

Grains and Nutrition Therapy



Yudhi Adrianto, SE, SGz
Triyani Kresnawan, DCN, MKes, RD

RSUPN Dr. Cipto Mangunkusumo

Jl. Diponegoro No. 71 Jakarta 10430

Email : instalasiqizirscm@yahoo.co.id ; yudhiadrianto.gizi@gmail.com ; triyanikresnawan@yahoo.com

Hospital Nutrition Service

- 1. Pelayanan Gizi Rawat Jalan (outpatient)**
- 2. Pelayanan Gizi Rawat Inap (inpatient)**
- 3. Penyelenggaraan Makanan (food production & service)**
- 4. Penelitian dan Pengembangan Gizi Terapan (R&D)**

Standardize Nutrition Service



HOSPITAL/
PRIMARY HEALTH CARE



Organization Accredited
by Joint Commission International



ACCREDITATION



PATIENT/ FAMILY

Standard in Nutrition Service

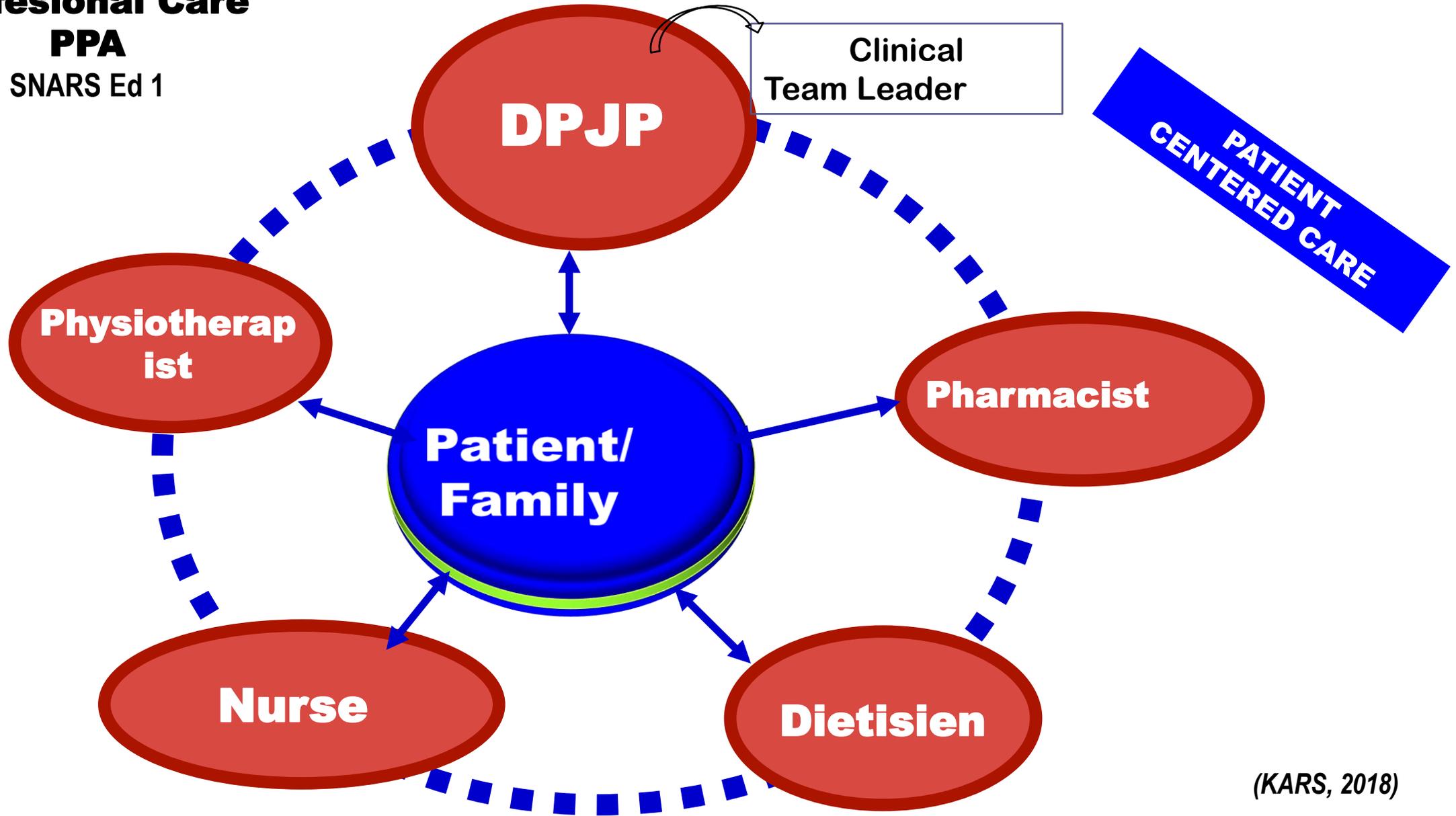


Nasional & International Standard

Professional Care

PPA

SNARS Ed 1



(KARS, 2018)

