Diet in Hemodialysis Patient

Nutrition & CKD

- Diet is an important part of the treatment plan
- ***Restrictive diet is a challenge for patients***
- Elements of renal diet:
  - Getting right amount of calories and pr
  - Limiting certain nutrients:
    - Sodium
    - Potassium
    - Phosphorus
    - Fluids

- Diet Compliance: 20-78% are noncompliant with diet restrictions

"Renal diets are arguably the most restrictive for any patient group, and many of the restrictions contradict current recommendations for healthy eating.[1]"

Kalantar-Zadeh … Ikizler, ***Nature Nephrology*** 2011

Prevalence of malnutrition & Nutritional issues in CKD patients

- Malnutrition/ wasting is common in CKD, as approximately **18 – 75% of patients with CKD**, undergoing maintenance dialysis therapy, show evidence of wasting
- High malnutrition rates in Chronic Kidney Disease (CKD) patients
  - **28% to 48% of predialysis patients**
  - **18% to 75% of dialysis patients**
- Risk for malnutrition increases as CKD progresses
- Protein-energy wasting (PEW) is common in patients with chronic kidney disease (CKD) and is manifested by
  - low serum levels of albumin or prealbumin,
  - sarcopenia, and
  - weight loss

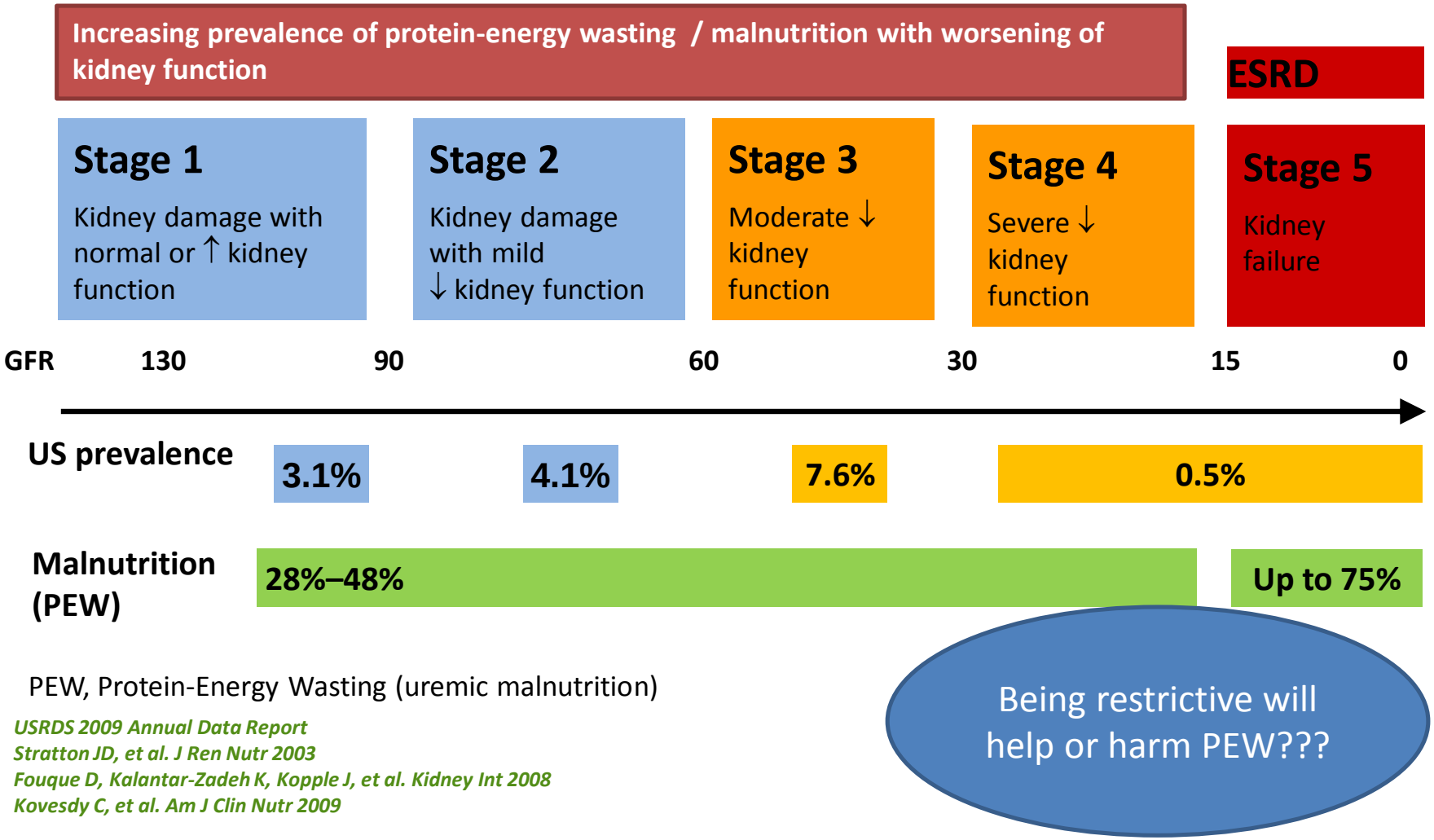
Kalantar-Zadeh, K. et al. Nat. Rev. Nephrol. 7, 369–384 (2011);

