

Nutrition in Elderly: Why Different?

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Ageing gastrointestinal system

- Teeth:
 - Yellowish discoloration
 - ↓ Enamel thickness
 - ↓ Vascularity of pulp
 - ↑ Carries & periodontitis
 - **Teeth loss**



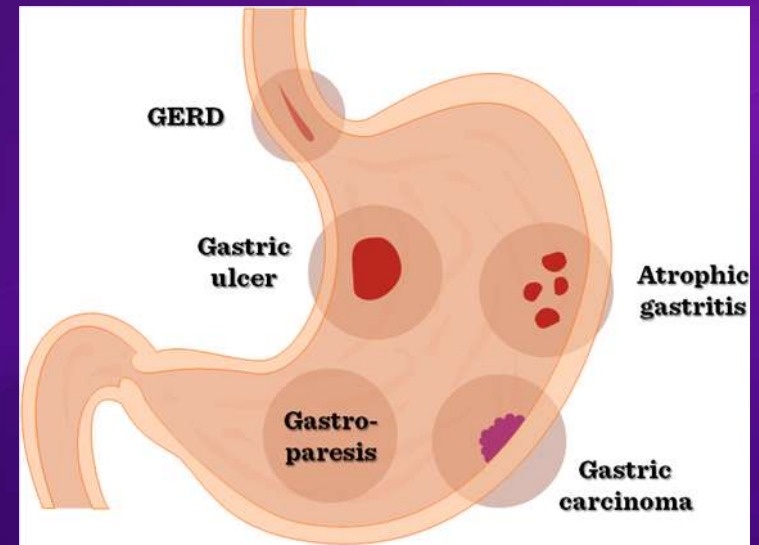
- Mouth:
 - Xerostomia
 - Bone resorption of mandible
 - ↓ Tone of oro-facial muscles
 - ↓ Taste sensation



Esophagus: ↑ reflux and hiatus hernia

Stomach:

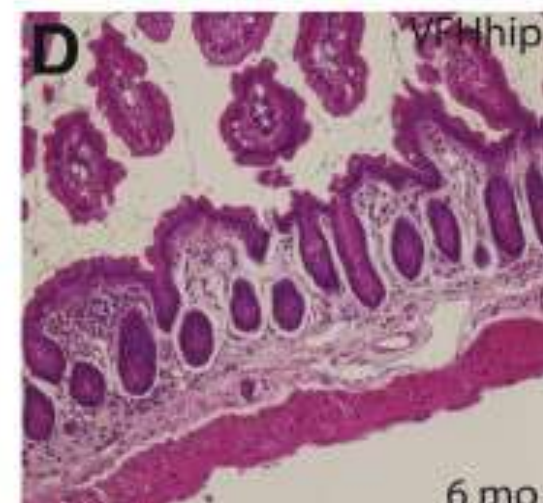
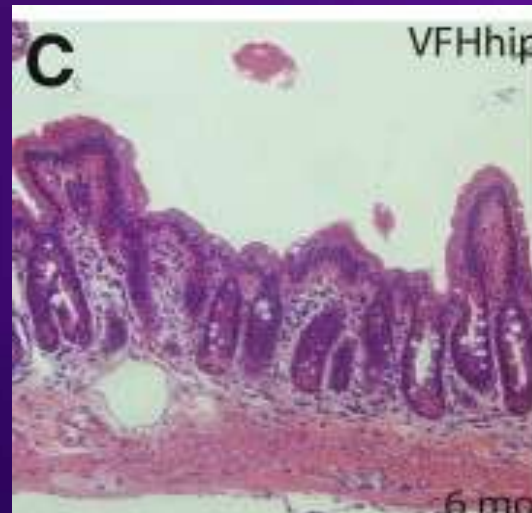
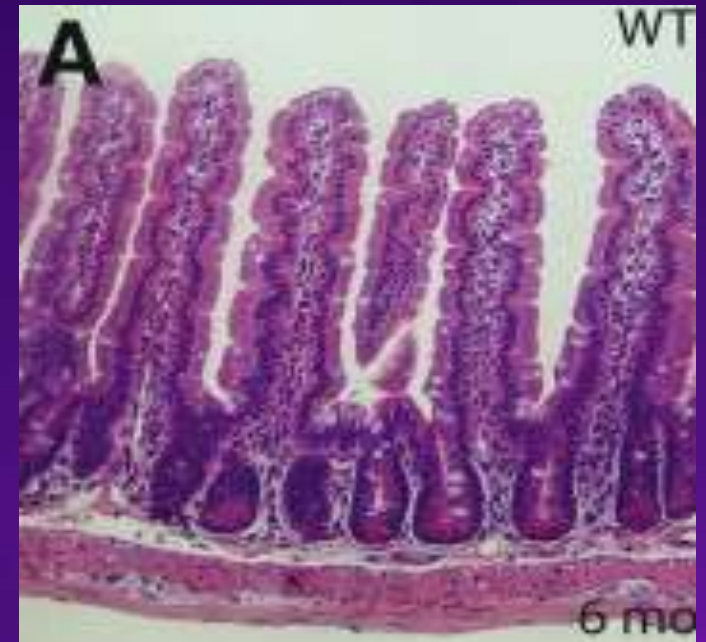
- ↑ Atrophic gastritis, ↓ Hcl & ↓ enzyme secretion
- Delay gastric emptying
- ↑ H. pylori carriage
- ↑ Gastric carcinoma