Whole Grains

Whole Grains
Healthy, Convenient, Delicious



**WHOLE
GRAINS
COUNCIL**
Whole Grains at Every Meal

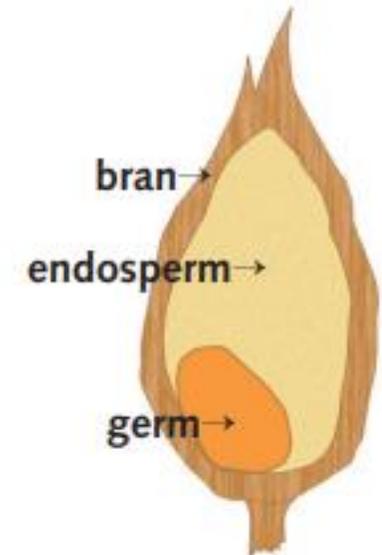
- Definition: A huge variety of cereal crops are grown for food throughout the world including wheat, rye, barley, oats and rice. Grains are the seeds of these cereal plants, includes beans, clover, alfalfa, lentils, peanuts, chickpeas, lima beans, soybeans, and others. Consist of:

- a fibre-rich outer layer – the bran
- a nutrient-packed inner part – the germ;
- a central starchy part – the endosperm.

Common Whole Grains:

- » Hulled Barley
- » Brown Rice
- » Buckwheat
- » Whole Corn

- (including popcorn)
- » Oats (and oatmeal)
- » Whole Rye
- » Whole Wheat
- » Wild Rice



Nutritional Profile



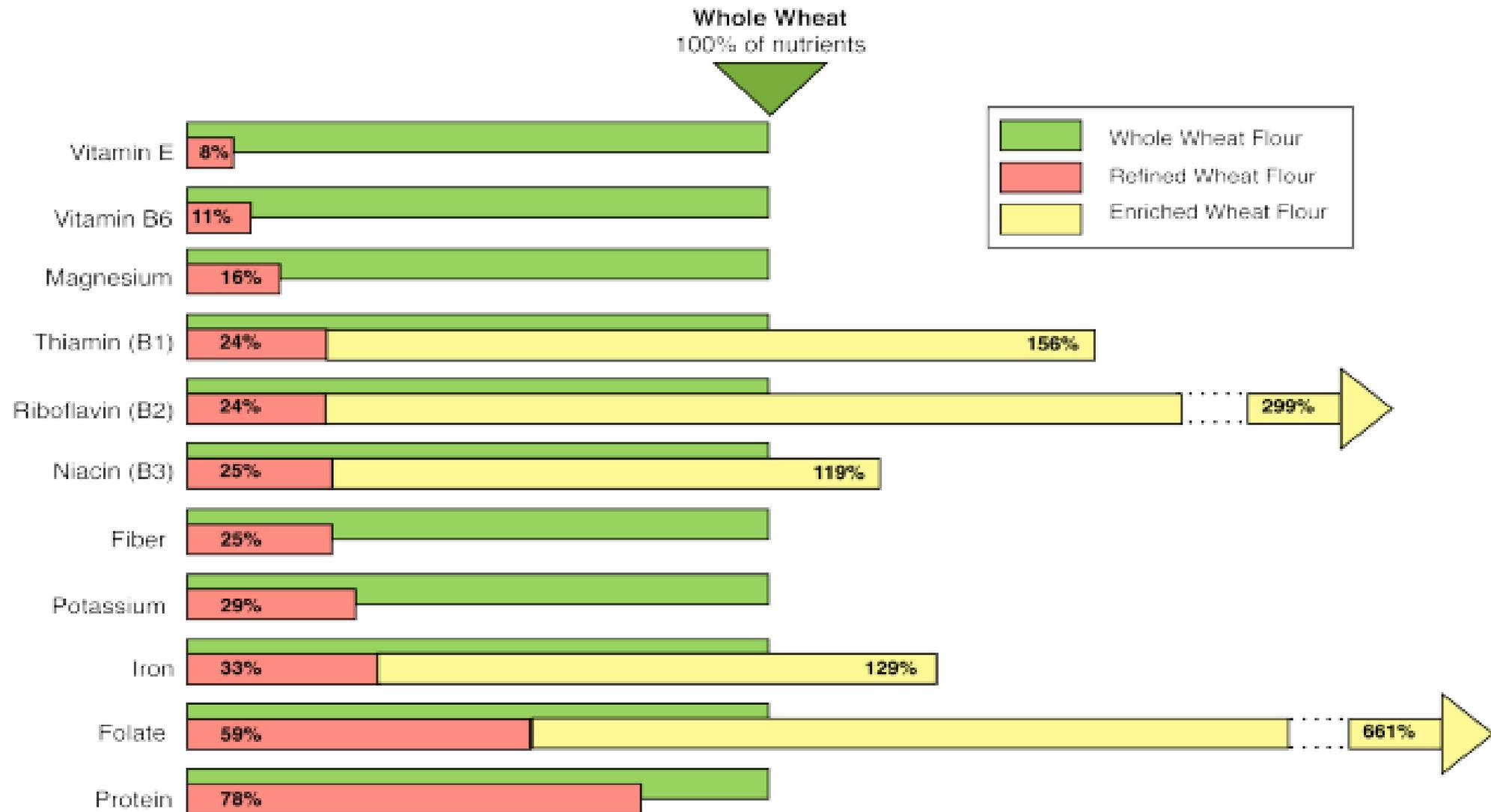
WHOLEGRAINS PROVIDE:

- fibre - both soluble and insoluble
- B vitamins and folic acid
- essential fatty acids (omega 3)
- protein
- antioxidants including vitamin E, selenium
- micronutrients like copper
- grains are unique sources of some phytochemicals, including potent antioxidants.
- Phenolic acid preventing the formation of carcinogens
- Lignans and phytoestrogens

Refined grains and fortified refined grains: What's the difference?

