MyBreakfast Study of School Children:

Findings, Implications & Solutions

SYMPOSIUM

Presentation 6:

Wholegrain consumption

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Introduction

- A growing body of epidemiological evidence indicates that consumption of whole grain may be protective against several chronic diseases in adults including diabetes (De Munter & Hu, 2007; Ye et al., 2012) and obesity (Harland & Garton, 2008; Mozaffatian et al., 2011).

- In children and adolescents, the association between consumption of whole grain and health benefits has been less explored but several studies have reported improved nutrient intakes and diet quality among whole grain consumers compared to non-consumers (Mann et al., 2015; Bellisle et al., 2014; Devlin et al., 2013; O'Neil et al., 2010).

- Little is known however, about whole grain consumption patterns in Malaysia.

Whole grain calculation

- 24-hour dietary recall/food record → **Whole grain consumers** were defined as children who **consumed a wholegrain food on at least one of the recall/record days**
- A database was created using excel spreadsheet where the details of all wholegrain foods consumed were recorded
- The amount of whole grain per 100g in each wholegrain food was estimated by one of three methods:
  1) using quantitative ingredient declarations on food package labels
  2) directly contacting the manufacturers to obtain the information
  3) taking an average of the whole grain content of similar products
- The amount of whole grain consumed was calculated using the formula:

  (Whole grain per 100g) x weight of the wholegrain foods consumed (g)

Eg:

Time	Item	Brand	Quantity	Weight (g)	Total whole grain/100g	Whole grain intakes (g)
6.30am	Cookie Crisp Breakfast Cereal	Nestle	½ Bowl	30	27.1	(27.1/100) x 30 = **8.13**

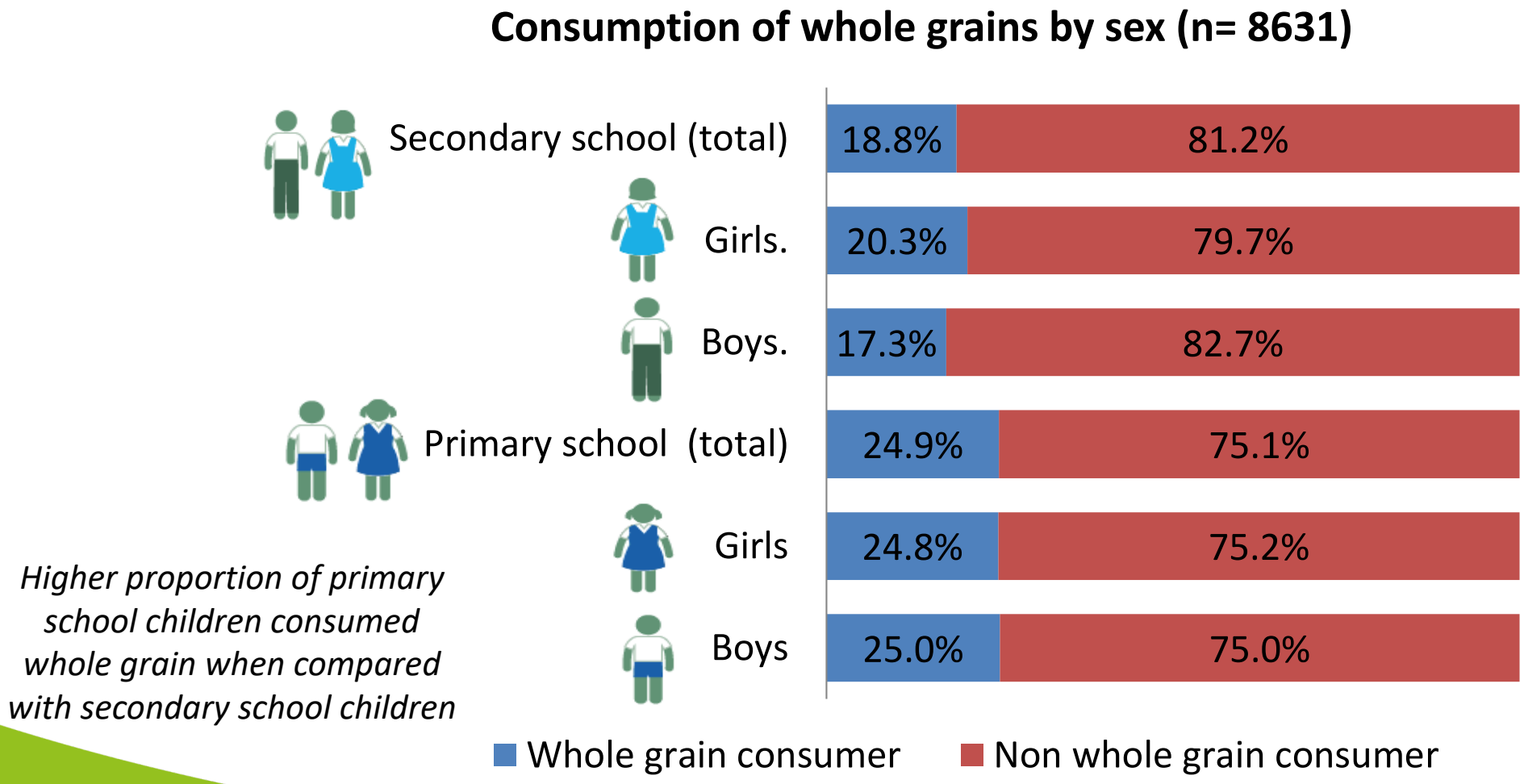
From 24-HDR/food record

Whole grain database: method 1-food label

(WG/100) x g consumed

Findings #1

Low prevalence of whole grain consumption among primary (24.9%) and secondary (18.8%) school children

