (10.5)

Table 4. Frequency n (%) of responses by the primary care physicians regarding definition of acute and chronic kidney diseases (N-239).

Definition of Acute kidney injury	Frequency n (%)
Increase in serum creatinine by ≥ 0.3mg/dl within 48 hours	170 (71.1)
Increase in serum creatinine by ≥ 50% within prior 7 days	107 (44.8)
Decrease in urine output to <0.5ml/kg/hr for > 6 hours	190 (79.5)
None of the above	5 (2.1)
Duration of functional damage to define Chronic Kidney Disease	Frequency n (%)
one month	7 (2.9)
two months	5 (2.1)
three months	164 (68.6)
six months	63 (26.4)
Stages of Chronic kidney disease	**Frequency n (%)**
one	0
two	2 (0.8)
three	21 (8.8)
five	216 (90.4)

Appendix 1: Frequency of responses n (%) by the primary care physicians (N-239) in the Knowledge, Attitude and Practice (KAP) survey

Section A: Demographic profile of the primary care physicians

Age

16 to 29 – 209 (87.4)

30 to 44 – 29 (12.1)

45 to 60 – 1 (0.4)

60 years and above - 0

Gender

Male – 155 (64.9)

Female – 84 (35.1)

Years of experience -

less than one year – 67 (28)

1 to 5 years – 160 (66.9)

5 to 10 years – 10 (4.2)

more than 10 years – 2 (0.8)

Which province are you currently working?

Province 1 – 61 (25.5)

Province 2 – 18 (7.5)

Province 3 – 108 (45.2)

Province 4 – 18 (7.5)

Province 5 – 14 (5.9)

Province 6 – 12 (5)

Province 7 – 8 (3.3)

What level of health institution are you currently working?

Primary hospitals (includes PHC upgraded hospitals) – 70 (29.3)

Province level hospitals (secondary hospitals and provincial health science academy) – 61 (25.5)

Federal hospitals (tertiary hospitals/super specialty hospitals/ federal health science academy) – 44 (18.4)

Private medical colleges/Nursing homes – 29 (12.1)

Autonomous health science universities (like BPKIHS/IOM-TUTH/PAHS/NAIHS/others) – 35 (14.6)

Does your current workplace have facility of dialysis?

Yes – 94 (39.3)

No – 145 (60.7)

Does your current workplace has nephrologist/s and dedicated nephrology unit?

Yes – 81 (33.9)

No – 158 (66.1)

Do you have experience of working in a center with nephrology facilities in the past?

Yes – 116 (48.5)

No – 123 (51.5)

Have you attended any trainings/seminars/workshops/ conferences related to kidney disease after you have started working as a doctor?

Yes – 29 (12.1)

No – 210 (87.9)

Section B: Knowledge

Which of the following is/are included in definition of acute kidney injury? (multiple tick marks were allowed)

increase in serum creatinine by ≥ 0.3mg/dl within 48 hours – 170 (71.1)

increase in serum creatinine by ≥ 50% within 48 hours – 107 (44.8)

decrease in urine output to <0.5ml/kg/hr for > 6 hours - 190 (79.5)

none of the above – 5 (2.1)

How long does kidney damage, either structural or functional, has to be there to diagnose a case of chronic kidney disease?

1 month – 7 (2.9)

2 months – 5 (2.1)

3 months - 164 (68.6)

6 months – 63 (26.4)

How many stages of chronic kidney disease do you know?

one – 0

two - 2 (0.8)

three - 21 (8.8)

five - 216 (90.4)

Is it possible to have kidney disease with normal serum creatinine?

Yes – 186 (77.8)

No - 31 (13)

I don't know – 22 (9.2)

Is it possible to have kidney disease with normal urine output?

Yes – 194 (81.2)

No - 31 (13.4)

I don't know – 13 (5.4)

A case of end stage renal disease under regular hemodialysis, who has missed his/her dialysis for last 10 days, presents to emergency with dizziness and has bradycardia in ECG. What is the medication you would like to give to the patient immediately?

iv atropine – 50 (20.9)

iv adrenaline – 14 (5.9)

iv noradrenaline – 15 (6.3)

iv calcium gluconate – 160 (66.9)

Which of the following are potentially nephrotoxic medications? (multiple tick marks allowed)

Furosemide – 71 (29.7)

Ibuprofen – 216 (80.4)

Telmisartan – 62 (25.9)

Amlodipine – 25 (10.5)

Spironolactone – 45 (18.2)

Gentamicin – 222 (92.9)

Amoxicillin – 46 (19.2)

Azithromycin - 36 (15.1)

Pantoprazole – 67 (28)

Which of the following group of medications do you prescribe first in a diabetic patient with hypertension and proteinuria in urine routine microscopy, provided her serum creatinine is normal?