- Small intestine:

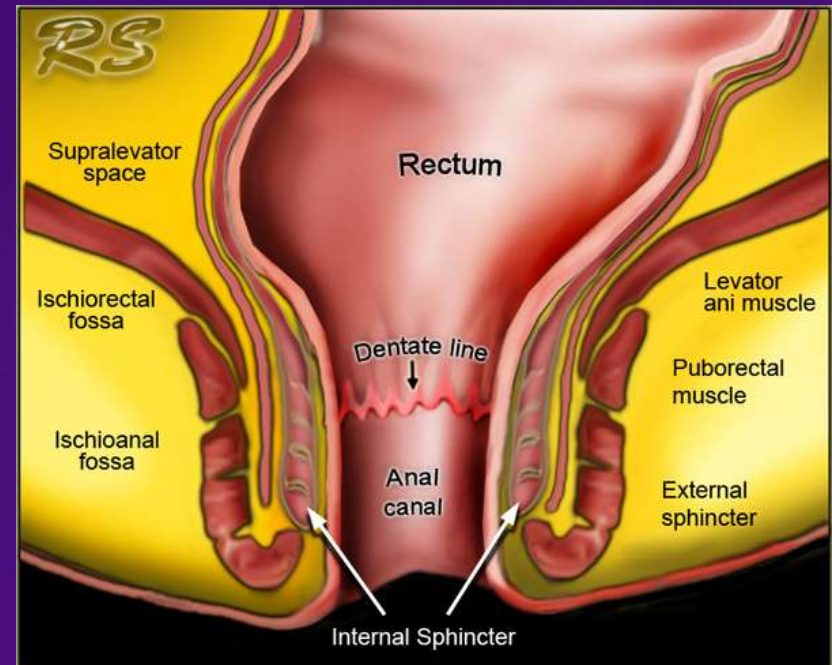
(Villous atrophy)

- ↓ Motility
- ↑ Bacterial overgrowth
- ↓ Nutrients absorption



- Large intestine:
 - ↓ Rectal sensation
 - ↓ Motility

→ **Constipation**

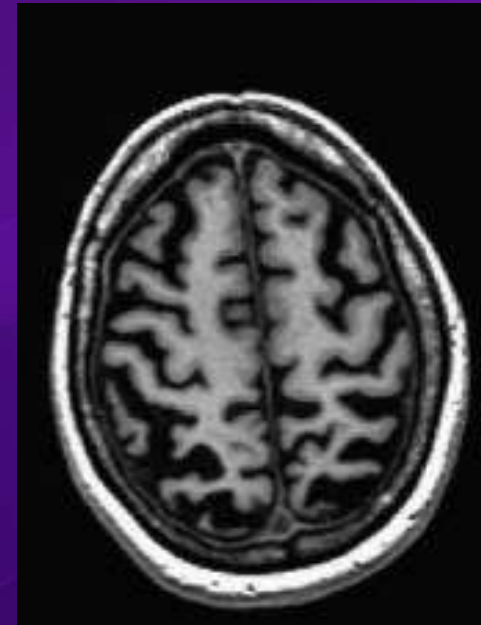
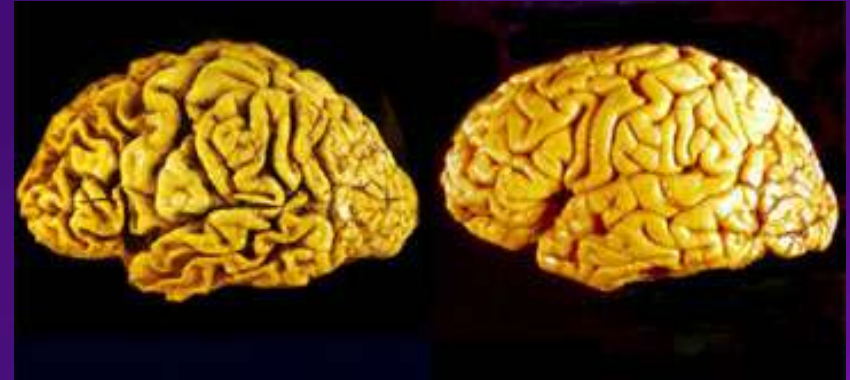