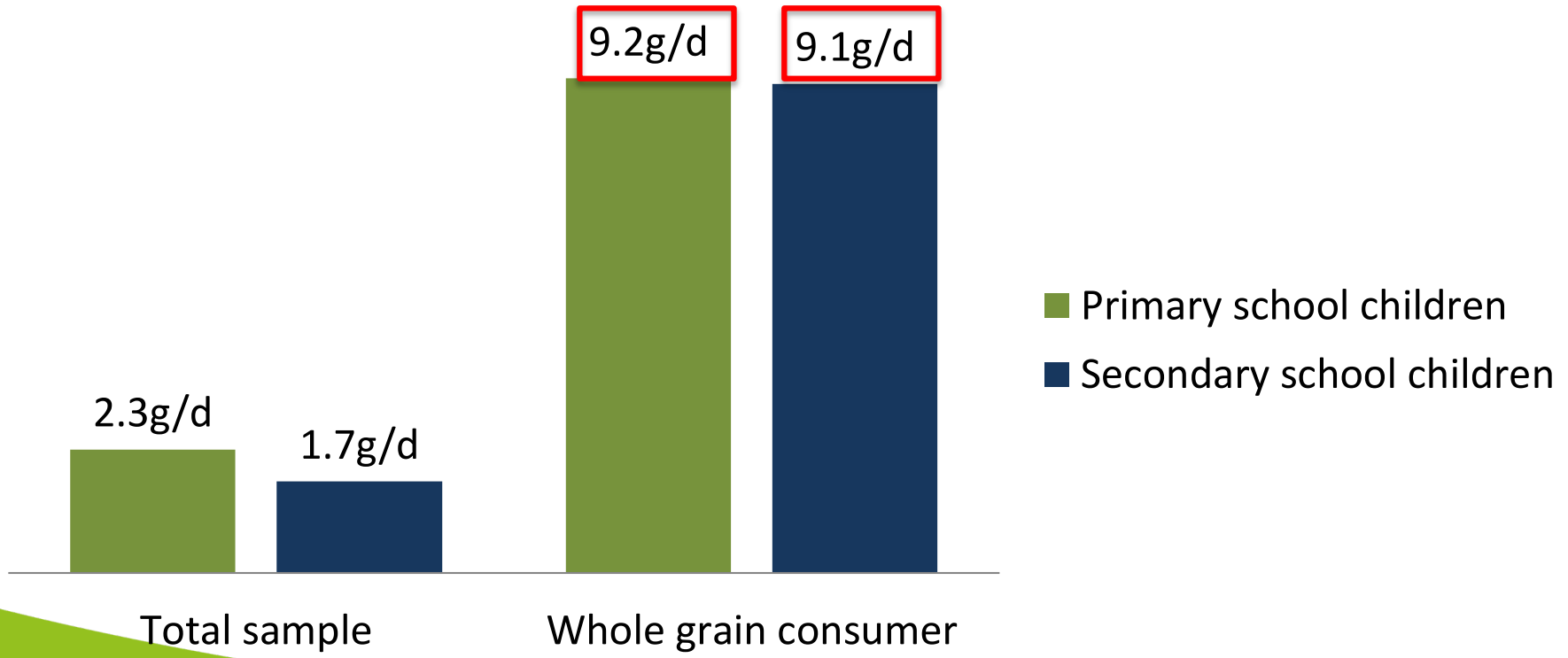


Higher proportion of primary school children consumed whole grain when compared with secondary school children

Findings #2

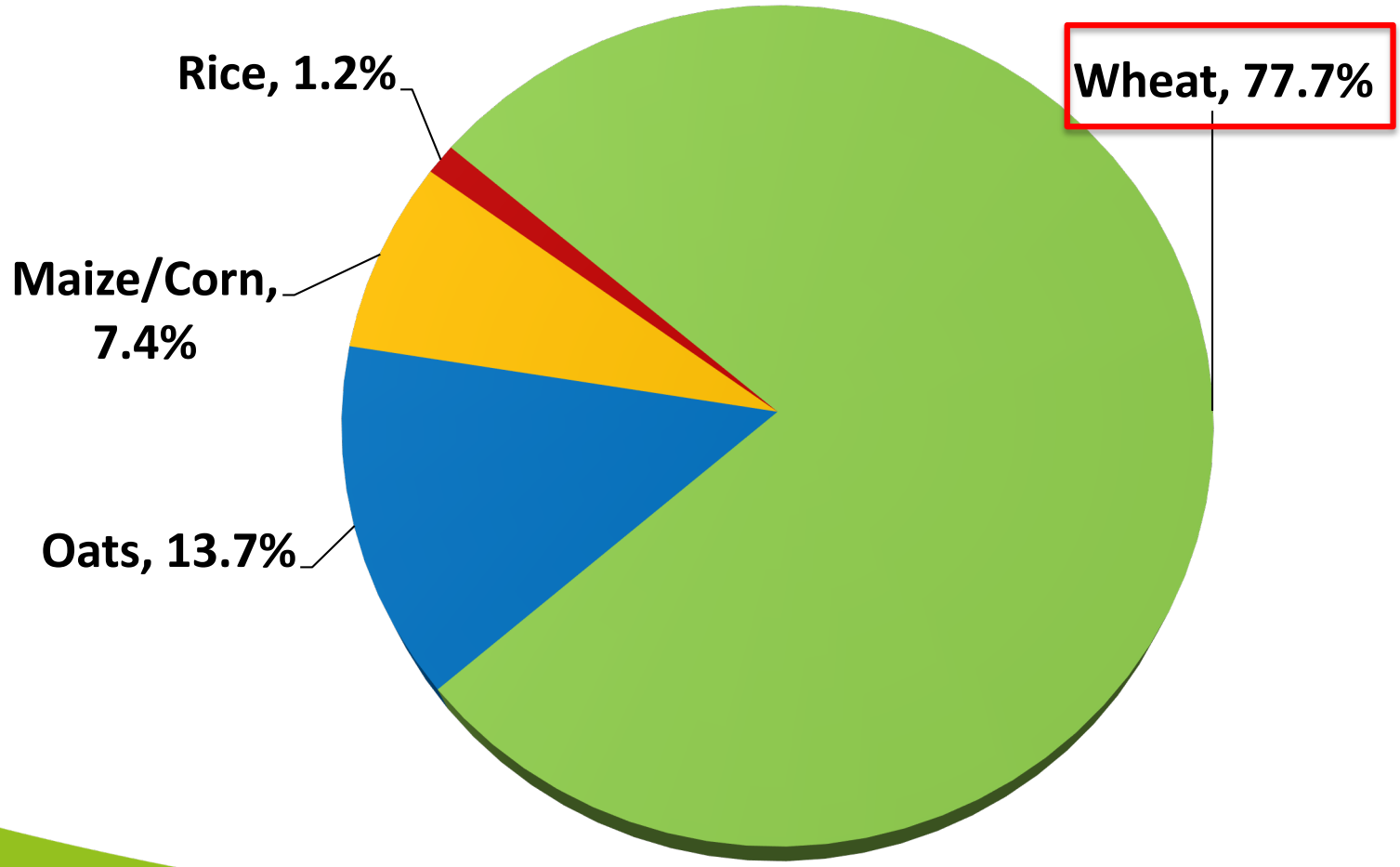
- **Intake of wholegrain among all children was very low (≈2g)**
- **Even among consumers, the amount consumed (about 9g/d) was far below the recommended intake for both primary and secondary school children**

