

Rice Consumption among US Adults with CD: Impact on Inorganic Arsenic Intake

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Objective

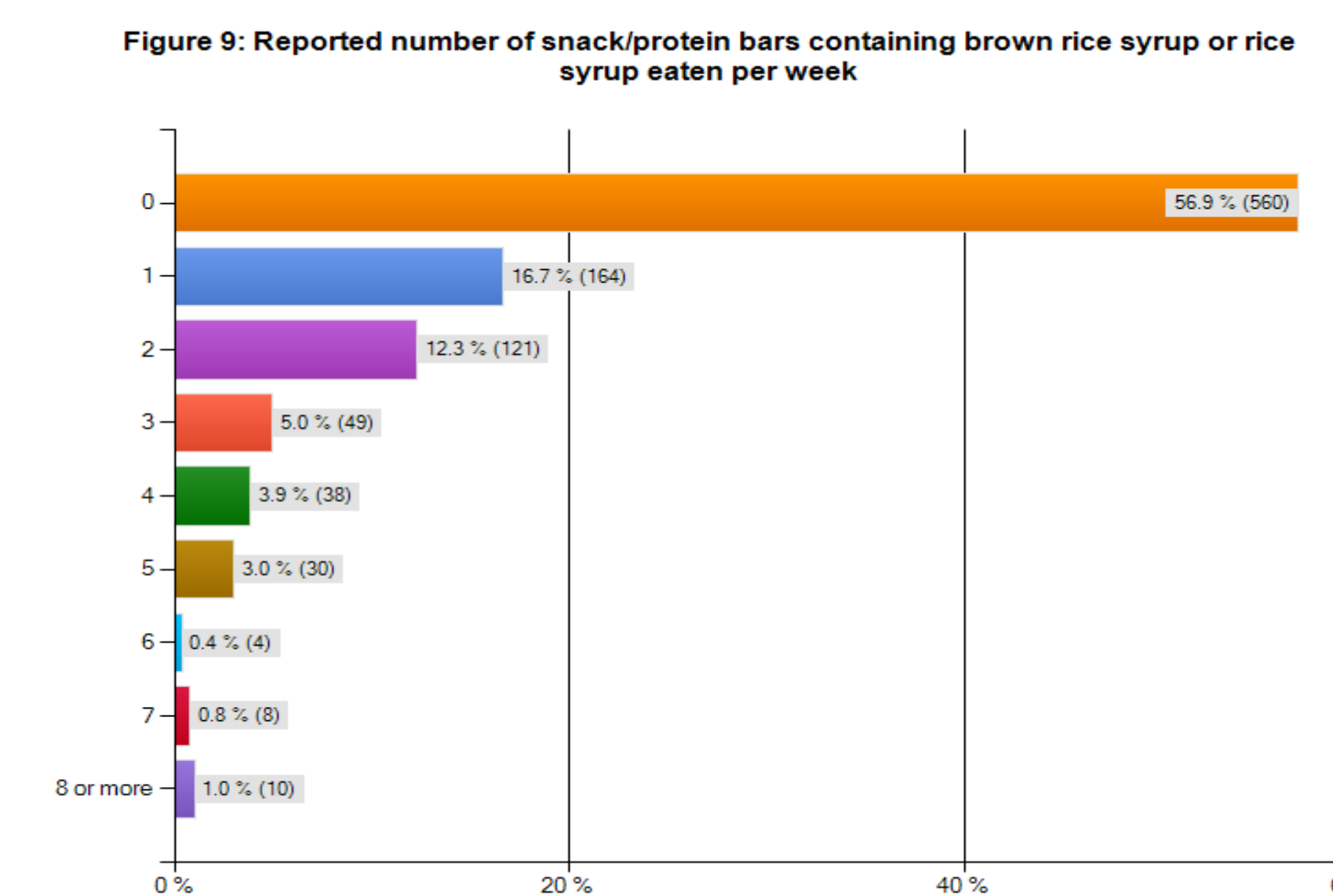
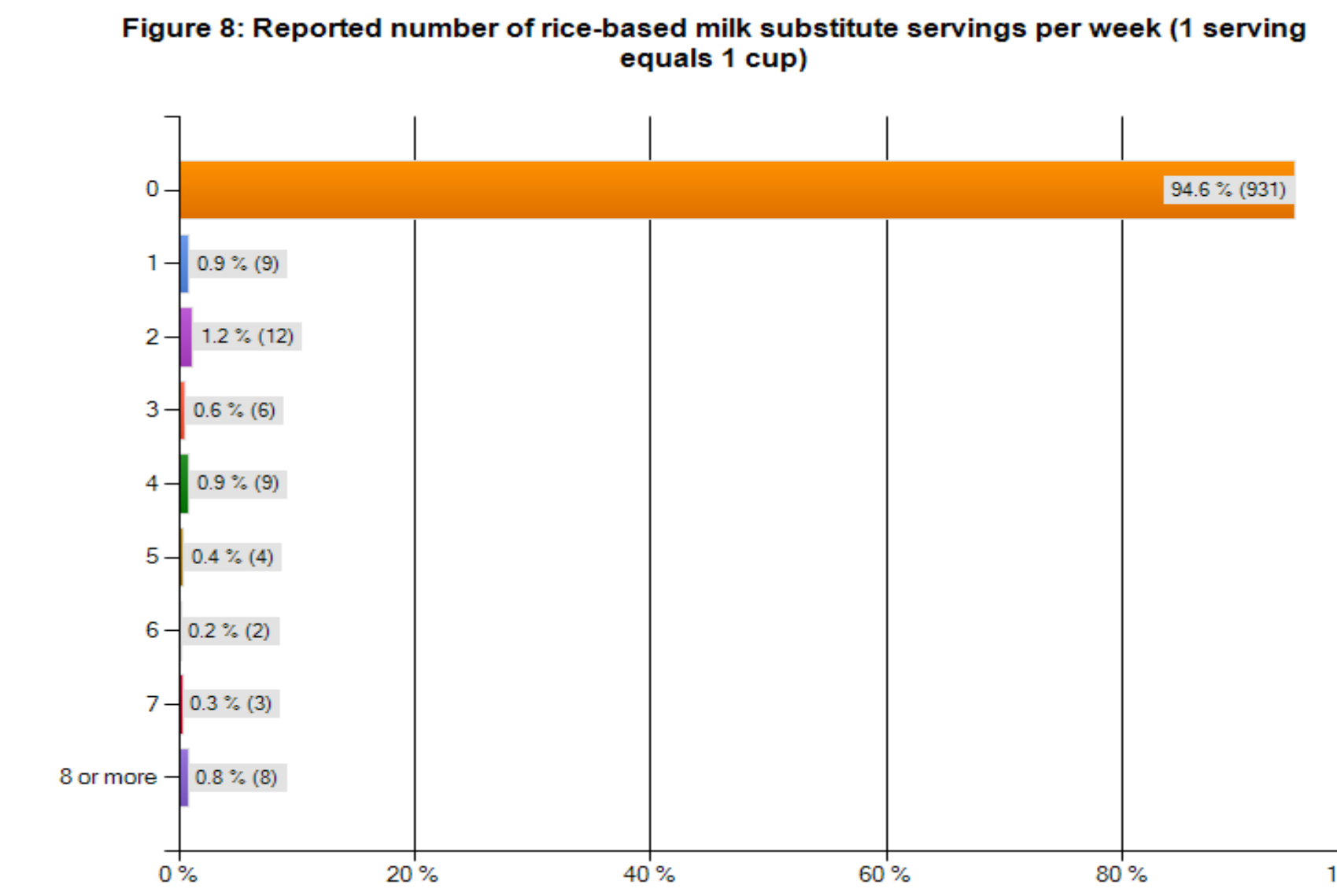
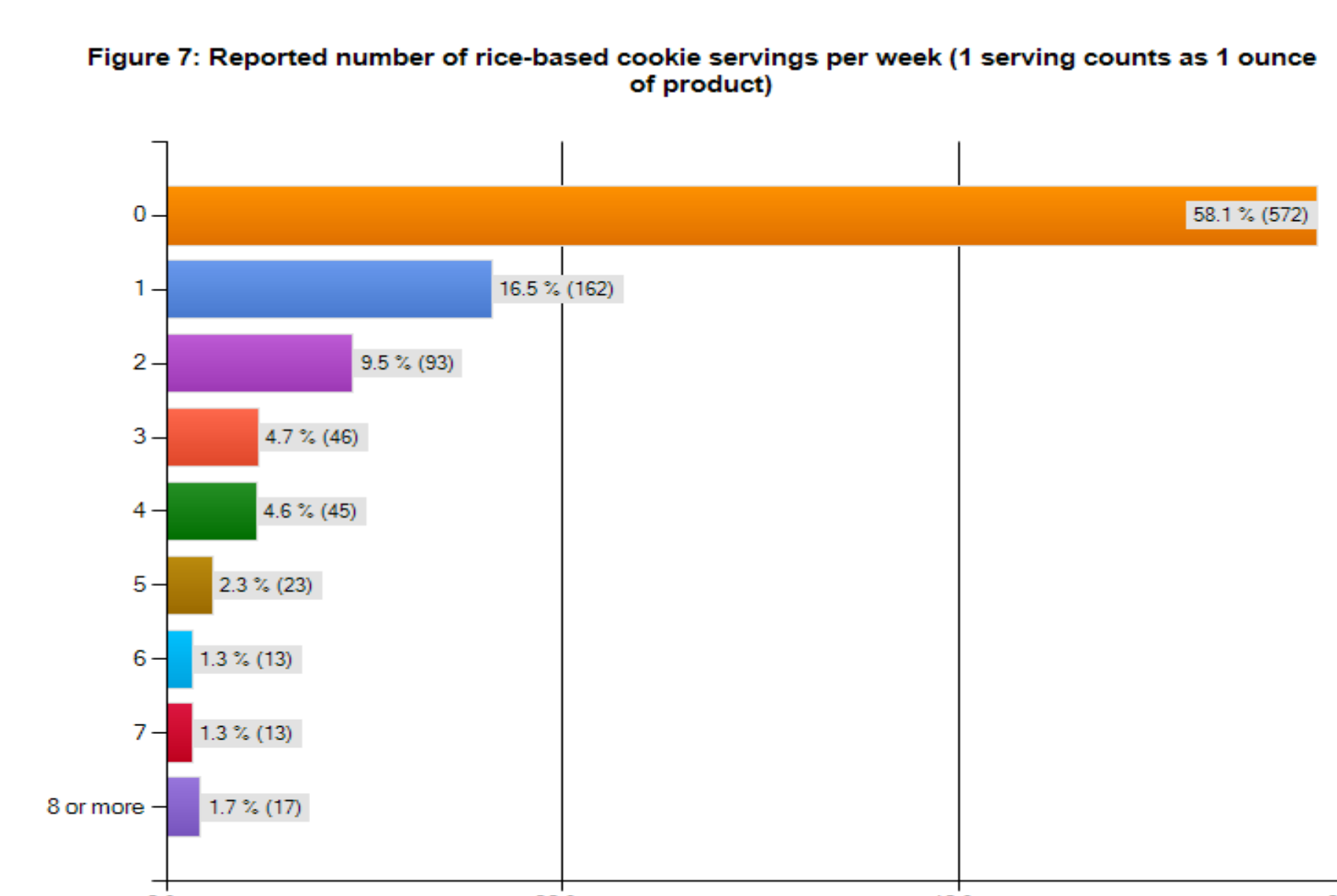
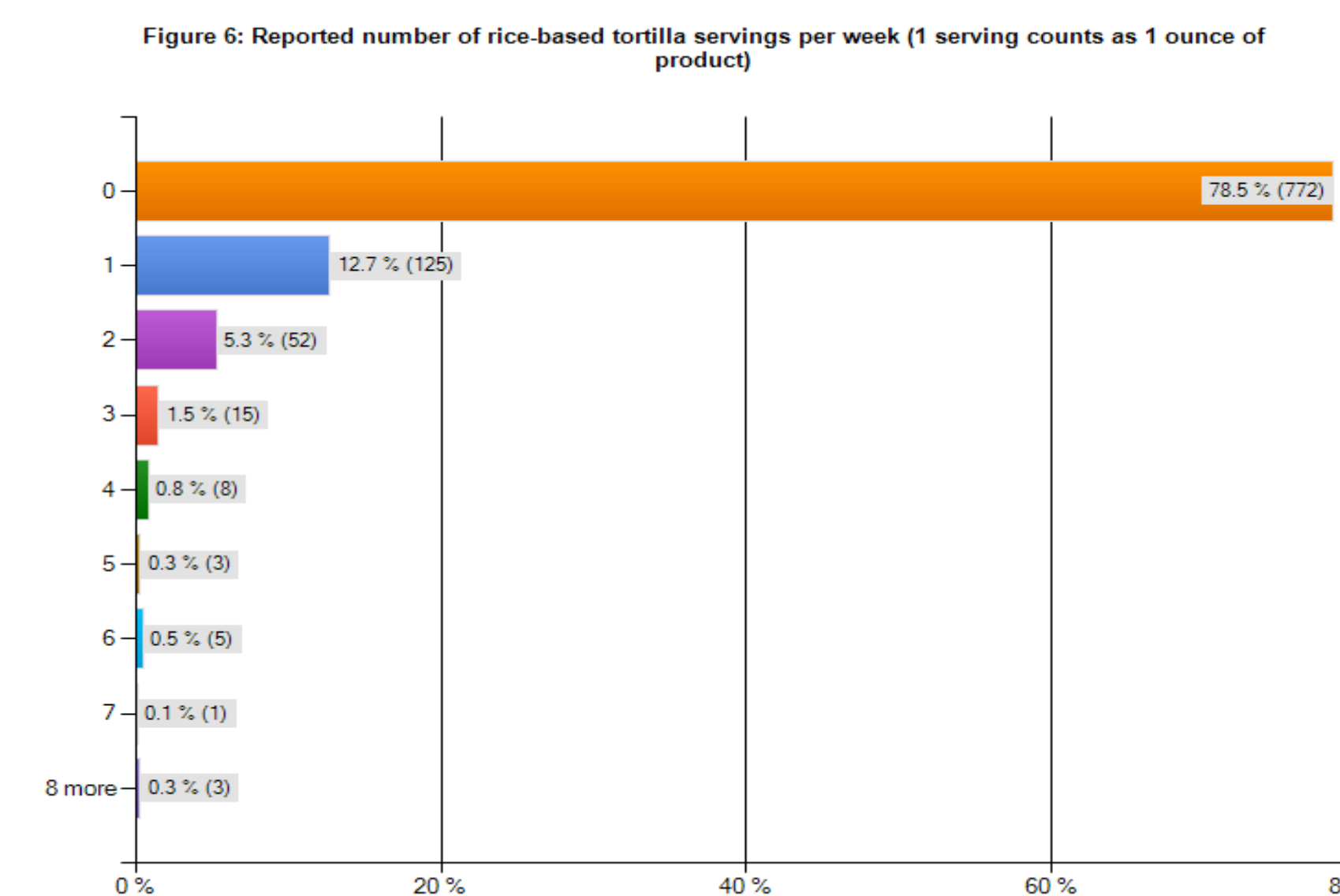
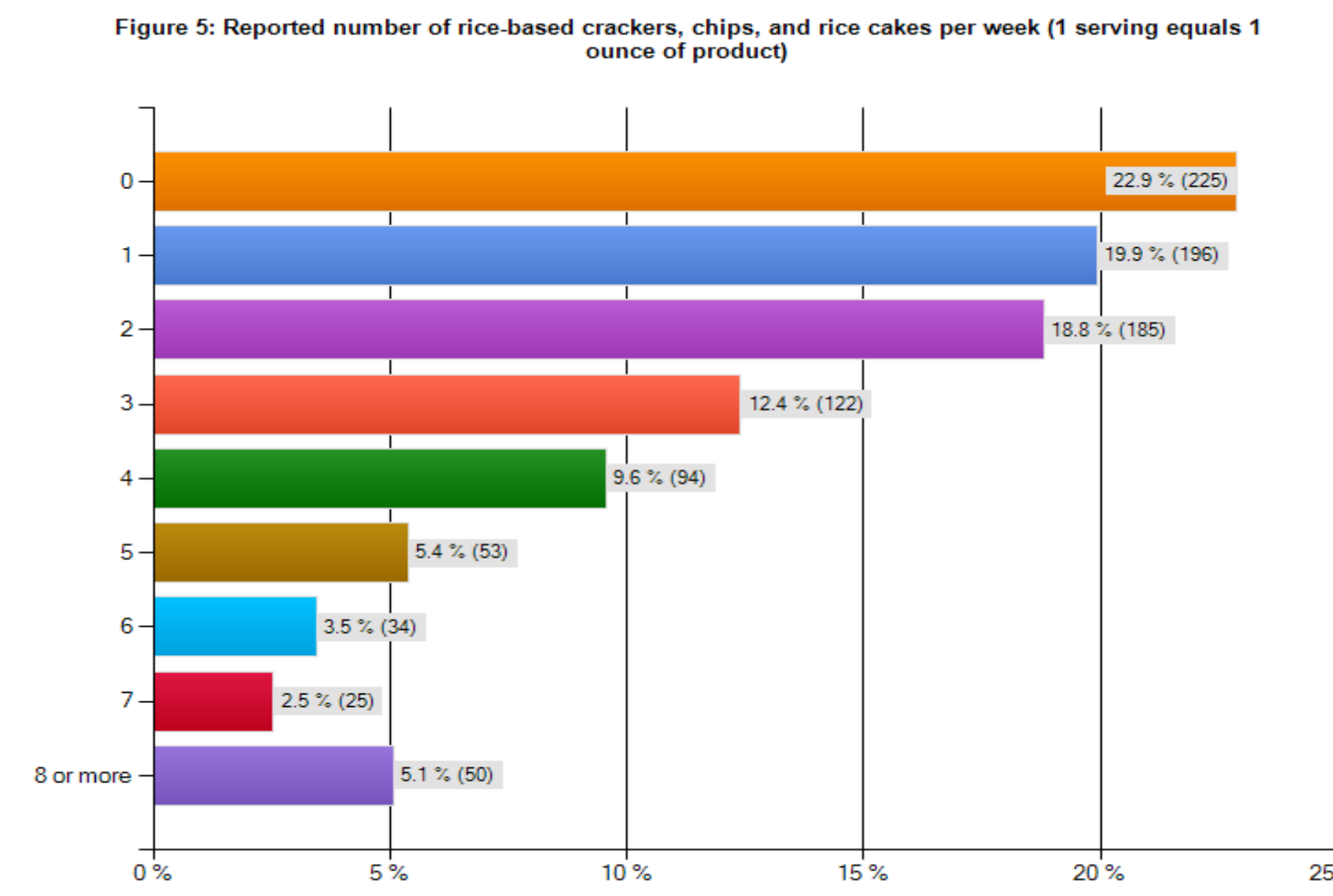
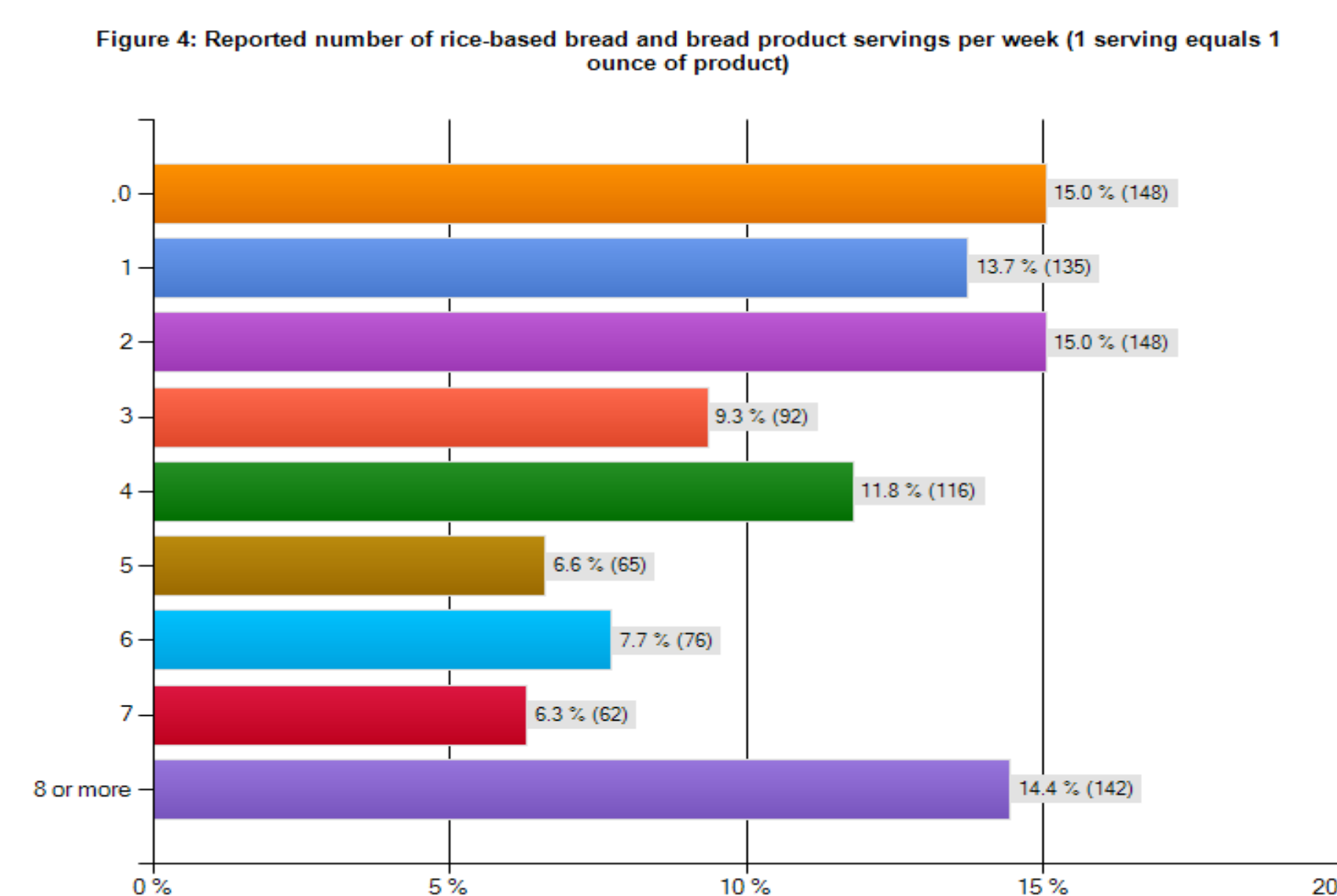
