



A Study on the Potassium Leaching Practices Among Practising Dieticians of Chennai Hospitals

KEYWORDS

Potassium restriction, leaching of vegetables.

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ABSTRACT

Leaching of vegetables is recommended to renal patients in order to reduce the food mineral load. The dietitians provide guidance to patients on ways to reduce potassium consumption. An opinionnaire was administered to the dieticians of various hospitals in Chennai to know about the custom of counselling renal patients on potassium restriction. It was apparent from the study that among 80% of the dieticians who recommended leaching procedure, 75% of them did not specify the time duration for leaching of vegetables and 70% of them did not specify the amount of water used for leaching process but most of the dieticians (65%) agreed that leaching of vegetables by proper cooking method brings about a significant variation in the serum potassium level of renal patients. Thus there is a need to set a universal protocol for the dieticians regarding suitable method of leaching potassium rich vegetables.

INTRODUCTION

Food is the basic necessity of life which satisfies the physiological and social needs of human being. The nutritional approach which has dominated in most of the research works on food consumption views food and eating in relation to the nutrient composition of foods and their instrumental roles in the physiologic functioning of the human body (Shils, 2006).

Vegetables form an essential part of the diet of both rich and the poor as majority of the Indian population is vegetarian (Bedi. R et al., 2006). In India a substantial proportion of the population, perhaps approximately 35%, follows a traditional vegetarian diet and has done so for many generations (Refsum et al., 2001). Vegetables are the major source of vitamins and minerals which are the chief regulators in metabolism in human beings (Shahnaz et al., 2003).

Minerals are an important part of a healthy diet. Some minerals are necessary for human life and play very important roles in bodily functions. Nutrition professionals recommend that they should be consumed as part of a balanced diet, primarily as fruits and vegetables, rather than in the form of dietary supplements (Piotr Szefer and Jerome, 2007). Losses of vitamins and minerals during processing and cooking can occur either due to oxidation or by dissolving in water (Tapadia. S. B et al., 1995).

Potassium is a mineral involved in electrical and cellular body function. Elevated potassium is of special concern for patients with chronic kidney disease. In people with end stage renal disease high potassium foods must be limited so that potassium levels do not get too high and cause complications. Restricting potassium rich foods lead to reduced intake of fruits and vegetables leaving meat and fats as the main source of calories (Kamyar Kalantar et al., 2002). Evidence show that preparing vegetables by leaching removes potassium to such an extent it adds variety to the monotonous diet and makes most of the vegetables suitable for the dietetic management of the kidney disease.

Hyperkalemia is a potentially life threatening situation as it can cause respiratory failure due to muscle weakness and sudden cardiac arrest. So in all chronic kidney disease patients with hyperkalemia a strict attention to potassium in the diet is required. Alternative choices should be provided either to limit foods that are high in potassium or to remove potassium from potato and other tuberous vegetables. Health care providers should be a food coach in balancing mineral restriction of patient while also trying to make them

follow dietary guidelines for other medical conditions (John T. Daugirdas, 2011). If patients want to include some high potassium vegetable in their diet, leaching is recommended before using high potassium rich foods. The dietitians will be able to counsel on the amount of leached high potassium vegetables that can be safely included in the diet (National Kidney foundation, 2012). Renal dietetics practice centered on the multiple aspects of patient care, and wellness has developed during the recent times (Mary Kay Hensley, 2008).

Considering the above facts an opinionnaire was used to elicit the information on the custom of counselling renal patients on potassium restriction among dieticians of both government and private hospitals in Chennai.

MATERIALS AND METHODS

A descriptive research study was conducted during the month of June 2012 involving twenty practicing dieticians from five government and fourteen private hospitals in Chennai built-in with a nephrology unit. Among the twenty dieticians selected for conducting the opinionnaire study, six dieticians were practicing in government hospitals and fourteen dieticians were practicing in private hospitals, Chennai. Only the dieticians who had experience in counselling renal patients with regard to renal diet were selected for the study. The researcher personally interrogated all the practicing dieticians with a structured interview schedule to analyze the counseling trend that was followed in all the hospitals regarding potassium restriction, the methods suggested for potassium restriction and the leaching procedure that was commonly recommended for the nutritional treatment of patients with chronic renal disease. Information about the benefits and the disadvantages of adopting leaching procedure and the reasons for dissuading leaching method were also studied.