Ind J Endocrinol & Metabol 2012; 16(2) : 246 – 241

Heimburger O et al. Am J Kidney Dis. 2000;36:1213-1225.

Fouque D et al. Kidney Int. 2008;73:391-398

Malnutrition in Chronic Kidney Disease

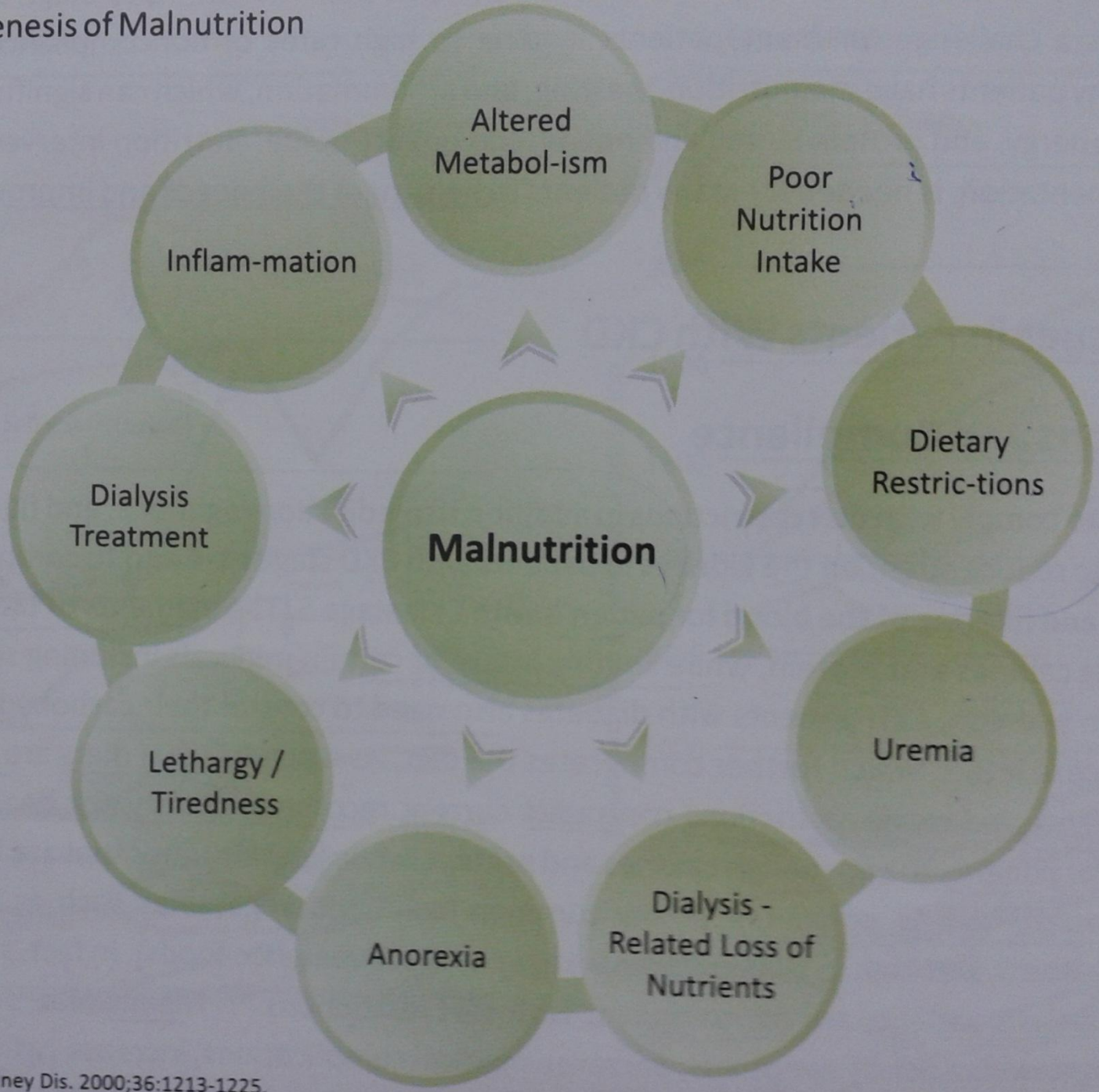


PEW, Protein-Energy Wasting (uremic malnutrition)

USRDS 2009 Annual Data Report
Stratton JD, et al. J Ren Nutr 2003
Fouque D, Kalantar-Zadeh K, Kopple J, et al. Kidney Int 2008
Kovesdy C, et al. Am J Clin Nutr 2009

Being restrictive will help or harm PEW???

Figure 11. Pathogenesis of Malnutrition



Heimburger O et al. Am J Kidney Dis. 2000;36:1213-1225.
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Causes of poor nutrient intake includes.

- Anorexia.
- Uremic toxins.
- Dysgeusia: metal flavor in mouth , dry mouth
- Dialysis procedure.