- Breads were first fortified with riboflavin, niacin, thiamin and iron in the 1940s as a means to deliver these nutrients, which were in short supply in the American diet
- In 1970 Cereal products have also been fortified with B vitamins and iron
- Grains were chosen as the vehicle for fortification with folic acid. In January 1998, grains in the United States were required to have folic acid added.
- Because this fortification is included in all grain products, even women who choose inexpensive white bread as their grain source will be receiving this protection to ensure the neural tube development in pregnant women.

Whole, refined and enriched weheat: What's the difference?



Indonesian Policy of Wheat Fortification?

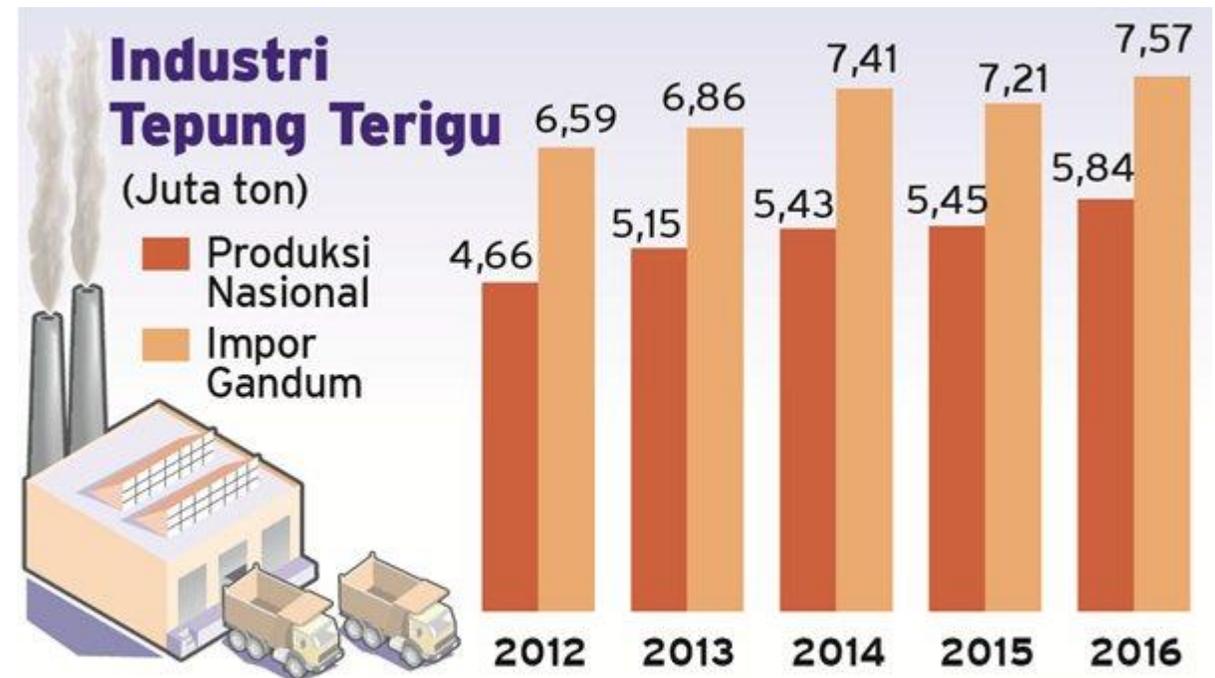
**KEPUTUSAN MENTERI KESEHATAN REPUBLIK
INDONESIA
NOMOR 1452/MENKES/SK/X/2003
TENTANG
FORTIFIKASI TEPUNG TERIGU
MENTERI KESEHATAN REPUBLIK INDONESIA,**

Menetapkan :

Pertama : **KEPUTUSAN MENTERI KESEHATAN
TENTANG FORTIFIKASI TEPUNG TERIGU.**

Kedua : Tepung terigu yang di produksi, diimpor atau
diedarkan di Indonesia harus ditambahkan
fortifikan sehingga mengandung :

- a. besi min 50 ppm;
- b. Seng min 30 ppm;
- c. Vitamin B1 (tiamin) min 2,5 ppm;
- d. Vitamin B2 (riboflavin) min 4 ppm;
- e. Asam folat min 2 ppm.