RESULTS & DISCUSSION

The study revealed that among the interviewed dieticians 20% of them recommended their patients to avoid high potassium rich foods, 10% of dieticians recommended the method of leaching vegetables before consumption and 70% of the dieticians recommended both restriction of potassium rich foods and leaching of vegetables. In the study 65% of the dieticians highly recommended boiling of cut vegetables and discarding excess of water as a procedure for leaching, 20% recommended double boiling, 10% recommended soaking of cut vegetables for 2-3 hours before cooking, 5% of them recommended soaking of cut vegetables overnight before cooking and another 5% of them recommended combination of soaking and boiling.

Among the interviewed dieticians from government hospitals, one dietician recommended triple boiling and among dieticians of private hospitals, one dietician recommended double soaking of vegetables in 100°C hot water for one hour. Thus it is apparent from the study that recommending leaching of vegetables to renal patients still prevailed among dieticians of various hospitals.

Table – 1: Comparison on the custom of counselling renal patients regarding potassium restriction among dieticians of government and private hospitals

S. No	Variables	Hospital				Total	
		Government		Private		N	%
		N	%	N	%		
1.	Method recommended for potassium restriction						
	a. Recommendation to avoid high potassium rich foods	1	16.7	3	21.4	4	20
	b. Recommendation on the method of leaching	0	0	2	14.3	2	10
	c. Recommendation of both a and b	5	83.3	9	64.3	14	70
2.	Counselling patients on leaching of potassium rich vegetables before consumption	5	83.3	11	78.6	16	80
	Yes						
	No	1	16.7	3	21.4	4	20
3.	The leaching procedure recommended						
	a. Soaking cut vegetables overnight, discard the water and cook	1	16.7	0	0	1	5
	b. Soaking of cut vegetables for 2 – 3 hours and cooking	0	0	2	14.3	2	10
	c. Boiling of cut vegetables and discarding excess of water	4	66.7	9	64.3	13	65
	d. Double boiling and discarding excess of water	0	0	4	28.6	4	20
	e. Combination of the above methods	0	0	1	7.1	1	5
	f. Others	1	16.7	1	7.1	2	10

N- Number of subjects % - Percentage

Table 1 depicts the percentage distribution of private and government hospital dieticians regarding their counseling trend that was followed regarding potassium restriction, the methods suggested for potassium restriction and the leach-

ing procedure that was commonly recommended for the nutritional treatment of patients with chronic renal failure.

Table – 2: Time duration and amount of water used for leaching vegetables

S. No	Variables	Hospital				Total	
		Government		Private		N	%
		N	%	N	%		
1.	Specification of time duration for cooking vegetables by leaching process						
	Yes	2	33.3	3	21.4	5	25
	No	4	66.7	11	78.6	15	75
2.	The time duration for boiling of vegetables						
	a. 10 minutes	1	16.7	2	14.3	3	15
	b. 15 minutes	0	0	1	7.1	1	5
	c. Till well cooked	1	16.7	0	0	1	5
3.	Specification on the amount of water used for cooking vegetables by leaching process						
	Yes	2	33.3	4	28.6	6	30
	No	4	66.7	10	71.4	14	70
4.	The ratio of vegetables to water recommended for leaching of vegetables						
	a. 1:2	1	16.7	1	7.1	2	10
	b. 1:3	1	16.7	2	14.3	3	15
	c. 1:10	0	0	1	7.1	1	5
5.	The most recommended food group for leaching						
	Roots and tuber	3	50	3	21.4	6	30
	Green leafy vegetables	2	33.3	5	35.7	7	35
	Potassium rich vegetables	4	66.7	8	57.1	12	60