Calcium channel blockers - 19 (7.9)

Thiazide group of diuretics - 12 (5)

Angiotensin converting inhibitors/ angiotensin receptor blockers – 203 (84.9)

Beta blockers – 5 (2.1)

Which of the following are risk factors for occurrence of acute kidney injury? (multiple tick marks allowed)

Elderlies – 125 (52.3)

Diabetes mellitus – 161 (67.4)

Hypotension – 151 (63.2)

Hypovolemia – 212 (88.7)

Congestive cardiac failure – 170 (71.1)

Chronic liver disease – 109 (45.6)

Chronic kidney disease - 160 (66.9)

Sepsis – 216 (90.4)

Major surgeries – 180 (75.3)

Radiocontrast agent – 203 (84.9)

Burns – 216 (90.4)

Which of the following should be avoided as far as possible in cases of end stage renal disease due to their high potassium content?

Banana – 227 (95)

Orange - 75 (31.4)

Spinach - 128 (53.6)

Tomato - 119 (49.8)

Milk and milk products – 47 (19.7)

Nuts and legumes – 86 (36)

Chocolate – 50 (20.9)

Apple - 16 (6.7)

Chicken – 25 (10.5)

Eggs 29 (12.1)

What are the emergency indications of hemodialysis?

Serum bicarbonate levels less than 22meq/dl – 66 (27.6)

Hyperkalemia not responding to medical treatment – 228 (95.4)

Symptoms of uremia – 190 (79.5)

Volume overload not responding to medical treatment – 176 (73.6)

Anuria or oliguria – 118 (49.4)

Acute digoxin toxicity – 111 (46.4)

All acute kidney injury secondary to sepsis – 57 (23.8)

Section C: Attitude

Scoring in the attitude section has been done as per Likert scale from 1 to 5

Do you think a case of acute kidney injury need to be consulted with a nephrologist?

almost never - 0

usually not – 16 (6.7)

occasionally - 40 (16.7)

usually - 93 (38.9)

almost always – 90 (37.7)

Do you think a case of chronic kidney disease need to be consulted with a nephrologist?

almost never - 2 (0.8)

usually not - 1 (0.4)

occasionally not – 3 (1.3)

usually - 30 (12.6)

almost always – 203 (84.9)

Do you agree that kidney diseases are being adequately and promptly managed in your/our medical practice?

Strongly disagree - 14 (5.9)

Disagree - 71 (29.7)

Undecided - 50 (20.9)

Agree - 90 (37.7)

Strongly agree – 14 (5.9)

On a scale of 1 to 5 (with 1 being can't manage at all to 5 being can efficiently manage), how well do you think you can manage a case of hyperkalemia in emergency?

1 – 6 (2.5)

2 – 38 (15.9)

3 - 88 (36.8)

4 – 82 (34.3)

5 – 25 (10.5)

Do you think you have received adequate training during your educational program to be able to promptly identify kidney diseases and give basic/emergency management to a kidney disease patient?

not at all – 26 (10.9)

to some extent – 119 (49.8)

to considerable extent – 82 (34.3)

to great extent - 12 (5)

Section D: Practice

How often do you have to attend case of acute kidney injury/ chronic kidney disease in your medical practice? (no scoring to this question)

never - 6 (2.5)

rare - 28 (11.7)

sometimes – 102 (42.7)

often - 92 (38.5)

always – 11 (4.6)

A 32 year old female patient incidentally finds out for the first time that her serum creatinine level is 8 mg/dl during her general health checkup. What would you do now?

as she is asymptomatic, you advise her to avoid nephrotoxic drugs and repeat creatinine level in next 2 weeks – 32 (13.4)

investigate to find out any reversible cause of deranged kidney function and treat accordingly - 201 (84.1)

counsel her for renal replacement therapy – 6 (2.5)

If a patient of chronic kidney disease under conservative medical management comes to your OPD for regular visit, which arm do

you usually use to measure blood pressure of that patient?

dominant arm – 140 (58.6)

non dominant arm – 73 (30.5)

any of above – 26 (10.9)

If a patient of chronic kidney disease comes to your OPD for regular visit, do you spend some time counseling him/her on her diet?

Yes - 227 (95)

No – 12 (5)

If a patient of chronic kidney disease comes to your OPD for regular visit, do you measure weight of that patient?

Yes – 197 (82.4)

No – 42 (17.6)

If a case of chronic kidney disease under conservative medical management is planned to have an intravenous access, do you advise your paramedical staff to avoid puncturing veins of the non-dominant arm?

Yes - 175 (73.2)

No – 64 (26.8)

Do you order urine routine examination in any case of kidney disease to look for urinary sediments?

Yes – 217 (90.8)

No – 22 (9.2)

Which formula do you mostly use to calculate estimated glomerular filtration rate? (no scoring to this question)

Cockroft-Gault formula – 158 (66.1)

MDRD equation (Modification of Diet in Renal Disease) – 47 (19.7)

CKD-EPI equation (Chronic Kidney Disease – Epidemiology collaboration) – 34 (14.2)

Do you calculate estimated glomerular filtration rate in an 80 year old patient with normal serum creatinine while prescribing antibiotics?

Yes - 107 (44.8)

No - 132 (55.2)

Do you strictly monitor urine output in critically ill patients?

Yes – 234 (97.9)

No – 5 (2.1)