Sumber: Asosiasi Produsen Tepung Terigu Indonesia (Aptindo)

BISNIS/TUTUN PURNAMA

Nutritional Evidence of Wholegrains Intake

Research suggests that:

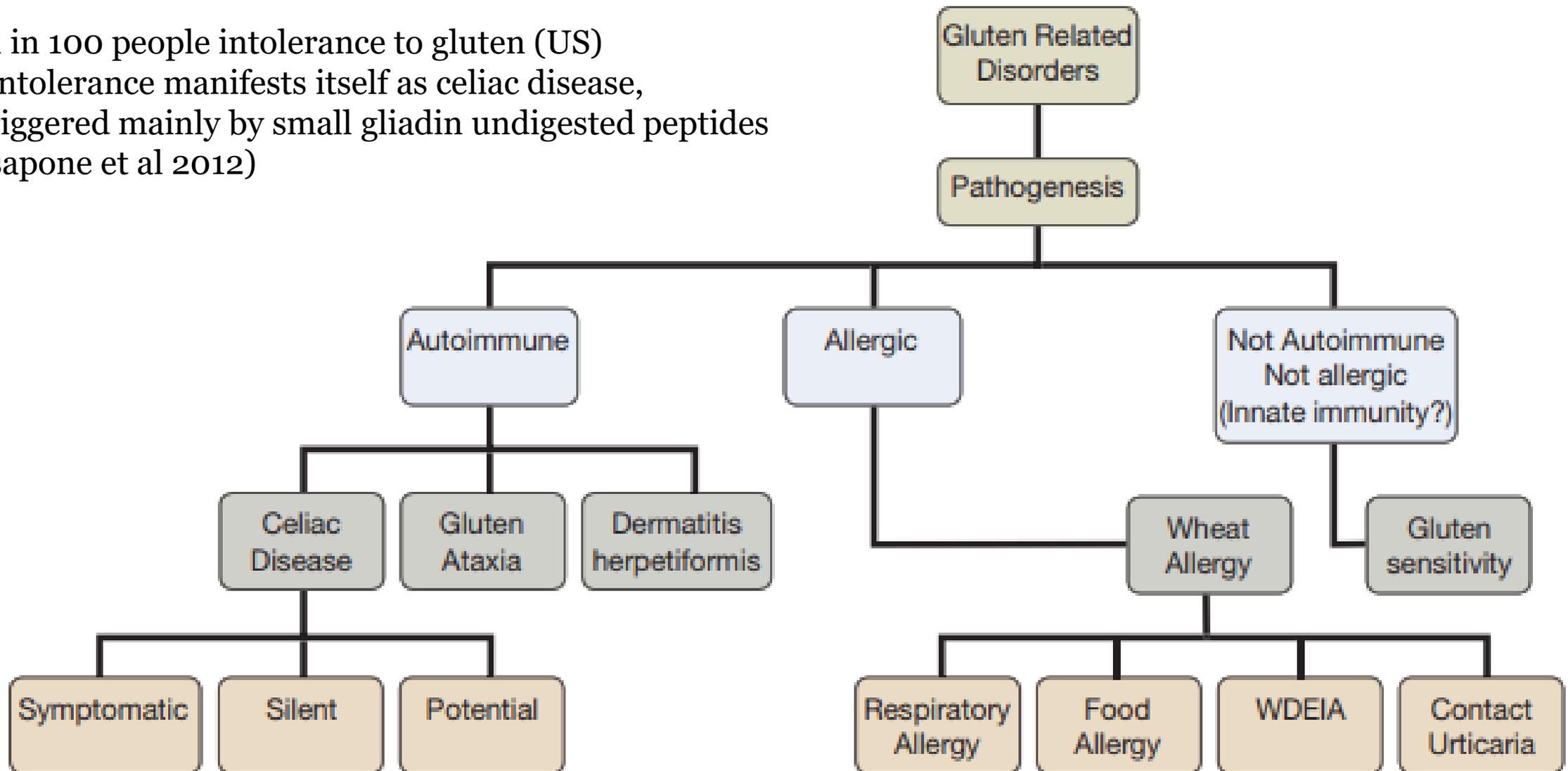
- The risk of heart disease, stroke and type 2 diabetes may be up to 30% **lower** in people who regularly eat whole grains as part of a low-fat diet and healthy lifestyle.
- The risk of developing some forms of cancer of the digestive system like bowel cancer may be reduced with higher intakes of wholegrains.
- Some of the fibre provides a food source for 'friendly' gut bacteria (inullin) helping them to increase and produce substances which are thought to protect the gut wall, such as short-chain fatty acids

Nutritional Evidence of Wholegrains Intake

- Wholegrains may help in maintaining a healthy body weight over time as part of a healthy diet and lifestyle.
- Wholegrains are usually low in fat but rich in fibre and starchy carbohydrate and often have a low glycaemic index (GI).
- Adding whole grains to your diet can significantly lower your risk of chronic diseases and illnesses such as:
stroke ; diabetes ; heart disease ; inflammatory diseases ; some cancers ; high blood pressure

Gluten Related Disorders

-1 in 100 people intolerance to gluten (US)
-intolerance manifests itself as celiac disease,
triggered mainly by small gliadin undigested peptides
(sapone et al 2012)



Grains : Related Blood Glucose, and Inflammation

Effects of CHO, Grains, and Dietary Fiber on Glucose and Insulin.