Mean daily intakes of whole grain



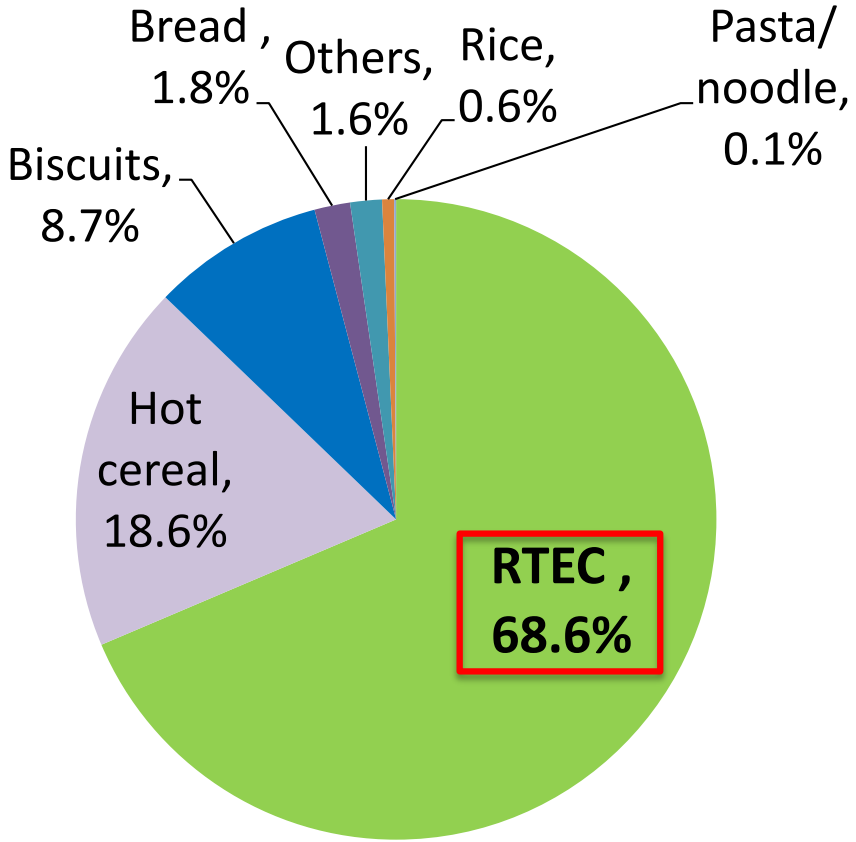
Findings #3

The main source of whole grain was wheat

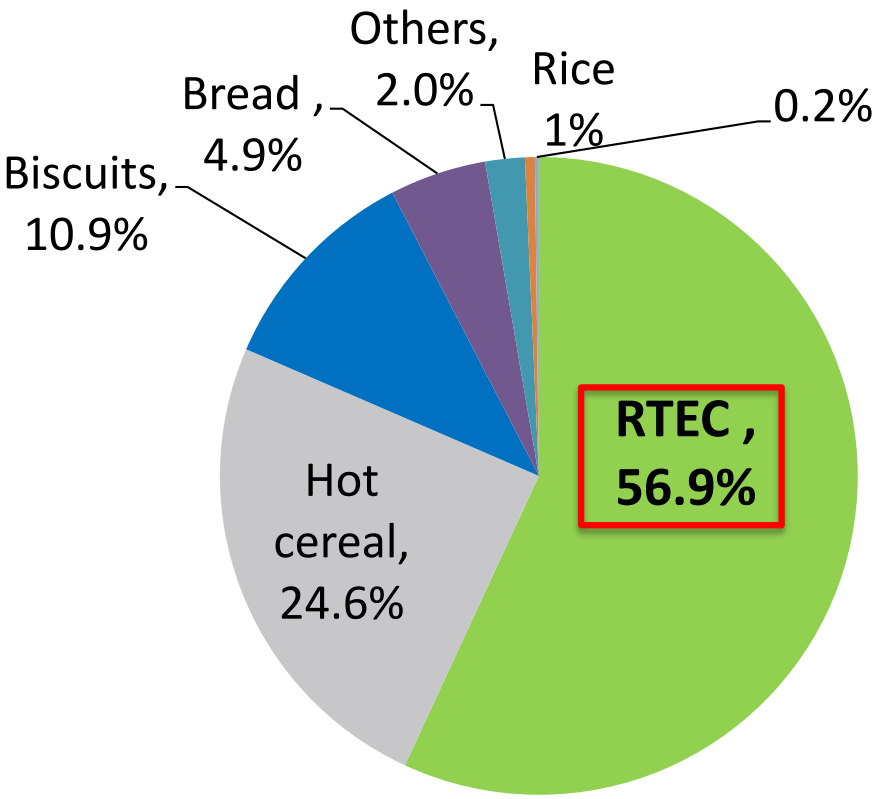


Findings #4

The main source of wholegrain foods was ready-to-eat cereals (RTEC), contributing 60-70% of whole grain intakes



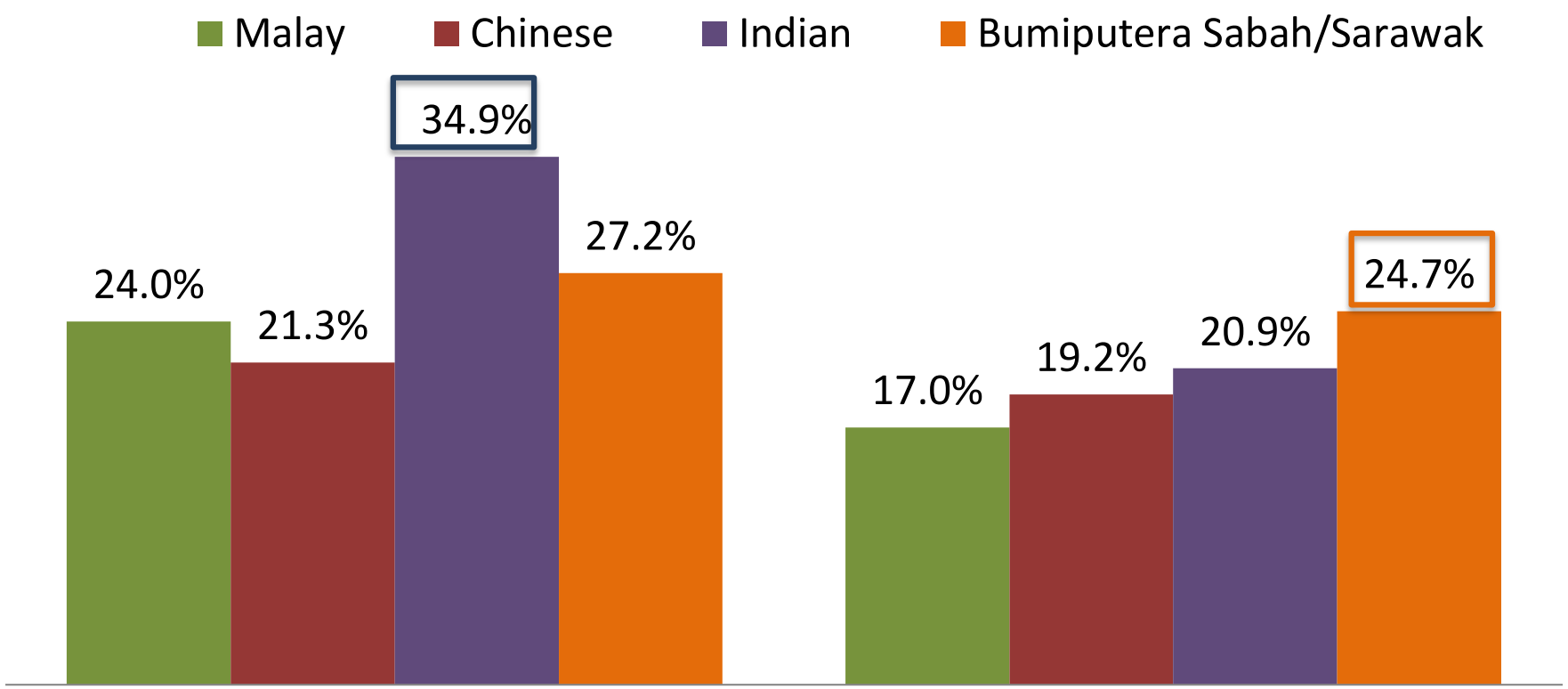
Primary School (*n*=5556)