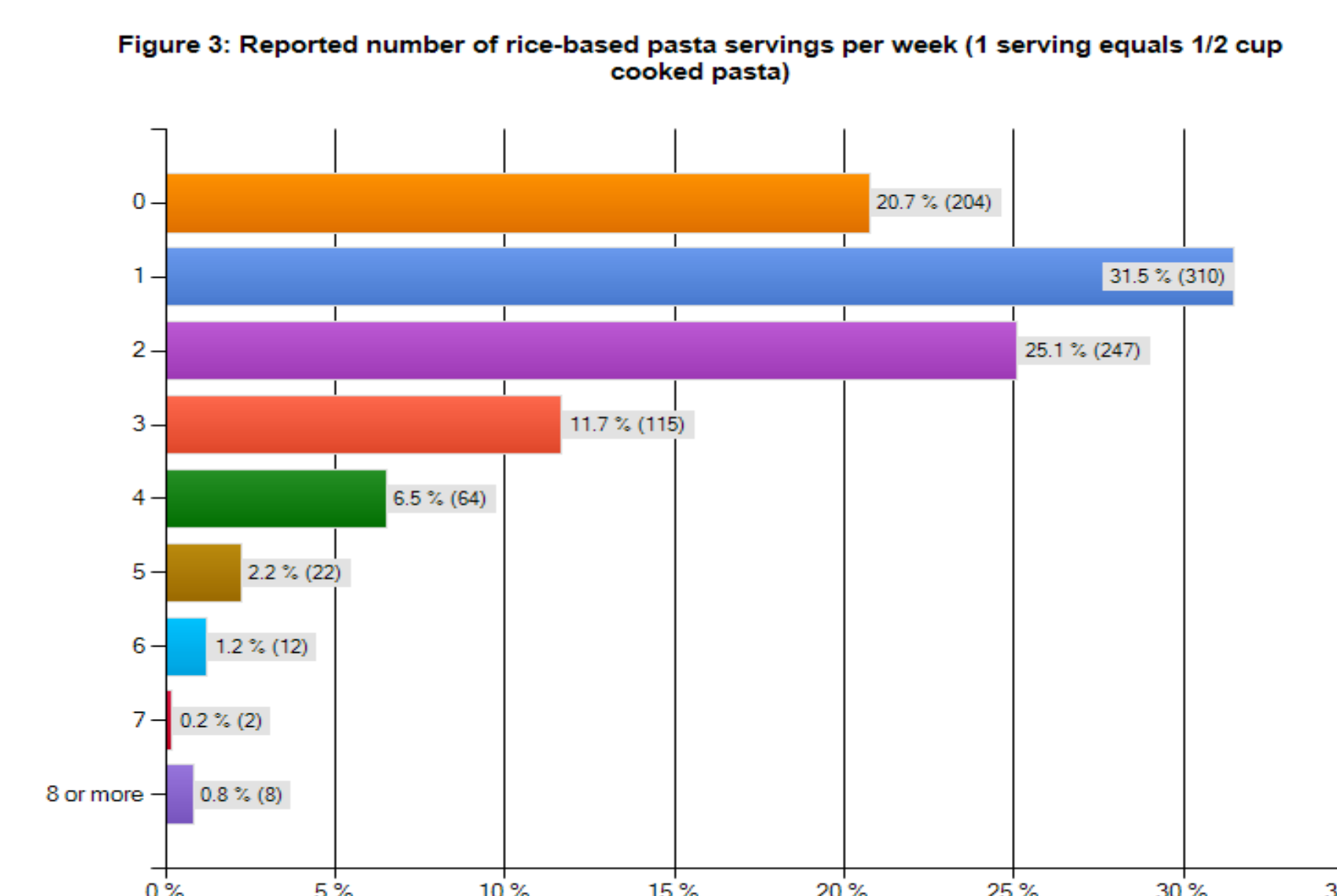
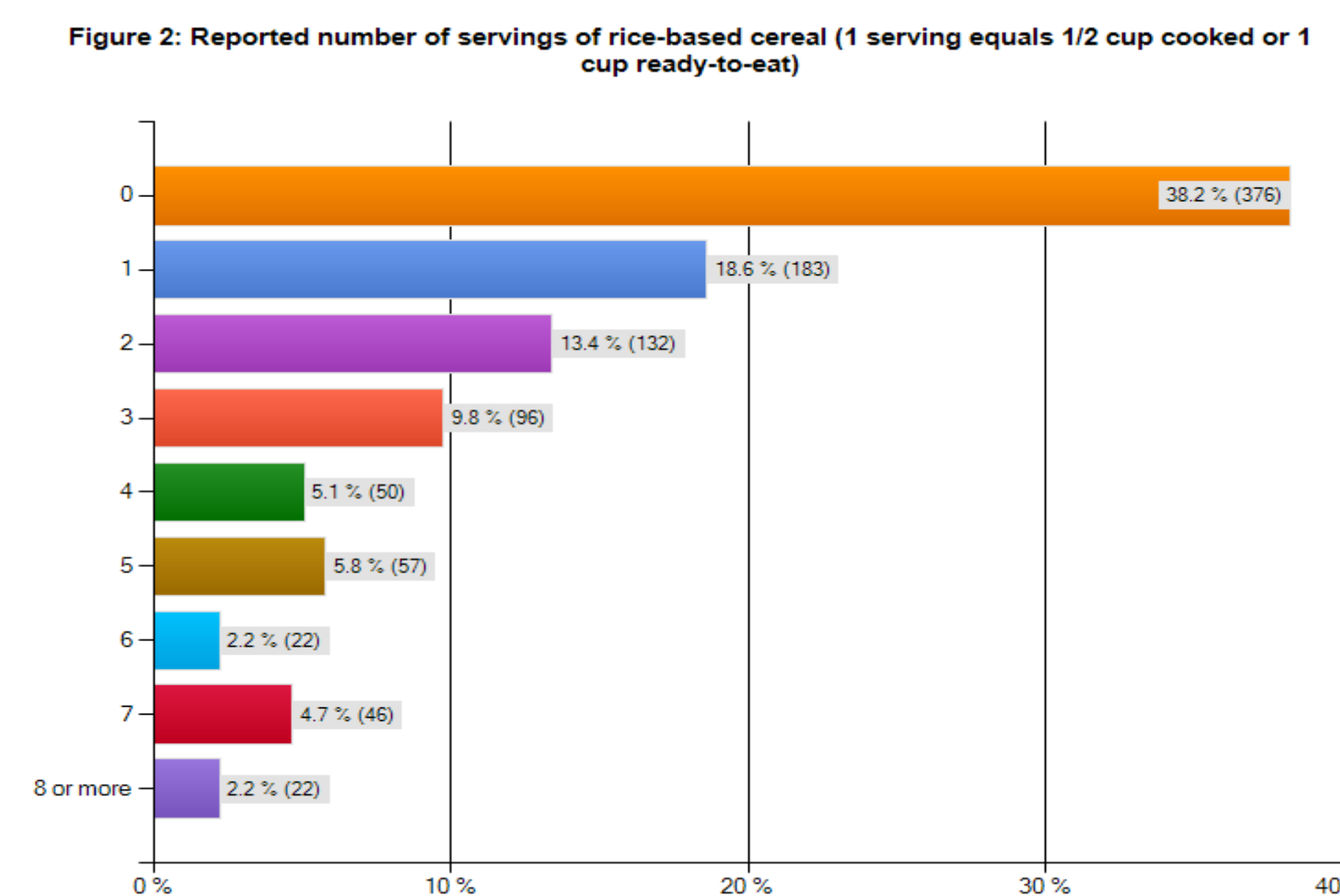
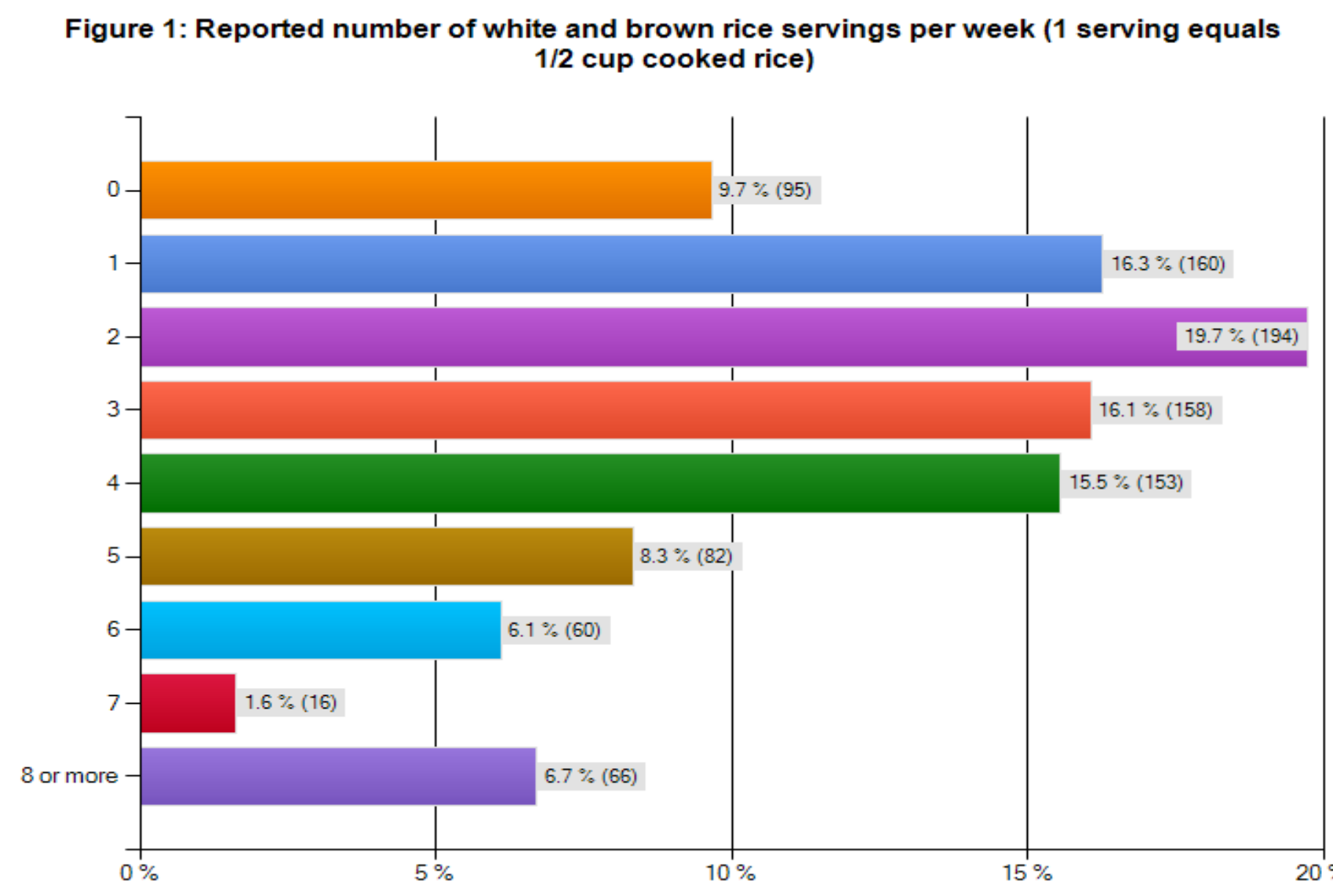
To assess rice consumption patterns of adults with celiac disease.

Background

- Inorganic arsenic is a known carcinogen and ingestion may cause an increased risk of certain cancers.
- The EPA and the FDA have limits on the amount of total arsenic that may be found in drinking water and bottled water, respectively of 10 micrograms per liter (1,2).