Prospective cohort studies (Shrestha et al 2012) indicate that diets containing a recommended balance of whole and enriched refined grains, dietary fiber, and cereal fiber help reduce the risk of chronic conditions that involve elevated glucose and insulin, such as metabolic syndrome, cardiovascular disease, inflammation, and T2DM

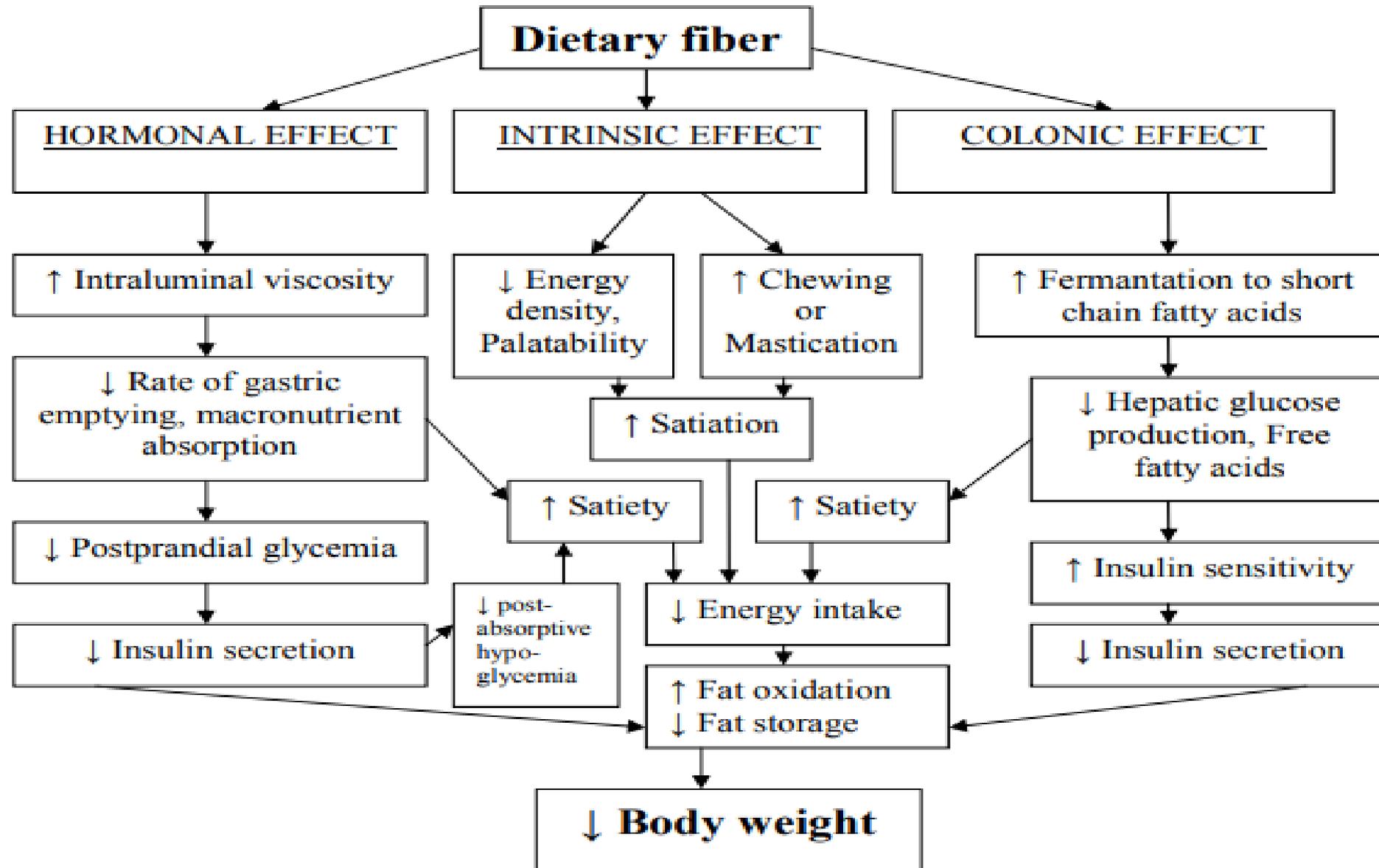
Glycemic Index Food List

Low GI			Medium GI		High GI	
Breakfast Cereals	All-Bran (Kellogs -AU)	30	Sustain (Kellogs)	55	Mini Wheats, Blackcurrant	72
	Guardian (Kellogs)	37	Hi Bran Weetbix (Sanitarium)	57	Bran Flakes (Kellogs)	74
	Natural Muesli (Sanitarium)	40	Mini Wheats (Kellogs)	58	Coco Pops (Kellogs)	77
	Toasted Muesli (Purina)	43	All-Bran Wheat Flakes	60	Cornflakes (Kellogs - AU)	77
	Komplete (Kellogs)	48	Sultana Bran (Kellogs)	64	Instant Porridge (Uncle Toby)	82
	Fruit & Nut Mueli (Naytura)	48	Nutrigrain (Kellogs)	66	Puffed Wheat (Sanitarium)	85
	Porridge	49	Shredded Wheat	67	Rice Bubbles (Kellogs)	87
	Natural Muesli (Morning Sun)	49	Special K (Kellogs-US)	69	Crispix (Kellogs)	87
	All-Bran (Kellogs - US)	50	Weetbix (Sanitarium)	69		
	Oat Bran	50				
	Rolled Oats	51				
	Special K (Kellogs)	54				