Secondary School (*n*=3075)

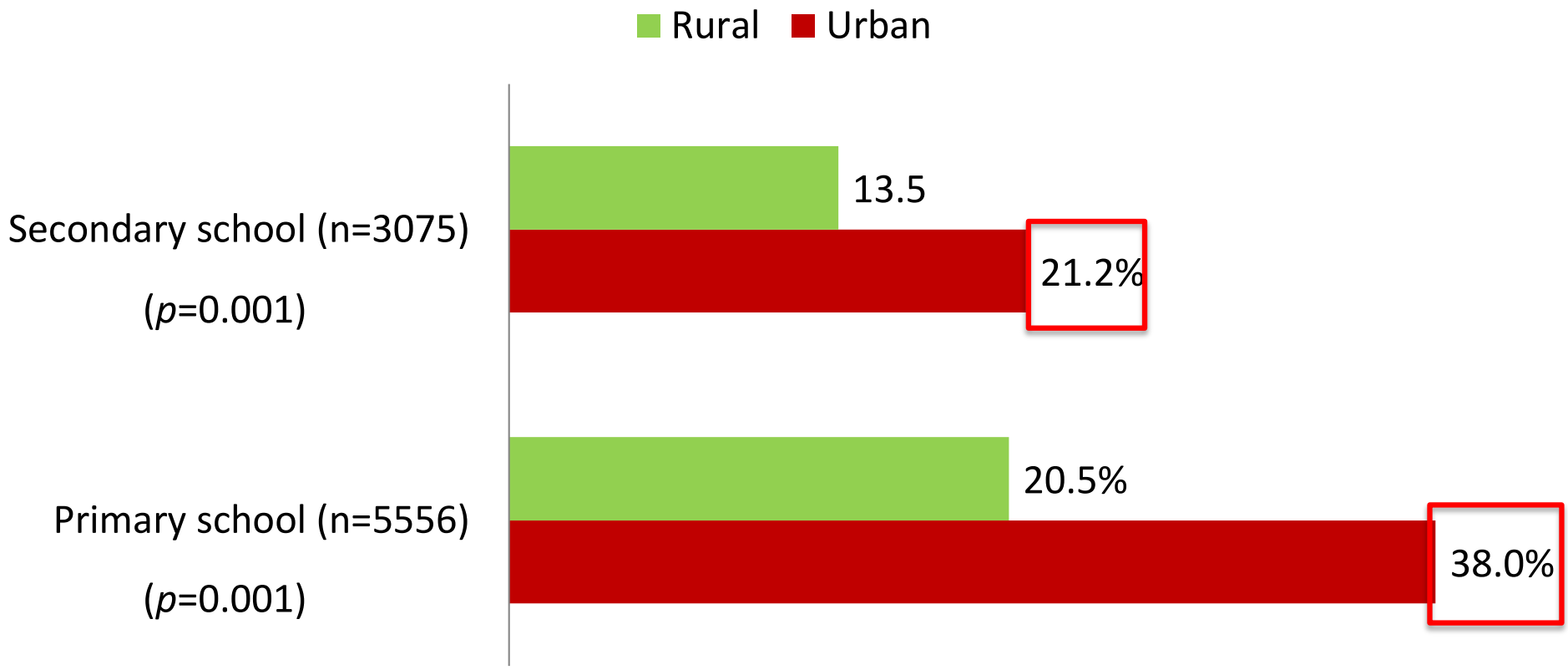
Findings #5

The prevalence of whole grain consumers was highest among Indians in primary schools and Bumiputera Sabah/Sarawak in secondary schools