- Pancreas:
 - ↓ Size and secretory functions
- Gallbladder:
 - ↓ Bile synthesis and excretion

Ageing brain and nervous system

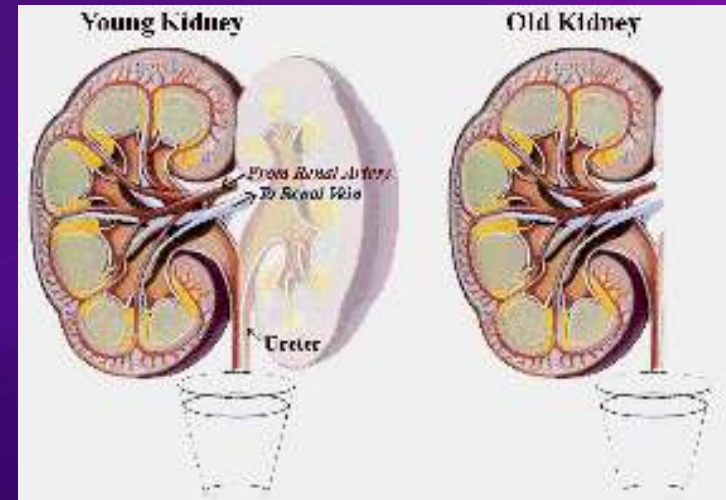
- Brain atrophy
 - ↓ Neurotransmitters synthesis and release

Impaired memory
& cognition



Ageing renal system

- ↓ Response to Na loading or depletion
- ↓ Ability to concentrate or dilute urine
- ↓ Renin and aldosterone secretion
- ↓ Response to ADH