Low GI			Medium GI		High GI	
Breads	Soya and Linseed	36	Pita - white	57	Bagel	72
	Mixed / Multi Grain	43	Sourdough	57	Wholemeal	74
	Heavy Mixed Grain	45	Wholemeal Rye	58	White	80
	Wholegrain Pumpernickel	46	Hamburger Bun	61	Baguette	95
	Sourdough Rye	48	Bran Muffin	65		
	Whole Wheat	49	Croissant	67		
	Dark Rye	51				
	Sourdough Wheat	54				
Pasta/Rice/Carbs	Pearled Barley	22	Doongara Rice	56	Tapioca / Sago	70
	Egg Fettuccini	32	Wild Rice	57	Brown Rice	72
	Spaghetti	42	Basmati Rice	58	Brown Rice (boiled)	72
	Macaroni	45	Couscous	61	Short Grain White Rice	83
	Brown Rice (steamed)	50	Cornmeal	68	Glutinous Rice	86
	Buckwheat	51	Taco Shells	68	Instant White Rice	87
	Instant Noodles	52	Gnocchi	68	Sticky Rice	87
	Rice Noodles	53	Arborio Rice	69	Jasmine Rice	89
	Wheat Pasta Shapes	54				

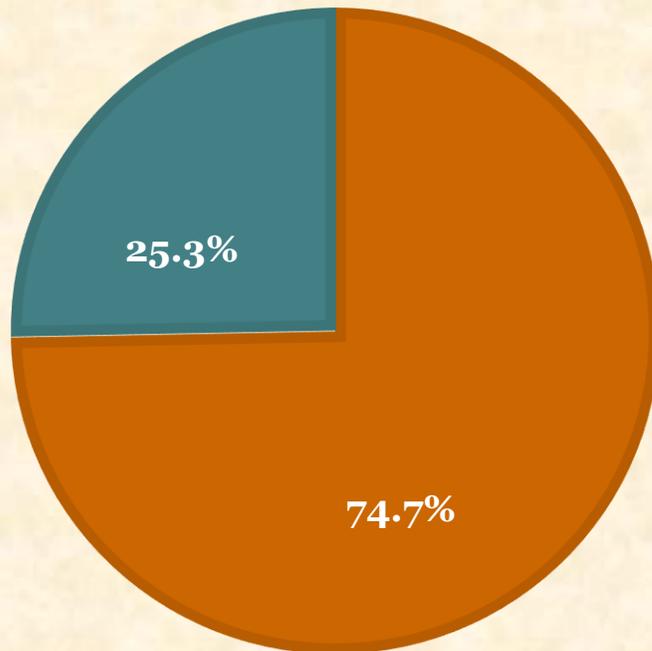
Dietary Fiber Intake and Body Weight



FUNCTIONAL CONSTIPATION

FUNCTIONAL CONSTIPATION
(n=150)

■ Ya ■ Tidak

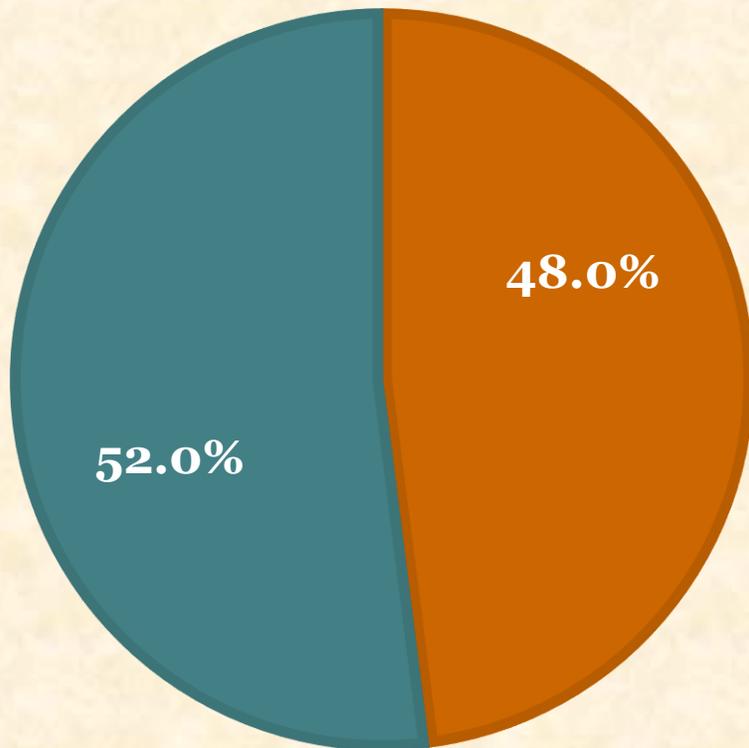


- Female = 31,3%; Male = 43,3%
- > prevalence functional constipation in Al-Azhar 2 Pejaten High School South Jakarta (36,9%) (Dhias, 2015)
- > prevalence functional constipation in Kesatrian 1 High School Semarang (68,5%) (Claudina, et al., 2018)
- Constipation symptom (less <3 times per week for defecation (79,3%)

