



Research articles

Dietary management of CKD in diabetic patient in a tertiary care hospital

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ABSTRACT

Chronic kidney disease (CKD) is perhaps the most pervasive entanglements of diabetes, and patients with diabetic kidney disease (DKD) have a considerably higher danger of cardiovascular disease and demise contrasted with their non-diabetic CKD partners. Notwithstanding pharmacologic management procedures, nutritional and dietary mediations in DKD are a fundamental part of the board with the potential for enhancing kidney function decay and forestalling the improvement of opposite of other end-organ complications. In this study we detailed a patient having CKD and observed all require parameter in dietary management. Initial days, the patients Hb level was below normal, so, he was suggested iron-rich foods like beetroot, turnip, and carrot, raw banana in stewed form or in curry form. Also, in later, as the urea and creatinine content of the patient was too high from the normal patient, he was restricted from consuming protein-rich foods. On the day of discharge, all his reports were up to mark except urea and creatinine, as he was renal patient. Although nutrition intervention for DKD does require calculation of macro- and micronutrient and electrolyte requirements, a growing body of evidence suggests that specific dietary patterns of intake may confer additional therapeutic benefit.

Keywords: Diabetic kidney disease, CKD, nutrition, diet & management.

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INTRODUCTION

Nutrition objectives for grown-ups with diabetes include obtaining control of blood lipids, blood glucose and hypertension; accomplishing a sound body weight; and preventing systemic complications of diabetes.^[1] When applied to people with diabetic kidney disease (DKD), these objectives become more earnestly to accomplish, muddled by the interrelationships between and impacts of individual full scale and micronutrients on kidney function, renal hemodynamics, albuminuria, disease progression, associated metabolic complications, and nutritional status. Disease-specific dietary modifications for DKD are suggested for protein, carbs, fat, and electrolytes, with the last reliant upon singular kidney work.^[2-4] Weight management and actual work are additionally perceived as modifiable danger factors for the counteraction and the executives of both diabetes ^[1,3] and DKD [2,4] and their shared associated complications of cardiovascular disease (CVD), dyslipidemia, and hypertension.^[1-4] Along these lines, prescriptive exercise is a significant adjunctive part of nutritional treatment for people with DKD. In spite of the fact that nutrition intervention for DKD does require computation of full scale and micronutrient and electrolyte necessities, a developing collection of proof recommends

that particular dietary examples of admission may present extra restorative advantage. ^[5-7] Use of these standards may upgrade nourishment mediation for DKD.^[8] In this study we explained details diet like foods to be avoided, foods to be included depending on different biochemical parameter in a DKD patient.

MATERIAL AND METHOD

This is an observational analysis carried out at Institute of Medical Sciences and Sum hospital, Bhubaneswar. The patient history was given below

Patient's history

- On 24/01/21, the patient was advised orally diabetic-renal diet. He was on insulin (8ml morning, 6ml night) As the Hb level of the patient was below normal, so he was suggested iron-rich food by me (example-raw banana, beetroot juice 100ml, turnip, carrot).
- During the period he was consuming from home.

Weight : 60 kg (at the time of admission),**BMI** : 22.9 kg/m² (at the of admission): 23.66 kg/m² (at the time of discharge)**Chief Complaints** : Headache, disturbed sleep

Past Disease : CKD, DM, HTN

Previous Operation : CABG (coronary artery bypass graft surgery) in 2006

Family History : NIL

History of present illness: Patient was apparently alright 15 days back. He developed headache that aggravated during Sleep. Disturbed sleep for 15 days.

Any kind of allergy : NIL

Diagnosis : T2DM, CKD, post CABG, Headache

Diet recommended : Normal diabetic-renal diet (during discharge)

All the biochemical parameter was done as per physicians' prescription.

OBSERVATION AND DISCUSSION

Diet Low protein, low potassium, low fat, moderate carbohydrate. He was having normal diabetic-renal diet. As the Hb level was below normal, so, he was suggested iron-rich foods like beetroot, turnip, carrot, raw banana in stewed form or in curry. From dt-12/01/21 till 31/01/21, there wasn't much difference in the sodium level. It was between 135-138 mEq/L. As the urea and creatinine content of the patient was too high from the normal patient, he was restricted from consuming protein-rich foods. After 2 days, a diet with around 1300kcal, 220g CHO, 20g fat, 35g protein was suggested by me. The Hb content was 11gm/dl, so, stewed beetroot juice was suggested by me in the mid-morning. As the potassium was above the normal level, i.e., 5.4, so potassium-rich foods were restricted. The patient was not much active. He was drowsy. On dt-25/01/21, a diet with around 1400kcal, 220g CHO, 21g fat, 35.9g protein was suggested. There was not any major change in the Hb level, so iron-rich food was suggested to the patient by me. As there was no major change in potassium content, so the potassium-rich was still restricted. There was not much change in the patient's behaviour. There was a little change in the Hb level. It was between 12-13gm/dl. So, the iron-rich food was still suggested by me. The potassium level has decreased a little bit. The patient was looking fresh and was quite active and was interacting with his family members as informed by his attendant.