Findings #4

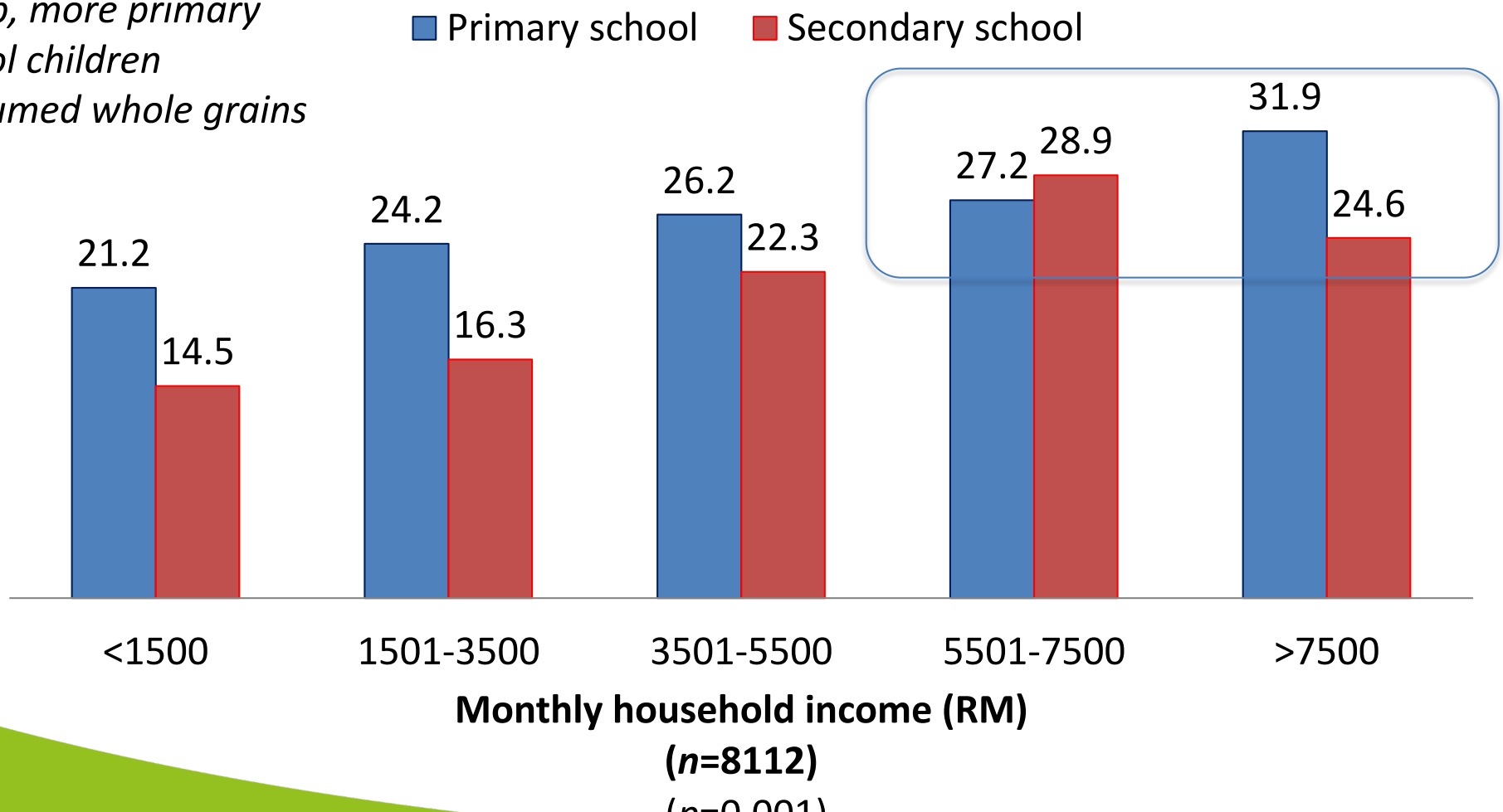
Consumption of whole grain was higher in the urban than rural area for both primary and secondary school children



Findings #4

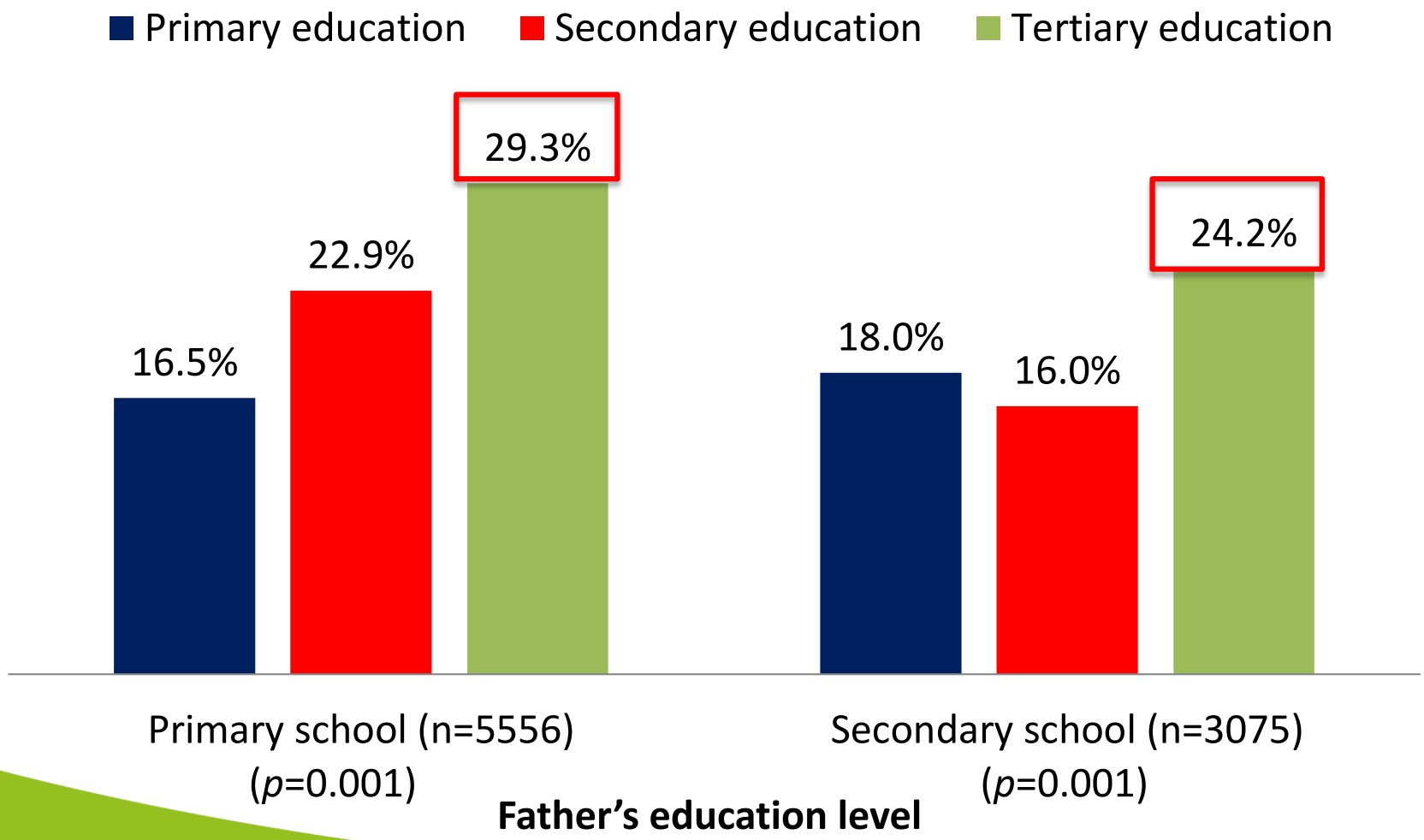
More primary and secondary school children in the higher income groups consumed whole grains