FIBER AND FLUID INTAKE

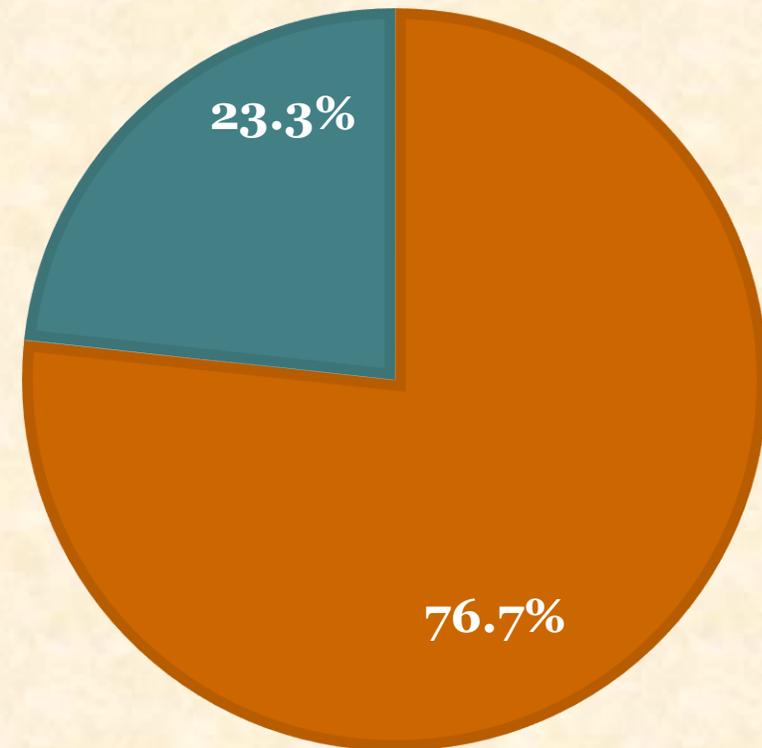
FIBER INTAKE (n=150)

■ Kurang ■ Cukup



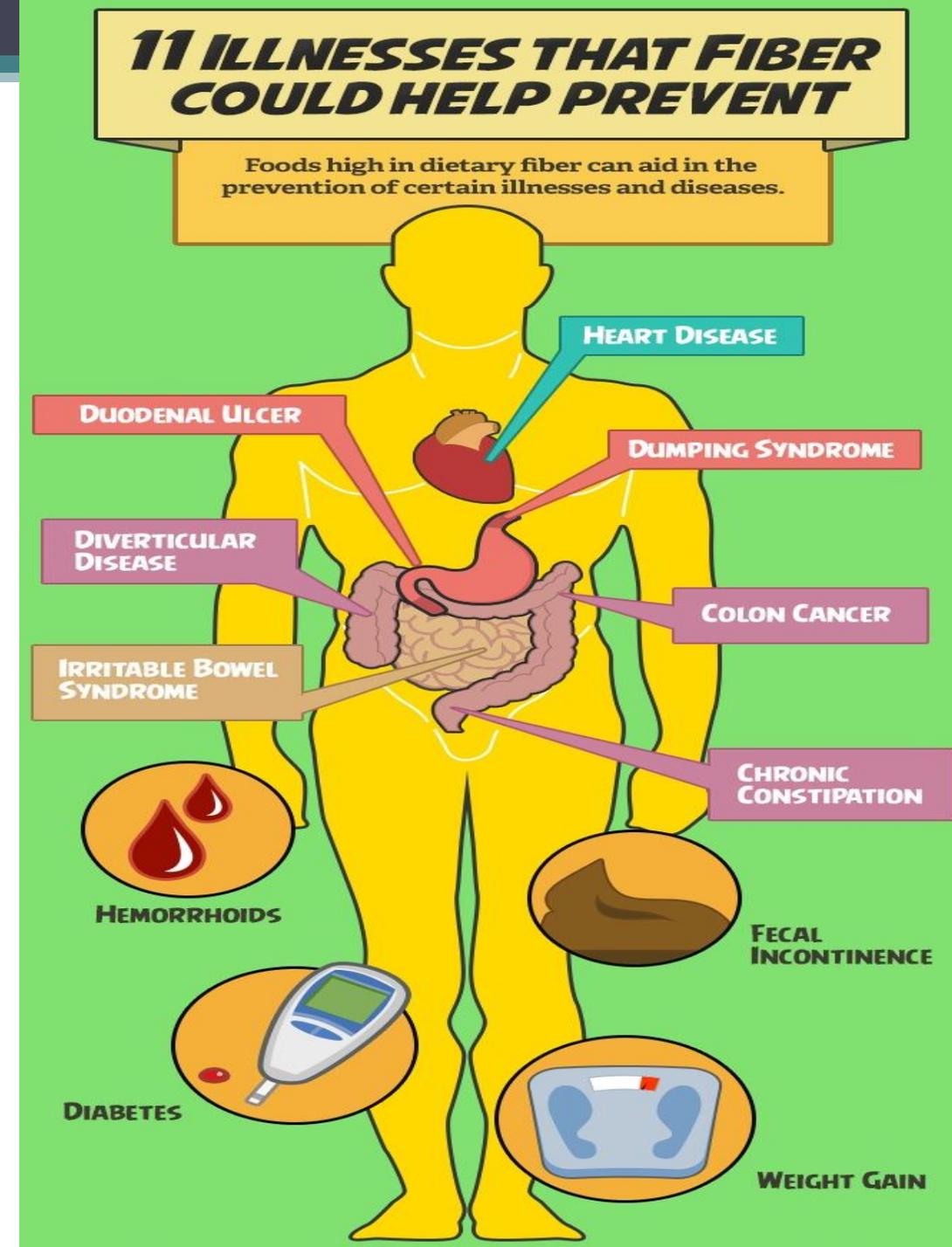
FLUID INTAKE (n=150)