The potassium-rich, protein-rich foods were still restricted as the patient was a renal patient. As per report of dt-30/01/21, the Hb content was normal, so no more iron-rich foods were suggested. He was having food from the central therapeutic kitchen and all the reports were also good. The patient was active and also interacted with me. On the day of discharge, dt-01/02/21, all his reports were upto mark except urea and creatinine, as he was renal patient. He was much active and happy too. He and his family members were made understood about his diet, what to avoid and what to include and what are the restrictions for his good health and

a sample menu and a diet

Chart was given to the patient at the time of discharge. At the time of discharge, the patient was advised normal diabetic-renal diet (1600kcal) with low protein, moderate CHO, low potassium, low fat.

Table 1: Biochemical parameters

Parameters	At the time of admission	At the time of discharge	Normal range
Sodium	136mEq/L	135mEq/L	135-145
Potassium	4.9mEq/L	3.5mEq/L	3.5-5.0
Urea	139mg/dl	128mg/dl	13-45
Creatinine	4.47mg/dl	3.5mg/dl	0.5-1.5
Haemoglobin	11gm/dl	14mg/dl	13-17

Figure 1: Sodium and Urea variation plot during the treatment

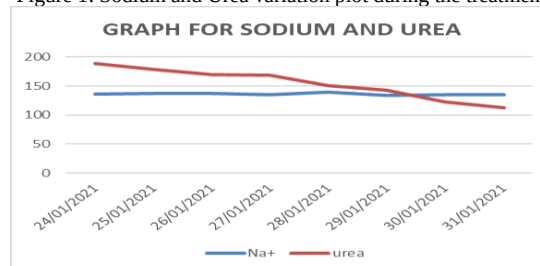


Figure 2: Potassium and Creatinine variation plot during the treatment

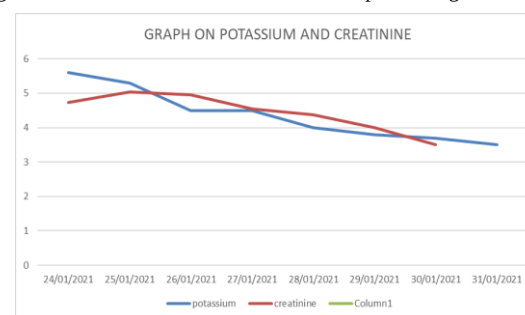


Figure 3: Sugar variation plot during the treatment from morning to night

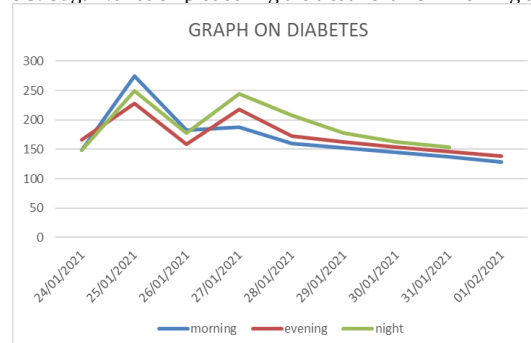


Figure 4: Haemoglobin variation plot during the treatment

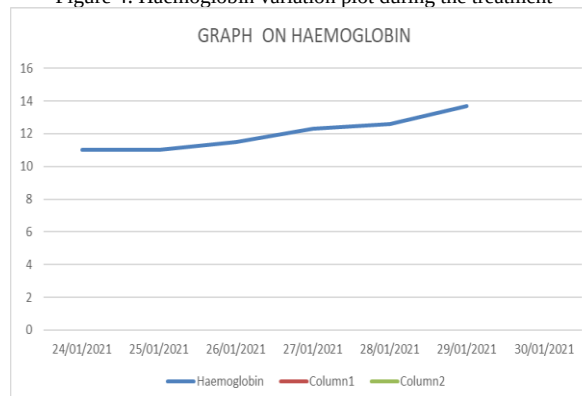


Table 2: Water output and input during treatment

DATE	INPUT	OUTPUT
12/01/21	1700ml	1200ml
13/01/21	1150ml	1250ml
14/01/21	1200ml	900ml
15/01/21	900ml	500ml
16/01/21	900ml	700ml
17/01/21	650ml	800ml
18/01/21	900ml	800ml
19/01/21	900ml	800ml
20/01/21	1450ml	1300ml
21/01/21	950ml	800ml
22/01/21	1000ml	850ml
23/01/21	950ml	1050ml
24/01/21	550ml	740ml
25/01/21	800ml	850ml
26/01/21	2000ml	1100ml
27/01/21	750ml	950ml
28/01/21	700ml	1500ml
29/01/21	950ml	1100ml
30/01/21	1200ml	950ml
31/01/21	1100ml	900ml

Fluid restriction for the patient was 1.5l to 2.1 L

Table 3: Diabetic chart (Sugar)