- Inter current illness.
- Frequent hospitalization ,multiple medications.
- Co-morbidity physical illness affecting gastrointestinal function.
- Depression, low social status.
- Restricted regimens: fluids, phosphorus, sodium , potassium.

Micronutrient protein fulfillment – challenge ??

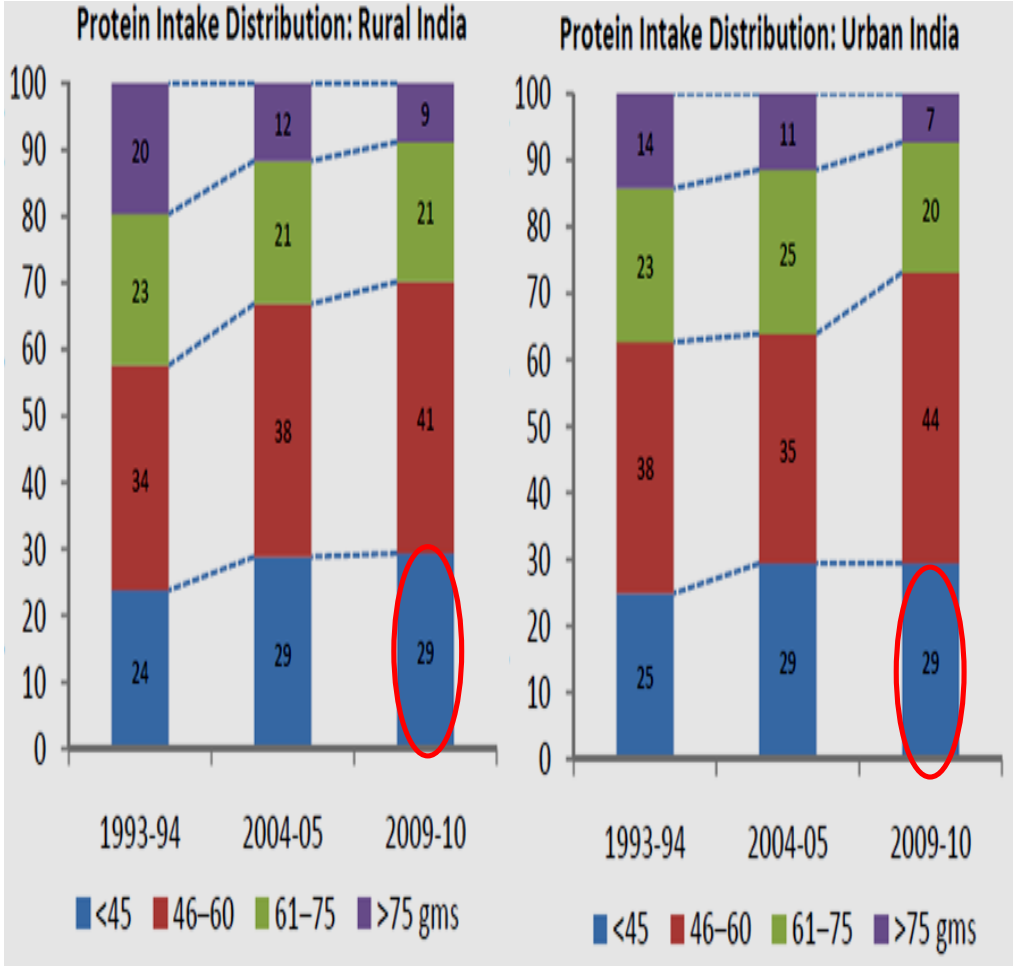
- Indian diet is low in good quality protein and is reach in phosphate, minerals and salt.
- Indian diet is in-adequate in calories and high biological value protein.
- Indian diet is pre-dominantly vegetarian and cereals / pulses forms major part of diet.
- Fish , chicken, egg white and dairy product are considered high biological value protein(HBV).
- A balanced diet includes a combinations of HBV and LBV.
- Indian CKD populations are most of the time non-affordable to HBV.