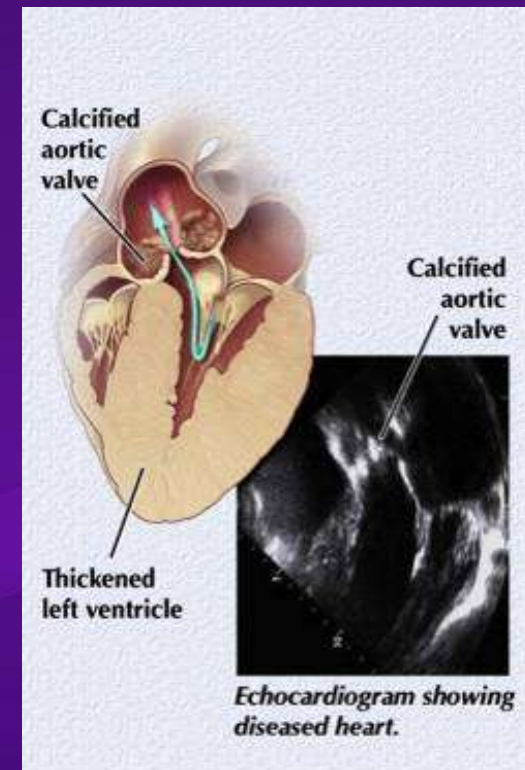


Ageing cardiovascular system

- Myocardial stiffness → diastolic dysfunction

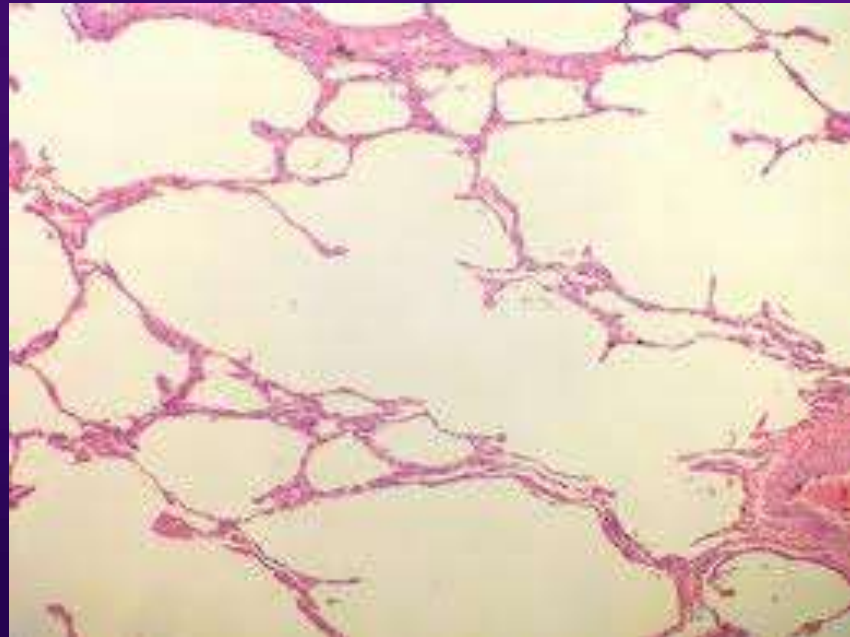
↓ Muscle mass & contractility → ↓ reserve function

→ ↑ risk of heart failure



Ageing lung

- There is reduced ventilation
- Increase air trapping
- Downward displacement of diaphragm
→ Early satiety and abdominal distension



Ageing and ear

- Increase incidence of deafness
- Lack of communication
- Isolation and self neglegance



Ageing eye

- ↓ Visual acuity
- Food indifference
- Lost interest in feeding



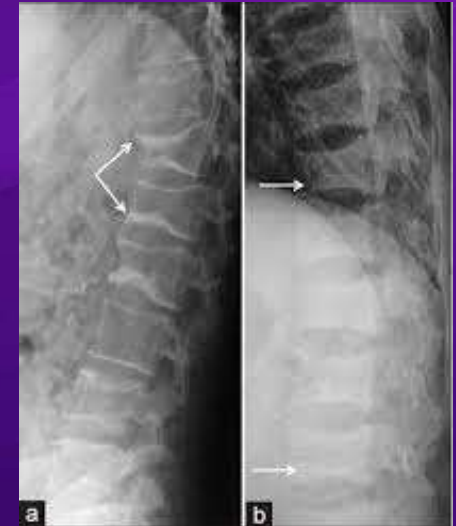
Ageing musculoskeletal system

- ↓ Skeletal muscle bulk & power
- ↓ Self dependence



- **↓ Bone Density & Strength**

- In man 20-30% of bone mass is lost after adult life
- In women 40-50% of bone mass is lost after adult life
- ↑ Bone fragility and ↑ fracture risk
- Osteoarthritis
- ↑ Dependency



Medications abuse



Depression & isolation



Fluid intake in elderly



What to Do?

Improve quality of life



Adjust vision



Adjust hearing



Adjust teeth



Treat depression

H₂O intake

Daily Need 30 ml/Kg

One glass with each meal
and two glasses in
between

How to know that enough H₂O is taken?

- Urine colour
- Urine amount ≥ 400 ml/day
- Skin turgor



High fiber diet



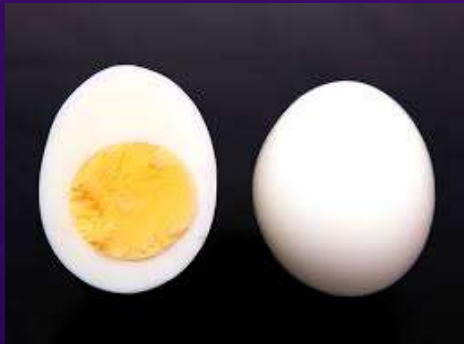
Protein in Diet

- **Protein is not stored in body**
- **Synthesis of all body proteins**
- **Synthesis of Immune system proteins**
- **Synthesis of neurotransmitters**
- **It shares by 15-20% of calories**

Protein Diet:

- Rich in essential amino acids

(Needs: 1.0-1.2 gram/Kg, 1.2- 2 gram /Kg in special situations)



Food rich in protein

- Egg 6 gram
- 1 cup of milk 8 gram
- Can of tuna, fish or chicken 40 gram
- 1 string cheese (1/2 cup) 8 gram
- 1 cup of lentil 18 gram
- 1 cup of beans and legumes 25 gram

Protein requirements of elder in diseases

- Mild-moderate acute illness develop –ve nitrogen balance mainly in skeletal muscles however, this is corrected in convalescence with return of appetite & intake to pre-illness level no need for additional protein ex chest infection, abscess drainage
- Severe acute illness (major operation) & chronic illness as, TB & malignancy additional protein is needed
- What protein reflects nutritional status?