At almost every income group, more primary school children consumed whole grains



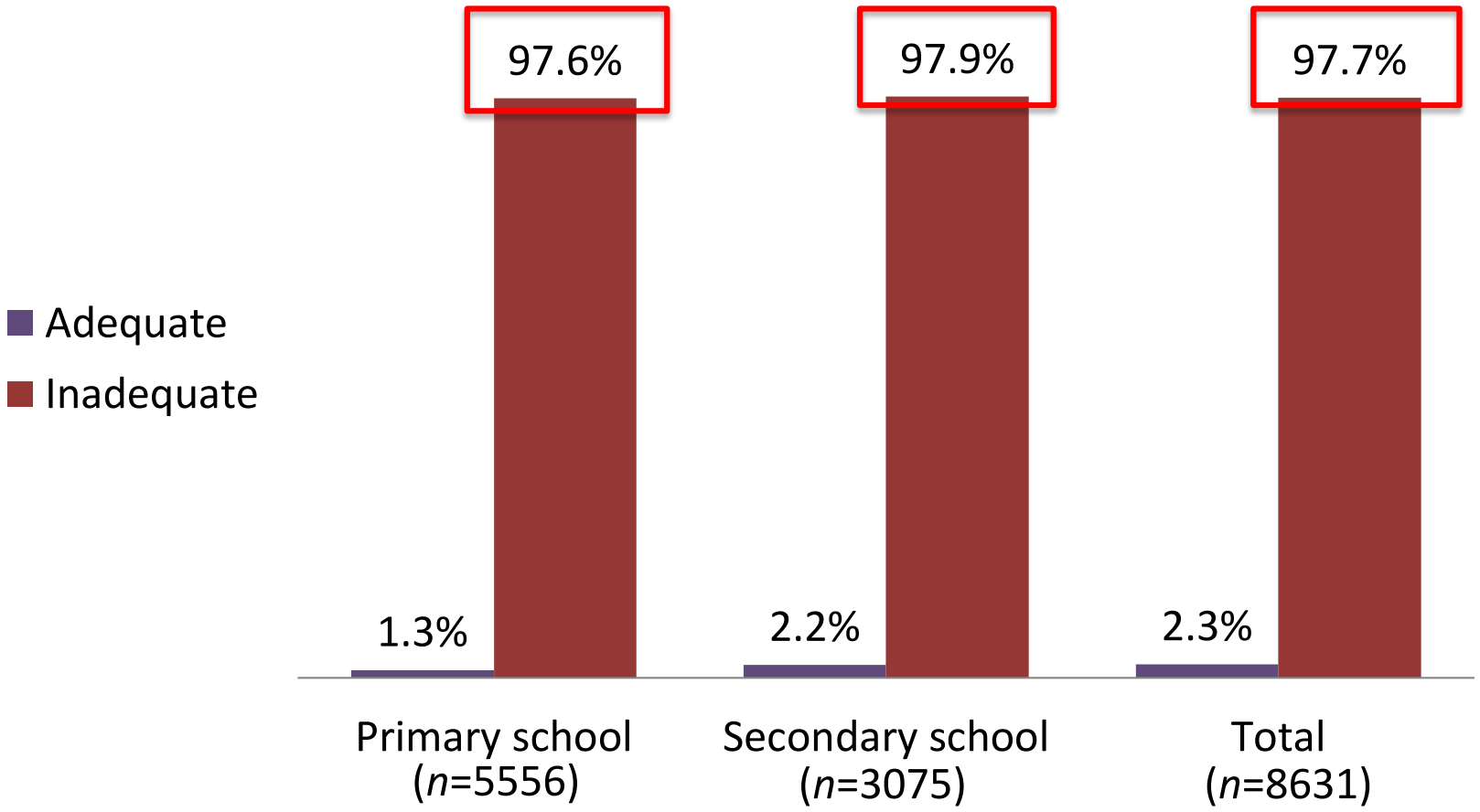
Findings #4

Consumption of whole grain was higher among primary and secondary school children whose fathers had tertiary education



Findings #7

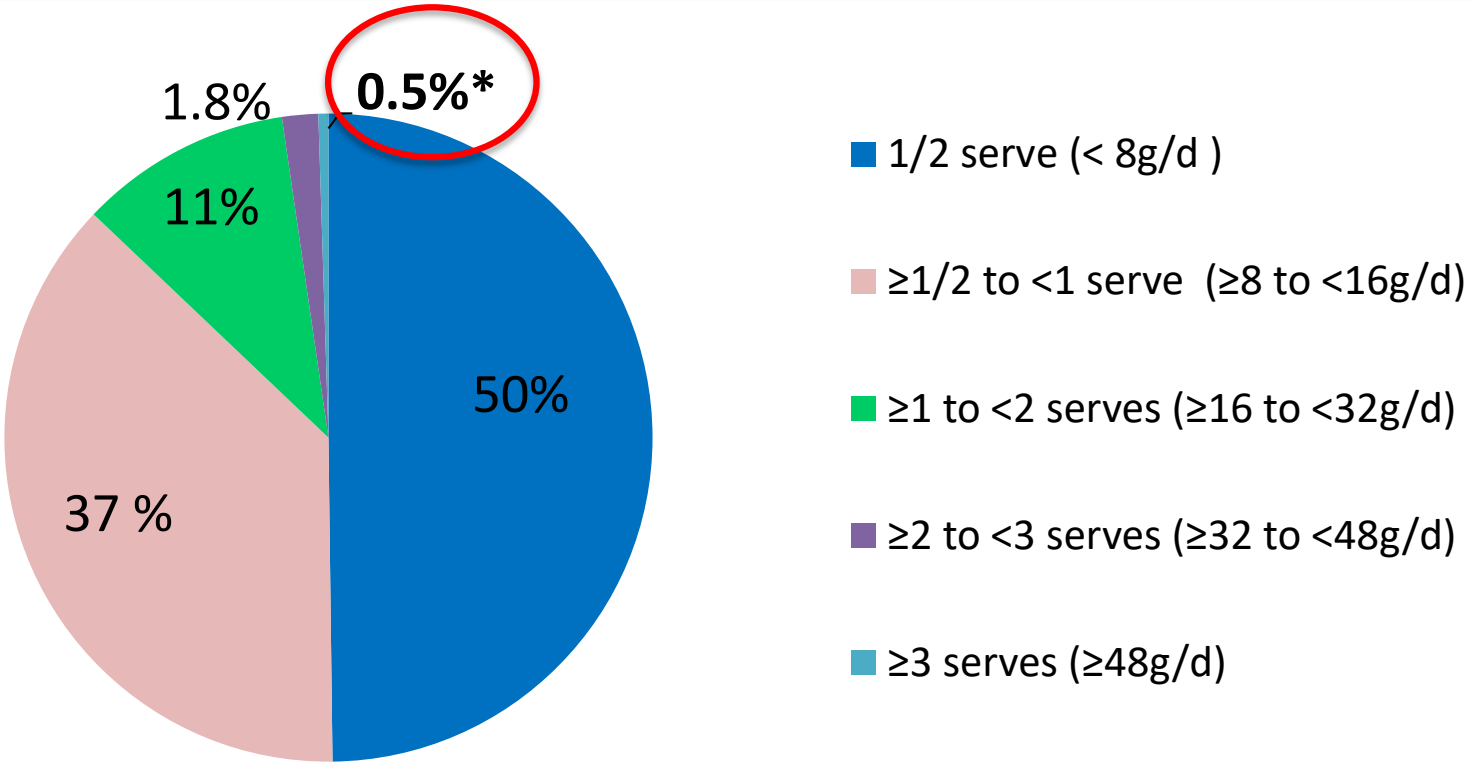
Almost all of the children (97.7%) did not meet the Malaysian Dietary Guidelines* wholegrain recommendation