Challenges that accentuate this problem

- 3 National surveys have shown our protein intake is very suboptimal
  - National sample survey
  - National Family Health Survey
  - National Nutrition Monitoring Board

Our Eating Pattern

- Indians have a **predominantly vegetarian diet**
- Major contribution of protein is **<u>from cereals (>50%) and pulses (8-10%)</u>**
- The share of meat, fish and egg in protein intake is **only** about 6% to 8%.



FAQ s by patients
frequently asked questions by patients

Q :My dietician has recommended me to have high biological value protein like milk & milk products, but I just don't feel like eating those foods. Should I force myself?

A : An aversion to protein is common, especially in new dialysis patients. There are two reasons

a- The habit of cutting down on protein may develop as a result of pre dialysis nutritional counseling.

b- Uremia causes natural decline in **taste** for protein.

Food which is high in protein and high in phosphorus too.
Dairy foods have the highest ratio of phosphates

Sources Of Phosphorous:	
Skinned pulses and legumes, carrot, water chestnut (dry), milk and milk products, cheese, khoa, skimmed milk powder, almonds, cashew nuts, pine nuts (chilgoza), sesame seeds (til), groundnut, walnuts, fish and seafood, cocoa, colas and beer, bran breads and cereals1,	

Restricting more dietary phosphates level had poorer nutritional status and this may relate to compromised intake of the other essential micronutrient such as protein.

Potassium is another important mineral found in most of the food.

Potassium helps your muscle and heart work properly

Sources of Potassium	
High potassium foods[ref]	**Low potassium foods**[ref] **(<100 mg/100 gm)**
Soups, Juices, Coconut Water, Lemon, Green Leafy Vegetables Like Spinach, Fruits Like Banana, Citrus Fruits, Melon, Apricots, Tomatoes, Potatoes, Mushrooms, Dried Fruits, Nuts, Chocolate, Chocolate Drinks, Instant Coffee, Colocasia (Arbi) etc.	Apple, Papaya, Guava, Pineapple, Pear, Methi, Lettuce, Lauki, Torai, Mango Green, Cucumber, Parwal, Beetroot, Tinda
	

Leaching the vegetables.

Vegetables are an importance part of healthy diet. Especially vitamins B & c dissolve in water ,leaching removes the precious nutrients.

The longer the vegetables sit in the water the more nutrients they loss.

3 gram of salt

Palatability of food in 3 gram of salt?

Is any body is having habit of reading labels of pre –packaged food.