Albumin, transthyretin or transferrin.

All can be used but latter two are more sensitive as former decline markedly as a negative acute phase reactant

Danger of Excess Protein

- **Whey protein for elderly:**
 - Whey is expensive
 - Not tightly regulated by FDA
 - Some ingredients were found to be not listed on label

Side effects of high protein diet:

1. Acidosis
2. Azotemia
3. Dehydration
4. Hyper-calcuria & ↑ stone formation
5. ↑ insulin secretion
6. ↑ Na level
7. Diarrhea
8. ↑ Gout
9. ↑ Cancer colon (4 times)
10. ↑ Chronic kidney disease

Sun & vitamin D

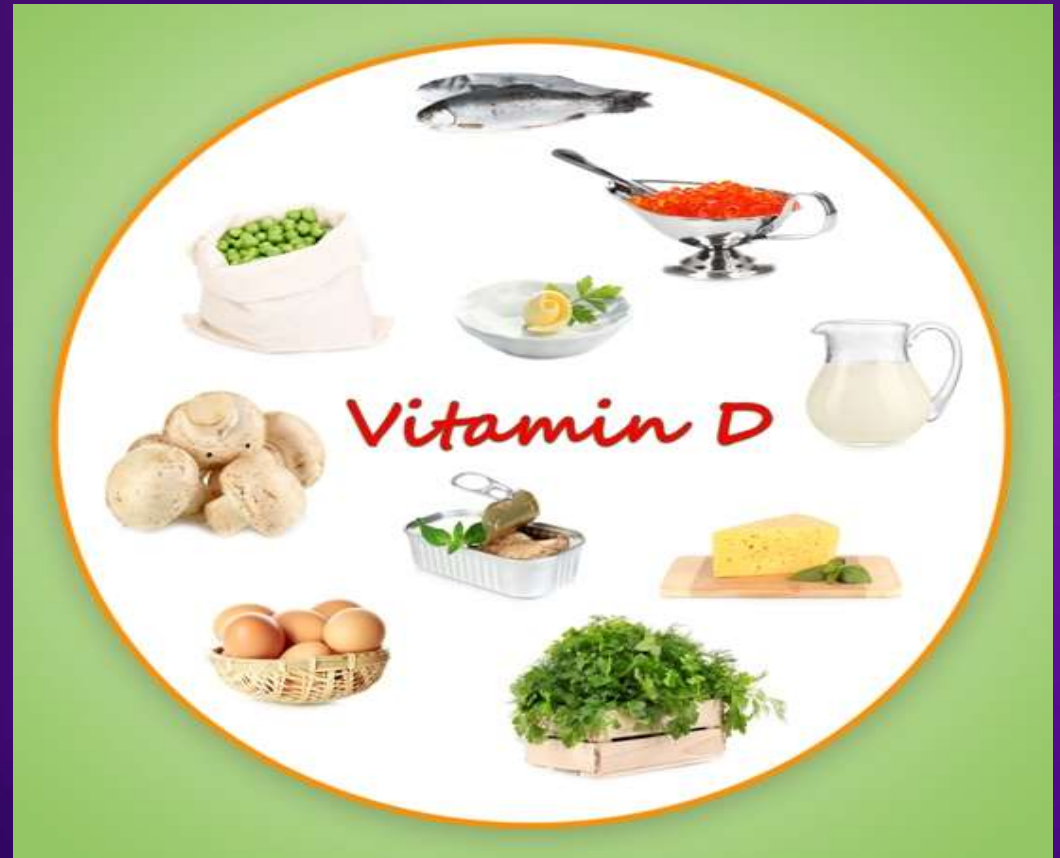
15min/day

11am-3pm

Arm and leg



Vitamin D rich food



Vitamins, minerals & antioxidants



Combined Food



photo: happyzhangbo

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Feeding in special situations