***Half of the cereal intake should come from wholegrain foods/product, equivalent to 2 – 4 servings (≈43g)**

Findings #7

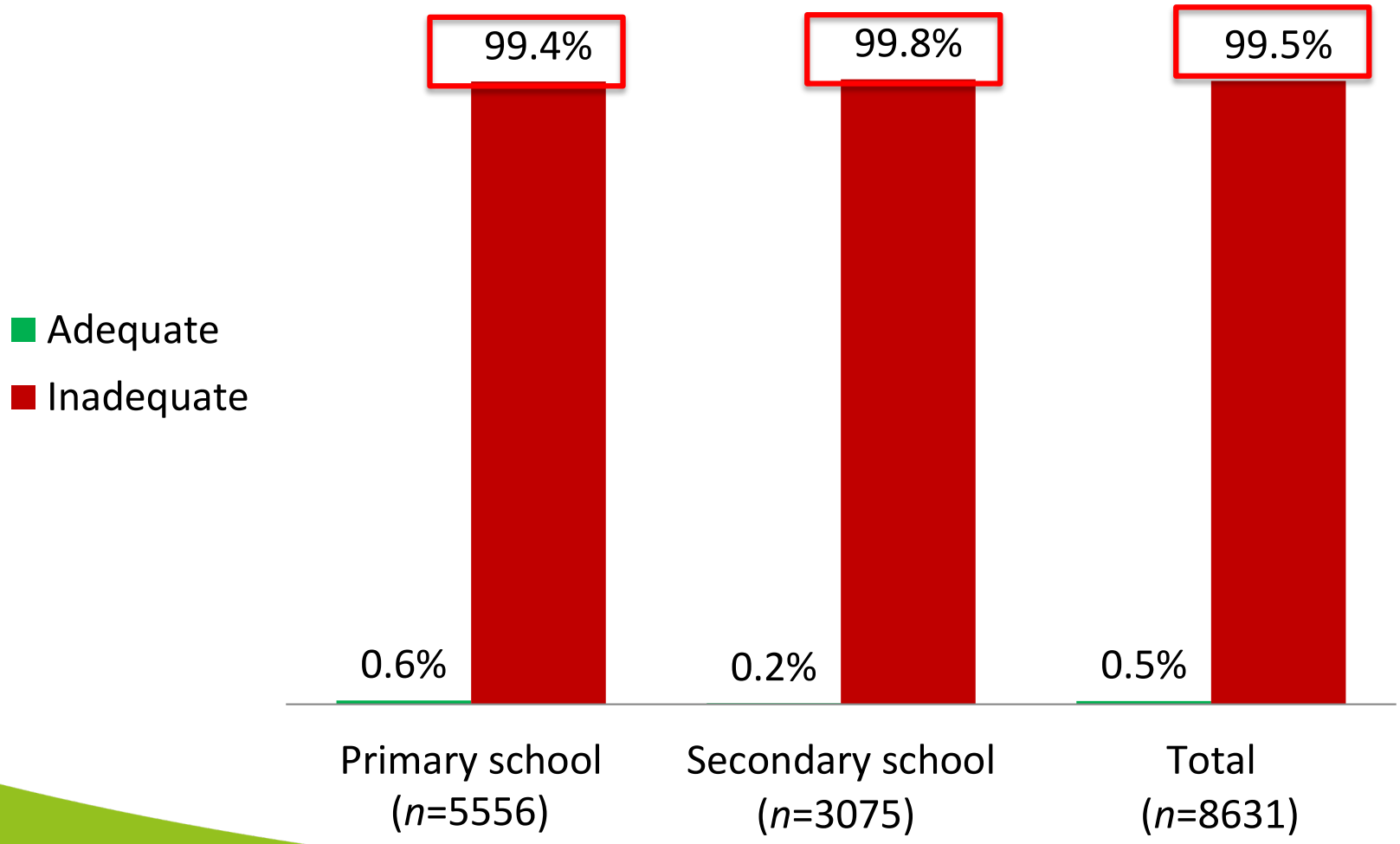
Proportion of school children who consumed whole grains achieving different levels of the US whole grain intake recommendation of 48g/d or 3 x 16g serves/d



*Less than 1% of the children who consumed whole grain achieved the US quantitative whole grain recommendation of 48g/d

Findings #7

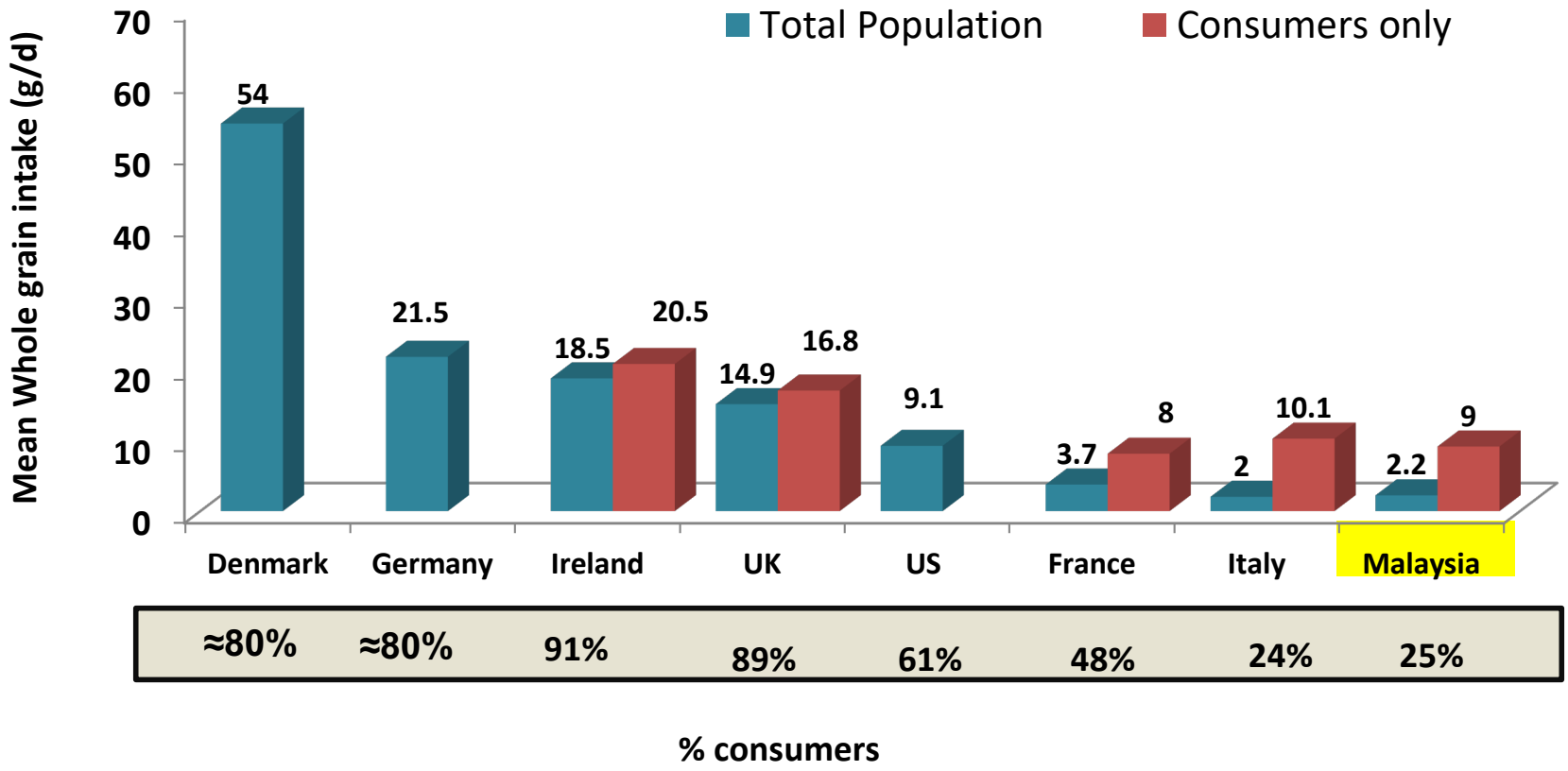
Less than 1% of primary and secondary school children met the US quantitative whole grain recommendation of 48g/d