Nutrition Facts

Serving Size 1 oz (28g)
Servings Per Container 8

Amount Per Serving	
Calories 90	Calories from Fat 50
	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 4g	**20%**
Cholesterol 20mg	**7%**
Sodium 240mg	**10%**
Total Carbohydrate less than 1g	**0%**
Dietary Fiber 0g	**0%**
Sugars 0g	
Protein 7g	

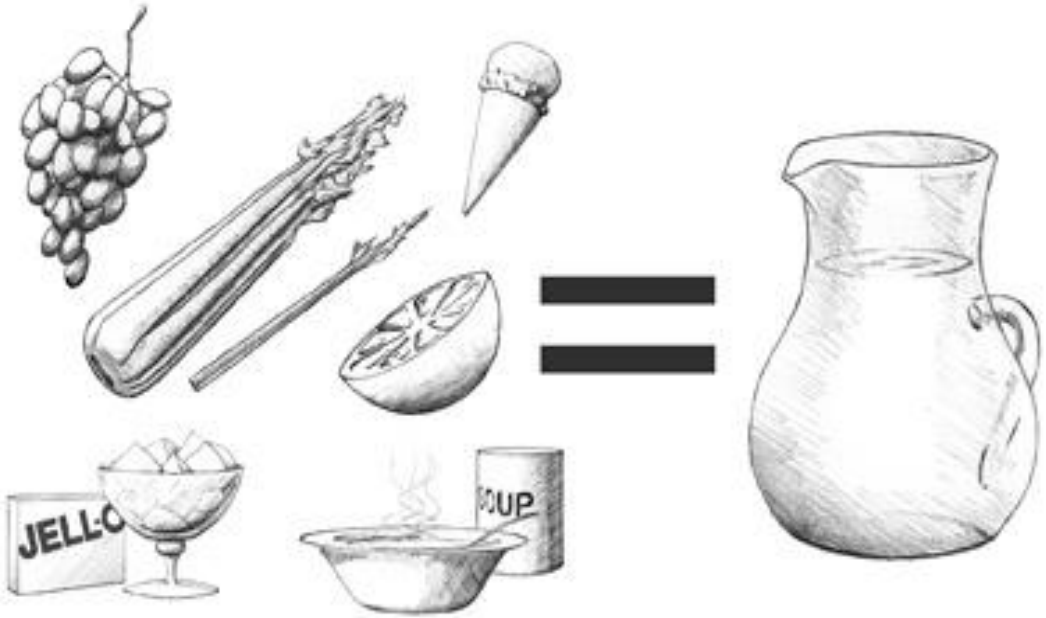
Vitamin A 6%	•	Vitamin C 0%
Calcium 20%	•	Iron 0%

Sources of Sodium you must avoid [ref]:

Fast Foods, Preserved Meats Like Bacon, Ham, Dried Sea Food, Seasonings, Sauces, Ketchups, Pickles, Papads, Processed Cheese, Salted Butter, Bakery Products, Baking Soda, Packed Soups And Vegetables, Ajinomoto, Processed Foods, Namkeens, Wafers, Chips, Etc.