- **HTN** what about salt restriction?
 - Na 5-6 gram/day
 - Diuretics Cautiously
- **DM** what glycemic control needed?
 - HA1c 7-7.5% for healthy elder
 - HA1c 7.5-8% for elder with other co-morbidities
 - HA1c 8-9% for frail elder & elder with life expectancy <5 years
- **Bone disease:**
 - Vit C, K help osteocalcin formation , Mg adjust Ca metabolism& B12
- **Renal disease:**
 - protein restriction
- **Hepatic:**
 - salt& protein
- **HF:**
 - salt

Food in Dementia

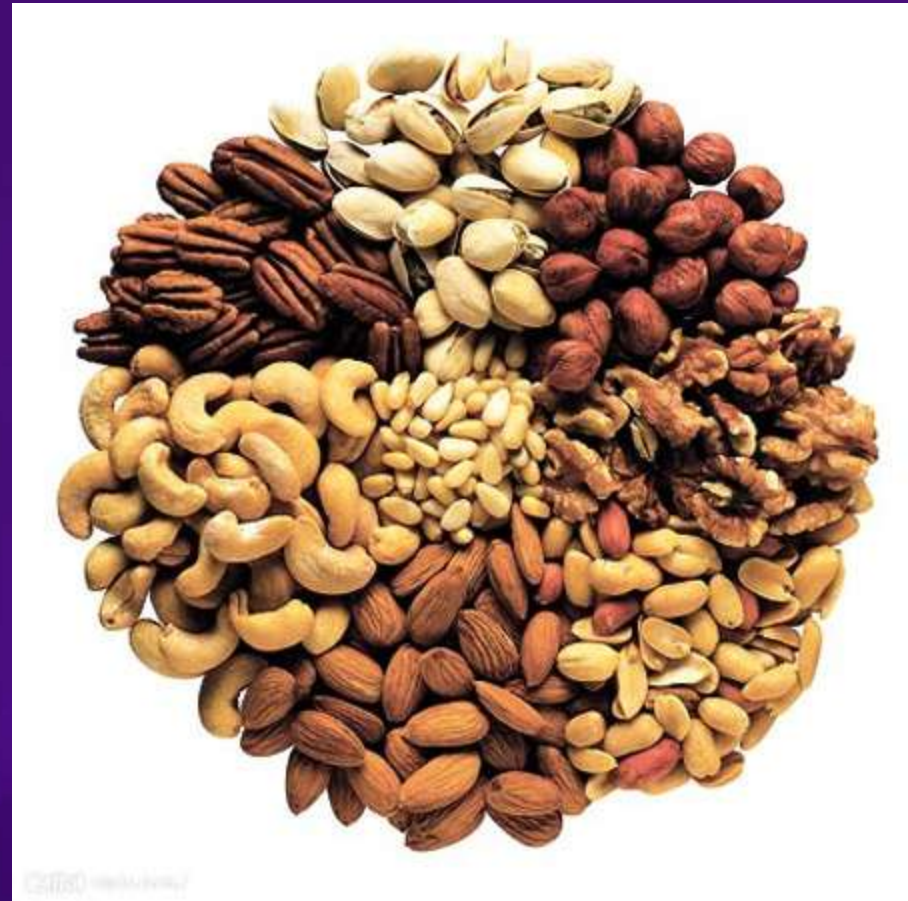
- **EAT**

- Fish, olive oil, sunflower& canola,
- Veg
- Dried dates, apricots and prunes
- Walnuts and peanut
- Fruits bread cereals

- **Avoid**

- Sat. fats, excess salt, sugar, soft drinks, alcohol& caffeine.

Awaken elderly brain



Why not to supplement all elder?

- Vitamin toxicity specially fat soluble
- Renal stones
- Vascular& soft tissue calcification
- Constipation
- GIT side effects that impair food intake, assimilation and absorption

Message to caregiver

- **How to adjust diet with medications?**
- **When to ask medical advice?**
- **Learning points for caregiver as red flags for malnutrition**
 - **Weight loss**
 - **Effort intolerance**
 - **Anaemia**

Nutrition tips for seniors

1. Stay hydrated
2. Eat protein in 3 meals
3. Do not forget cereals, nuts,
4. Customize you disk
5. Use supplements only under medical supervision
6. Salt need 2/3 teaspoon daily
7. Calories 30/Kg ↑ if activity increased

Be a happy senior



Thank you