N- Number of subjects % - Percentage

It was evident from table 2 that though 80% of the dieticians recommended leaching procedure, about 75% of them did not specify time duration for leaching of vegetables and 70% of them did not specify the amount of water used for cooking vegetables by leaching process. Among 25% of the dieticians who specified the time duration for leaching 15% recommended 10 minutes boiling, 5% recommended 15 minutes boiling and another 5% recommended boiling of vegetables till well cooked. Among 30% of dieticians who specified the ratio of vegetables to water for leaching 15% recommended 1:3 ratio, 10% recommended 1:2 ratio and 5% of them recommended 1:10 ratio of vegetables to water. About 60% of the dieticians who counseled renal patients to leach potassium rich vegetables before consumption, 35% of them recommended leaching of green leafy vegetables and 30% of them recommended leaching of roots and tubers.

Table – 3: Opinion of dieticians on recommending leaching of vegetables

S. No	Variables	Hospital				Total	
		Government		Private		N	%
		N	%	N	%		
1.	Opinion of dieticians on the benefits of leaching vegetables						
	It adds variety to the diet	1	16.7	3	21.4	4	20
	Helps in maintaining serum potassium level	5	83.3	9	64.3	14	70
2.	Opinion of dieticians for not recommending leaching of vegetables						
	Restricting high potassium rich food is easy to follow	0	0	1	7.1	1	5
	Leached vegetables loose all the other micronutrients (water soluble)	1	16.7	2	14.3	3	15
	There is no health benefits because of leaching vegetables	0	0	2	14.3	2	10

3.	leaching of potassium from food by proper cooking method brings about a significant variation in serum potassium level	3	50.0	10	71.4	13	65
	Agree						
	Disagree	3	50.0	4	28.6	7	35

N- Number of subjects % - Percentage

The opinion of the dieticians on the benefits of leaching (Table 3) showed that about 70% of them considered that following the method of leaching helps to maintain the serum potassium level and 20% of them considered that leaching method allowed renal patients to have more variety in their diet.

Among the dieticians who did not recommend leaching of vegetables, 15% of dieticians considered that leached vegetables loses all its water soluble vitamins, 10% thought that there are no health benefits because of leaching and 5% felt that restricting high potassium rich food is more convenient than following the leaching procedure.

65% of both government and private hospital dieticians agreed with the statement that leaching of potassium from food by proper cooking method brings about a significant variation in serum potassium level. In contrary 35% of the dieticians disagreed with the statement as they considered that there are other factors that may also contribute in maintaining the serum potassium levels of a renal patient.

The study associates with the finding of Yoo-So Young et al., (2002). The study has proved that positive effect of individualized medical nutrition therapy on the hemodialysis patients improved the nutritional status, nutritional knowledge, and the quality of life. In the findings of the present study majority of the dieticians felt that individualized counselling continuously performed to a renal patient on potassium restriction and leaching of vegetables may help to maintain serum potassium level.

CONCLUSION

Controlled intake of potassium is important to prevent complications such as cardiac arrhythmia and sudden death in the nutritional management of chronic kidney disease (Herselman. M. G et al., 2005). The results indicate that, despite high percentage of dieticians from both government and private hospitals counselling renal patients on leaching of potassium rich vegetables, there remains a definite degree of variation and uncertainty regarding appropriate method for leaching. This is supported by 80% of dieticians recommending leaching procedure, among them only 25% specified the time duration for leaching of vegetables and only 30% specified the amount of water used for leaching process. In this study 65% of the dieticians agreed to the fact that leaching of vegetables by proper cooking method brings about a significant variation in the serum potassium level of renal patients.

Thus it is concluded from the study that there is a need to set a universal protocol for the dieticians regarding suitable method of leaching potassium rich vegetables to such an extent it increases flexibility, adds variety to the monotonous diet and makes most of the vegetables suitable for the dietetic management of kidney disease individuals because a man may esteem himself happy only when that which is his food is also his medicine. Further, evidence based studies can be carried out to confirm whether the consumption of leached vegetables bring about positive change in the serum potassium level of a hyperkalemic kidney disease individuals.

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