- The FDA recently proposed an action level of 10 ppb of inorganic arsenic in apple juice (same level set for water) (3).
- Several foods may contain inorganic arsenic and contribute to an individual's exposure, including rice and rice-based products.
- If individuals with CD have a largely rice-based diet inorganic arsenic may be an issue
- The EPA has set a reference dose for chronic oral exposure to inorganic arsenic of 0.3 micrograms per kg per day (4).
- FDA reports an average inorganic arsenic level of 6.7 micrograms per cup cooked non-basmati rice; 3.5 micrograms per cup cooked basmati rice; 3.5 micrograms per cup rice cereal; 5.4 micrograms per 2 rice cakes; 3.8 micrograms per cup rice beverage (5).

Methods

A survey containing questions on estimated weekly intake of servings of various categories of rice and rice products was posted on Survey Monkey for 30 days.



Results

- 984 responses were received from individuals 18 years or older (13.8 % men, 86.3% women) and biopsy diagnosed with celiac disease.
- Using cumulative percentages, median servings per week were
- Rice: 3 servings (interquartile range: 1 to 4 servings) (fig. 1)
- Rice-based cereal: 1 serving (IQR: 0 to 3 servings) (fig. 2)
- Rice-based pasta: 1 serving (IQR: 1 to 2 servings) (fig. 3)
- Rice-based bread products: 3 servings (IQR: 1 to 6 servings) (fig. 4)
- Rice cakes, crackers, chips: 2 servings (IQR: 1 to 4 servings) (fig. 5)
- Rice-based tortilla: 0 servings (IQR: 0 servings) (fig. 6)
- Rice-based cookies: 0 servings (IQR: 0 to 2 servings) (fig 7)
- Rice-based milk substitute: 0 servings (IQR: 0 servings) (fig 8)
- Snack bars containing rice syrup: 0 servings (IQR: 0 to 2 servings) (fig. 9)

Conclusion

- Respondents consumed the greatest median number of servings from cooked rice, bread and bread products, and rice-based snack foods.
- A hypothetical individual consuming median amounts from each category of product would consume 10 servings of rice products each week.
- For each survey questions some individuals responded that they consumed the maximum number of servings which was listed as ≥ 8 .
- Based on these rice consumption patterns some individuals with celiac disease may be at risk of consuming above the EPA reference dose for chronic oral exposure to inorganic arsenic.

References

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