Feasibility of fluid restriction

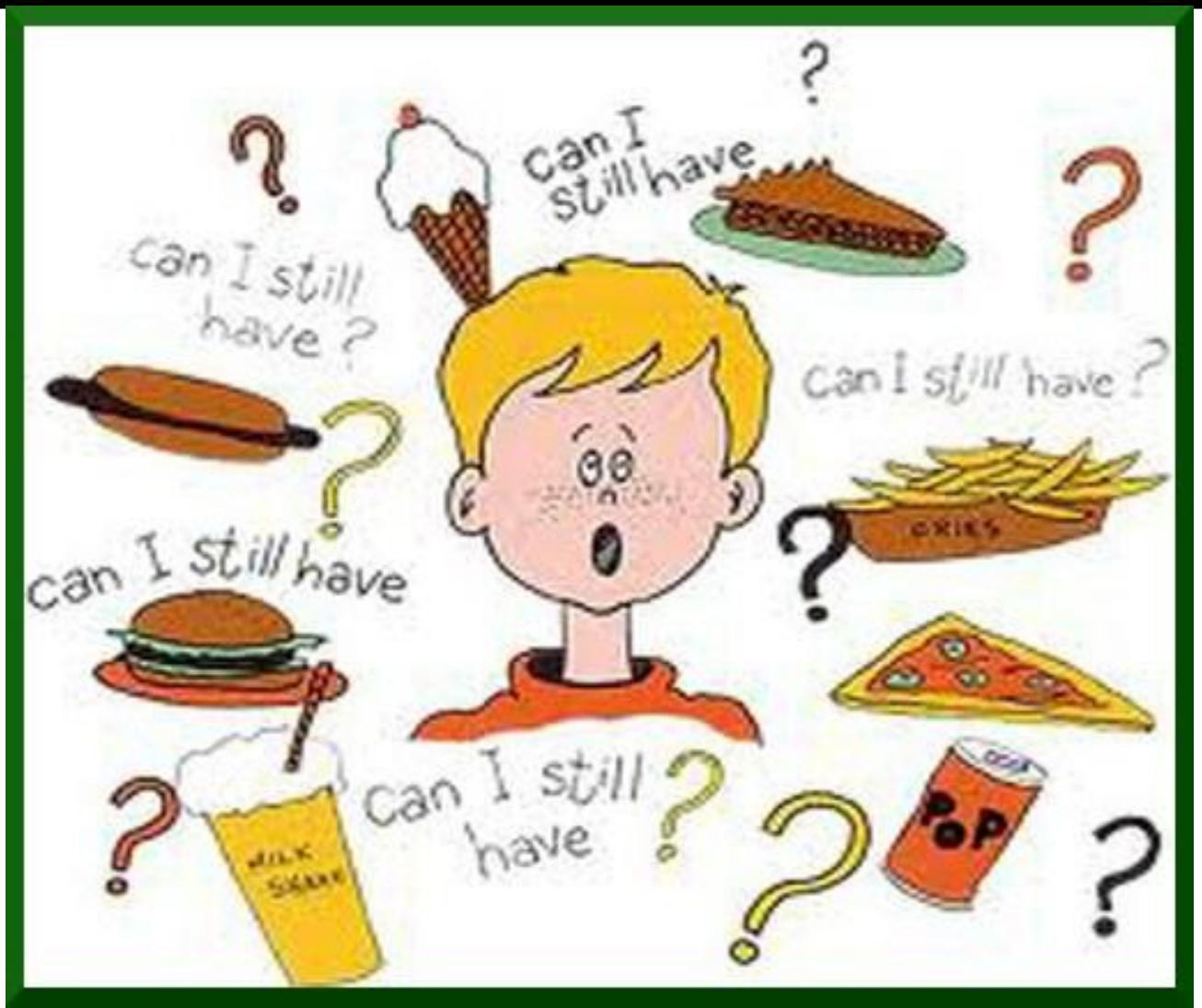
FLUID