DATE	MORNING	EVENING	NIGHT
17/01/21	288	299	389
18/01/21	470	420	380
19/01/21	253	312	266
20/01/21	243	382	263
21/01/21	222	261	233
22/01/21	136	214	152
23/01/21	140	158	142
24/01/21	148	166	149
25/01/21	275	228	249
26/01/21	182	159	178
27/01/21	188	218	244
28/01/21	160	172	208
29/01/21	152	162	178
30/01/21	145	153	162
31/01/21	137	146	153
01/02/21	129	138	144

(The patient was on insulin from 24/01/21, 8ml in morning and 6ml in night)

Table 4: Sample menu for dt-24/01/21 to 27/01/21

MEAL	MENU
EARLY MORNING (7am)	Green tea(1cup), sugar-free biscuit (2-3 no's)
Breakfast (9am)	Oats upma/chuda, upma/dahlia upma/suji upma-1cup, sambar-1cup
Mid-morning (11am)	Stewed beetroot or turnip juice/stewed apple/stewed carrot-1cup
Lunch (1pm)	Roti (2-3 pcs), dal water/mix vegetable stew/raw banana curry/parwelcurry/santula/ Lau curry- (1cup), baiganbharta/banana bharta/raw banana fry/ brinjal fry/parwel fry/mix veggie fry/krela fry/grated cucumber raita(1cup)
EVENING SNACKS(5pm)	Brown bread sandwich stuffed with only cucumber(2pcs)/suji halwa(sugar-free)/dahlia porridge/oats porridge/saago porridge-(1cup), vegetable soup/corn soup-(1cup)
Dinner (8pm)	Roti(2-3pcs), santula/veg curry/papaya stew/lau stew/semia kheer/parwel fry/mix veggie fry

Table 5: Sample menu during discharge

MEAL	MENU
Early morning	Green tea(1cup), sugar-free biscuit (2-3n0.s)
Breakfast	Chuda upma/dahlia upma/oats upma/suji upma/semia upma-(1cup), sambar-(1cup)
Mid-morning	Corn soup/vegetable soup/stewed apple juice/stewed mashed apple/stewed carrot-(1cup)
Lunch	Roti (2-3 pcs), dal water/mix vegetable stew/raw banana curry/parwel curry/santula/ Lau curry- (1cup), baiganbharta/banana bharta/raw banana fry/ brinjal fry/parwel fry/mix veggie fry/krela fry/grated cucumber raita(1cup)
Evening snacks	Brown bread sandwich stuffed with only cucumber(2pcs)/suji halwa(sugar-free)/dahlia porridge/oats porridge/saago porridge-(1cup), vegetable soup/corn soup-(1cup)
DINNER	Roti(2-3pcs), santula/veg curry/papaya stew/lau stew/semia kheer/parwel fry/mix veggie fry

- Calorie recommended for 24/01/21=1300kcal
- Calorie recommended for 25/01/21=1400kcal
- Calorie recommended for 26/01/21-27/01/21=1500kcal

DISCUSSIONAND CONCLUSION

While adherence to healthful rules might be trying among DKD patients who bear numerous simultaneous comorbidities bringing about complex drug regimens and proposals from different suppliers, a few systems might be carried out that upgrade its fruitful execution. For instance, information has shown that self-observing of food admission and criticism by clinicians can generously improve adherence.^[9] Continuous and clear correspondence with DKD patients about the significance of diet in their generally constant infection the executives may additionally energize adherence.^[10] Utilizing improved on diet approaches and guidelines, just as occasional checking of dietary admission with polls directed by clinicians, especially renal dietitians, may likewise increase consistence.^[11,12] In a RCT of stage 3 CKD patients, a renal nourishment schooling program that remembered singular classes and hands-for meetings about food types and plans improved adherence to dietary suggestions.^[13] Acquiring patients' criticism upon favored food types and decency is likewise an irreplaceable part of effective dietary administration.^[14]

There are different spaces of vulnerability as for the nutritional management of DKD patients, including (1) the ideal measure of dietary protein admission among non-dialysis subordinate CKD patients with diabetes, just as (2) the near impacts of animal versus plant-put together protein sources with respect to CKD and cardiovascular results; (3) the favored sorts and measures of dietary fats in the DKD diet; (4) the part of complex sugar food varieties upon DKD results; (5) the ideal extent of food types in DKD diets; and (6) the effect of "solid eating regimens, for example, the DASH and Mediterranean eating regimens upon results in moderate to cutting edge CKD patients. It ought to likewise be noticed that patients with cutting edge DKD advancing to end-stage renal illness may encounter unconstrained goal of hypoglycemia, standardization of glycated hemoglobin levels, and continuous hypoglycemic scenes requiring stopping of against diabetic drugs, known as the "wore out diabetes" marvel,^[15] and further investigations in this populace are especially expected to decide the wellbeing and viability of dietary limitations in this populace. Given the extremely high morbidity and mortality of DKD patients, just as convincing proof showing the basic significance of nourishing status in the more extensive CKD populace, future investigations that characterize the ideal wholesome management of this populace may have a significant effect after improving the wellbeing and endurance of this populace.

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