Findings #7

Compared to other countries, whole grain intakes among primary school children in Malaysia are amongst the lowest reported in the world

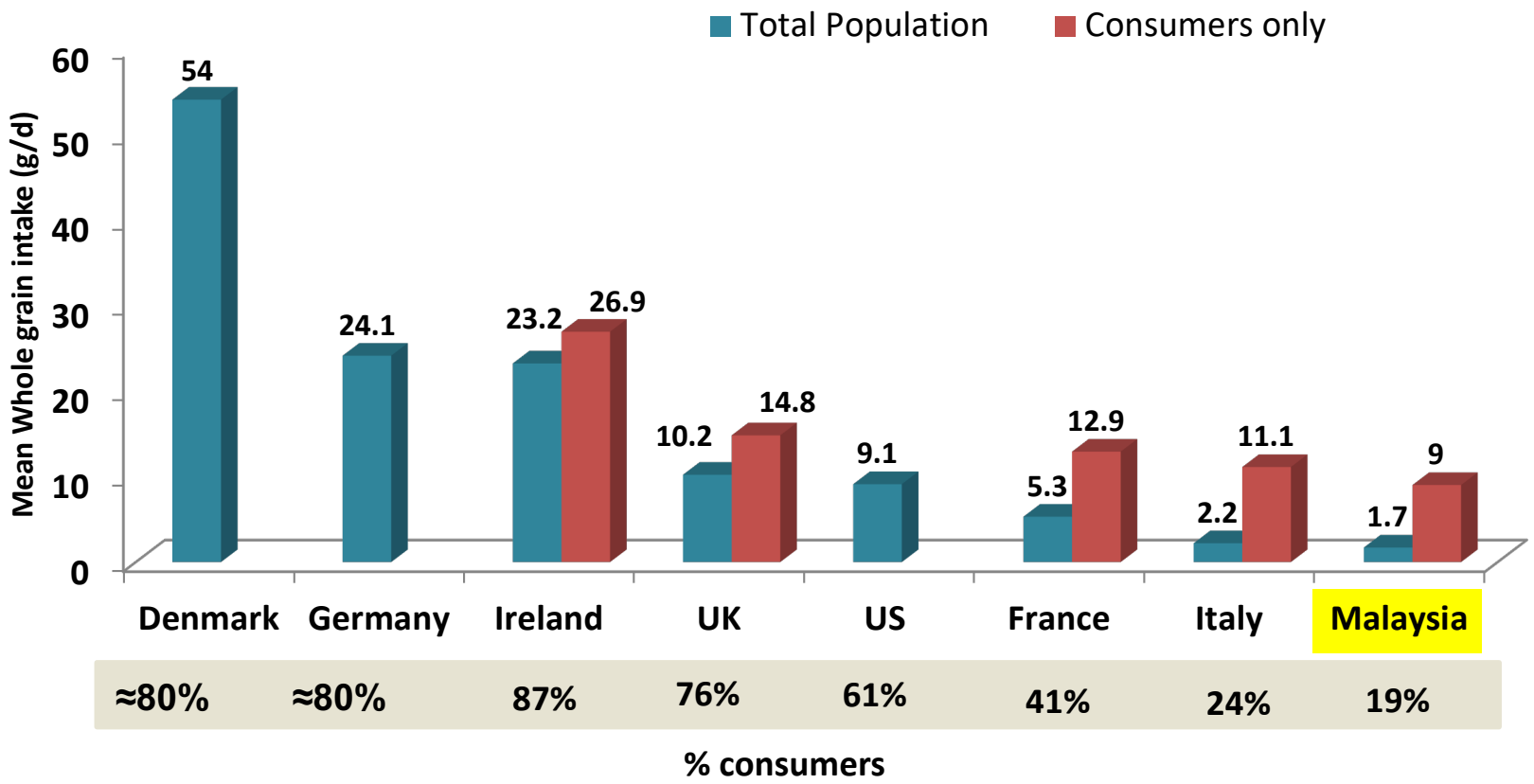
Global overview of Whole Grain Intakes (g/d) in Children



Findings #7

Compared to other countries, whole grain intakes among secondary school children in Malaysia are amongst the lowest reported in the world

Global overview of Whole Grain Intakes (g/d) in Teenagers



Recommendations

- Efforts are needed to understand the barriers to whole grain consumption among Malaysian children
- Increase nutrition education in schools on the health benefits of whole grain and how to identify whole grain foods is also warranted
- Encourage children to consume a greater variety of wholegrain foods, for example, wholemeal cereal, wholemeal bread, brown rice, wholemeal noodle and pasta
- Increase availability and affordability of whole grain foods
- Steps should be taken by the regulatory authority in Malaysia to encourage manufacturers to add or increase whole grain in products such as:
  - Approval of a definition for whole grain and a wholegrain food
  - Development of a distinctive food label logo which signifies that a food is a good source of whole grain

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Thank You