Restrictions



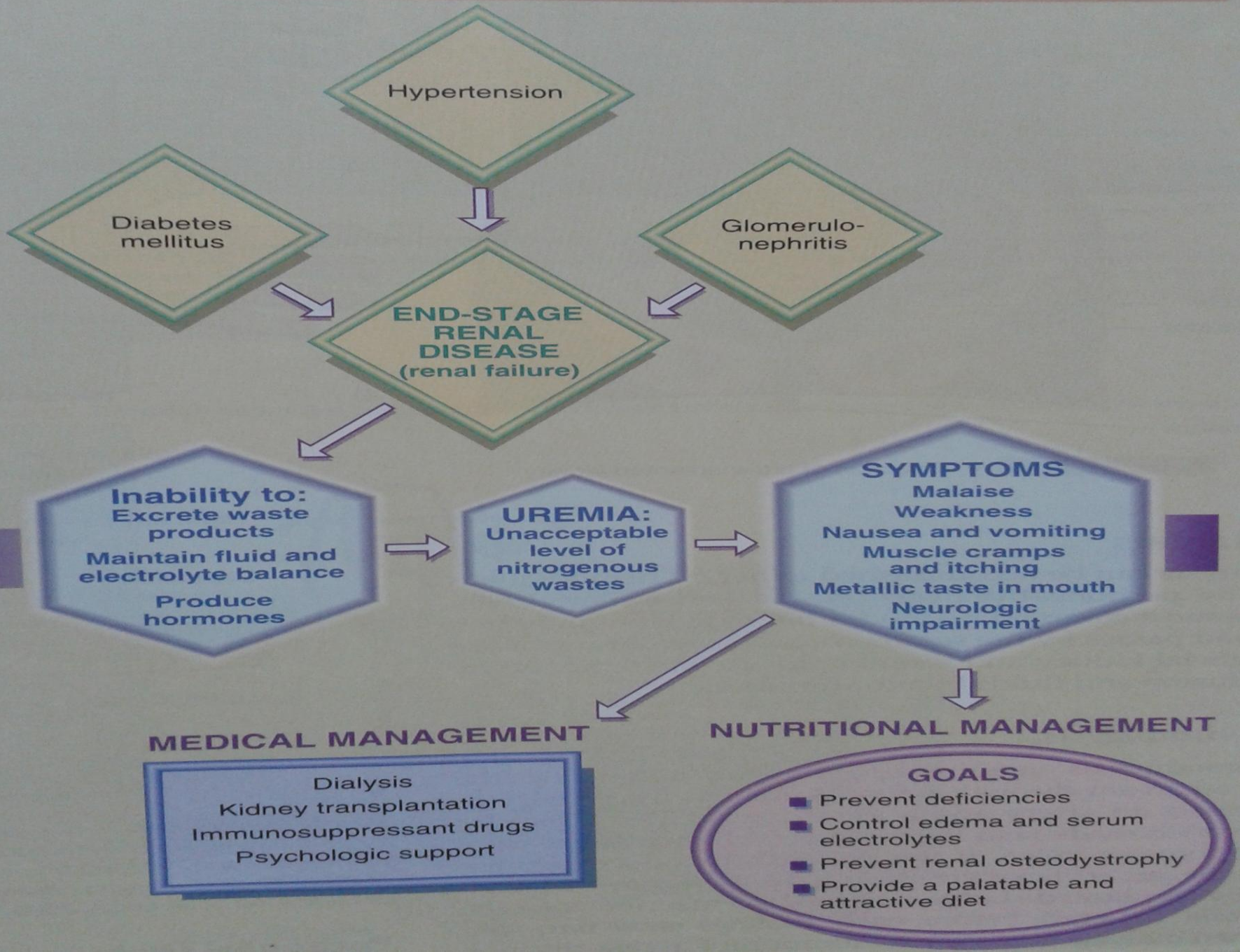
Restricted renal meal plate.