■ Kurang ■ Cukup



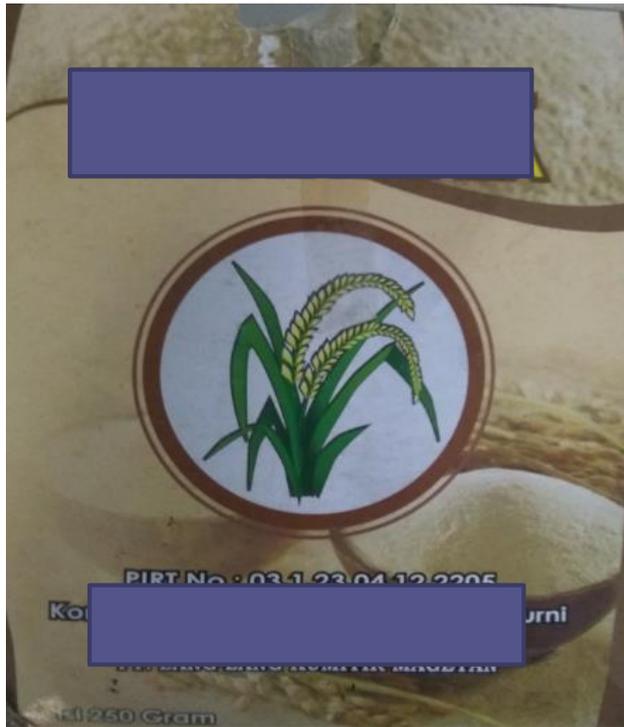
Are You Getting Enough Fiber?

- Recommended: 20-35 grams
- Average American consumes: 15 grams
- Average Indonesian consumes: 10 grams
- How can I make sure I'm getting enough fiber?
 - 5 servings of fruits and vegetables
 - 6 servings of grains





Use of Grains in Hospital



**Varian Makanan Enteral
RSUPN Dr. Cipto Mangunkusumo**

Havermout/Oatmeal Menu



Indication:

- Geriatric
- mechanical altered difficulties
- food transition (FEES test in stroke patient)

COMPOSITION:

- 350 gram oatmeal
- 30 ml coconut milk
- 30 gram brown sugar
- 1 pc egg
- 1 glass juice

NUTRITION VALUE:

- Energy : 503 kcal
- Protein : 16 gram
- Fat : 8 gram
- Carb : 92 gram
- Fiber : 7 gram



Cookies Bekatul as Snack Menu



NUTRITION FACTS

per 80 gram (2 pcs)

Energy = 181 kcal

Protein = 1,84 gram

Fat = 14,5 gram

Carb = 13,14 gram

Fiber = 1,9 gram

COMPOSITION :

- **Bekatul 150 g**
- **Sugar 200 g**
- **FC Milk 200 g**
- **Yolk 4 btr**
- **Corn starch 80 g**
- **Wheat flour 100 g**
- **Margarin & butter 100 g**

CONCLUSION

- Grains should always be part of a healthy and nutritious balanced diet for most of the population.
- Highly recommended to ensure an appropriate intake of dietary fiber, minerals, vitamins, and other beneficial bio- compounds present in grain.
- Balance diet is recommended as 45–65% of total calories from CHO-rich staple foods.
- Grains can be used as staple food, snack, and enteral or ONS in hospital diet.

Reference

- Biesiekierski, J.R., S.L. Peters, E.D. Newnham, O. Rosella, J.G. Muir, and P.R. Gibson. 2013b. No effects of gluten in patients with self-reported non-celiac gluten sensitivity after dietary reduction of fermentable, poorly absorbed, short-chain carbohydrates. *Gastroenterology* 145:320-328
- Lee, Y., and L.L. Birch. 2002. Diet quality, nutrient intake, weight status, and feeding environments of girls meeting or exceeding the American Academy of Pediatrics recommendation for total dietary fat. *Minerva Pediatrics* 54: 179-186
- Miller Jones, J. 2012. Wheat Belly: An Analysis of selected statements and basic theses from the book. *Cereal Foods World* 57: 177-189.
- Sapone A., J. C. Bai, C. Ciacci, J. Dolinsek, P. H.R. Green, M. Hadjivassiliou, K. Kaukinen, K. Rostami, D. S. Sanders, M. Schumann, R. Ullrich, D. Villalta, U. Volta, C. Catassi and A. Fasano. 2012. Spectrum of gluten-related disorders: consensus on new nomenclature and classification. *BMC Medicine* 10: 1-13.
- Shrestha, A. K., Blazek, J., Flanagan, B. M., Dhital, S., Larroque, O., Morell, M. K., Gilbert, E. P., and Gidley, M. J. Molecular, mesoscopic and microscopic structure evolution during amylase digestion of maize starch granules. *Carbohydr. Polym.* 90:23, 2012.
- Slavin JL (2005) *Nutrition* 21: 411-418;