Indian meal plate /restricted renal meal plate

IS THERE ANYTHING LEFT FOR ME TO EAT

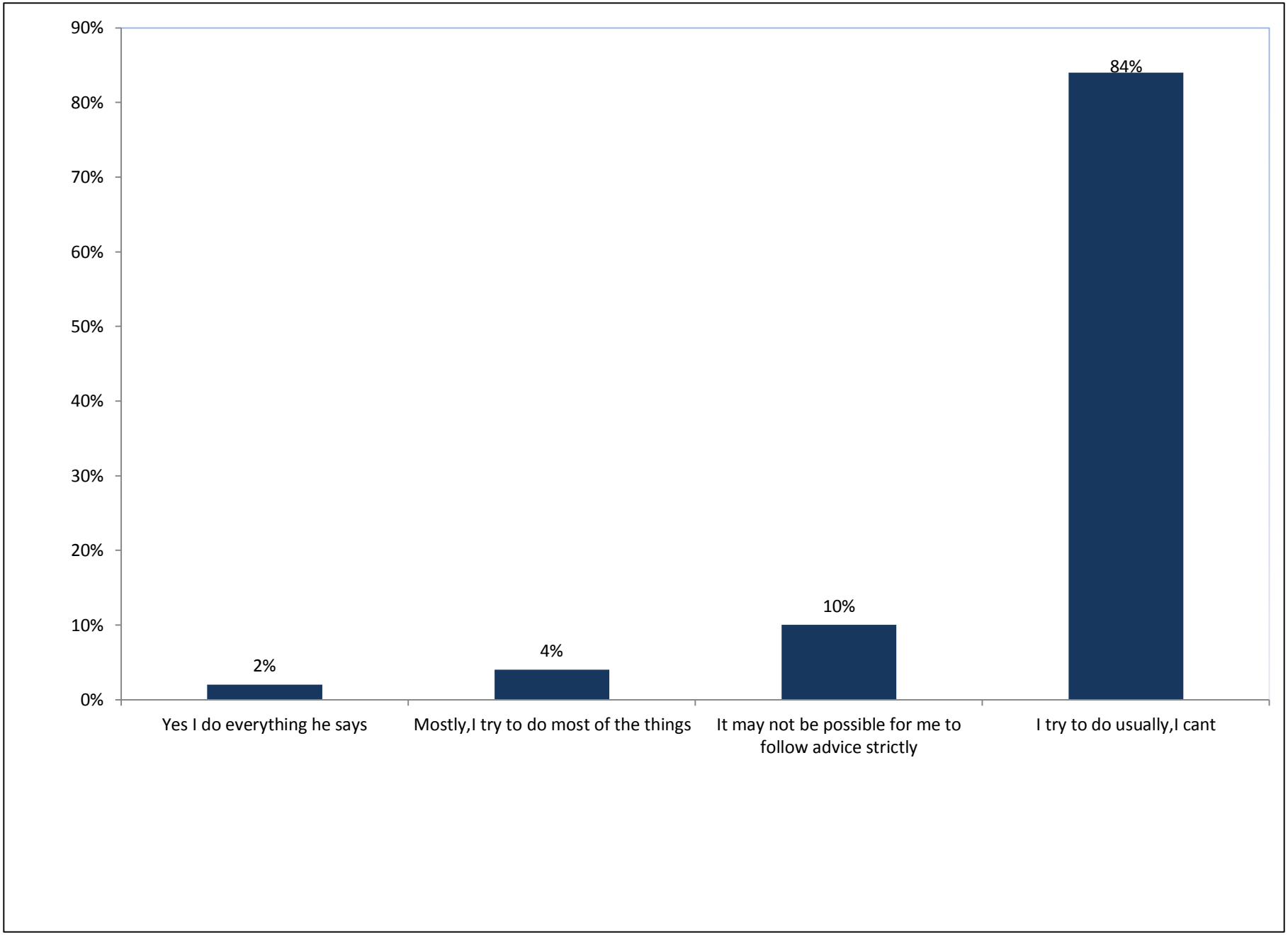


END-STAGE RENAL DISEASE



PATIENTS COMPLIANCE WITH DIET ADVICE

- Q – Do you follow your dietician advice very well ?
- a- yes I do everything she says.
- b- mostly I try to do most of the things,
- c- it may not be possible for me to follow advice strictly,
- d- I try to do usually I cant.


90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2%
4%
10%
84%
Yes I do everything he says
Mostly,I try to do most of the things
It may not be possible for me to follow advice strictly
I try to do usually,I cant

Take Home Messages

- **Malnutrition is highly prevalent in Indian CKD patients and under diagnosed so under treated**
- **There are many challenges in dealing with malnutrition in Indian patients :**
  - **Indian diet is pre-dominantly vegetarian and cereals/pulses forms major part of diet**
  - **Indian diet is in-adequate in calories and high biological value proteins**
  - **Renal diets are very restrictive , while spicy Indian palate believes in delicacy, fasting , feasting etc. and so COMPLIANCE to renal diet is an**
- **Being restrictive in approach will worsen PEM and thereby patient outcomes**

Impact of Malnutrition in CKD

- **PEW is one of the strongest predictors of mortality in patients with CKD**
- Malnutrition is associated with increased morbidity and mortality
- Maintenance hemodialysis (MHD) patients at high risk for malnutrition had[1]:

- MHD patients with anorexia (poor appetite)[2]:
  - 43% increased relative risk (RR) of hospitalization frequency
  - Twofold increase in the RR of annual hospital days
  - 4 to 5 greater mortality risk

1. *Burrowes JD et al. J Am Diet Assoc. 2005;105:563-572.*

2. Kalantar-Zadeh K et al. Am J Clin Nutr. 2004;80:299-307.

Thanks

Thanks

Thanks

Thanks