20121025 - BNI of kinds of corn chips (descriptive statistics) - 2012

[Data] [<Normal page] [**PEREZGONZALEZ Jose D (2012).** *BNI of kinds of corn chips (descriptive statistics).* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2012, pages 300-304.]

BNI of generic brands (description)

Some corn chips[4] are sold under a generic brand (eg, a supermarket brand) while others are sold under proprietary brands. Thus, it is of interest to test whether such characteristic informs about overall nutritional balance (BNI) and, thus, whether it may help choose more balanced products. As part of a research on the nutritional balance of corn chips *(2012b)*[3], Perezgonzalez also assessed whether generic and proprietary brands differed in regards to overall nutritional balance. This article provides descriptive information both about the sample of products under research (foodBNI) as well as about hypothetical diets based on those products (dietBNI).

foodBNI

Named brands were more abundant than generic brands, overall. The distribution of nutritional balance within each group was also different, with most generic products clustering higher than most named products. Indeed, the proprietary brand group had a median of BNI 57.88 and the middle 68% of products ranged between BNI 39 (P_{16}) and BNI 71 (P_{84}). In comparison, the generic brand group had a median of BNI 71.24 and the middle 68% of products ranged between BNI 55 and BNI 77. In both cases, the means appeared slightly more balanced, being off-centered towards the 16th percentile.

Both types of products, thus, appeared as extremely unbalanced[5]. Even so, the difference between both groups was over 10 units in the BNI scale, a moderate difference in favor of the proprietary brands.

Illustration 1: Kind of corn chips		
	Generic brand	
Unbalance	**No**	**Yes**
=0		
≥0		
≥10		
≥20	2	
≥30	2	
≥40	7	
≥50	5	3

≥60	6	
≥70	4	8
≥80		
≥90		
≥100		
≥110		
≥120		
≥130		
≥140		
≥150		
≥160		
≥170		
≥180		
≥190		
≥200		
Median	57.88	71.24
SPR	15.83	11.14
P_{16}	38.86	54.90
P_{84}	70.52	77.17
RSkew	-3.19	-5.21
Mean	53.81	68.29
StDev	14.77	9.30
zSkew	-0.05	-1.43
zKurt	-1.19	-0.62
Mean diff[6]	10.41	
Effect size[7]	0.77	

dietBNI

As part of two hypothetical diets where the corresponding generic and named products contributed the same weight of chips, the resulting nutritional composition of such diets would still be highly unbalanced (around BNI 47 for proprietary brands, and around BNI 55 for generic brands, when estimating fiber). The mean difference for both diets would be small and in favor of the proprietary brands.

Illustration 2: Diet's nutritional balance corn chips								
Corn chips	Protein	Carbs	Sugar	Fat	Sat.fat	Fiber	Sodium	BNI
Named brand (unest)	7.7	58.9	2.5	25.2	8.0	2.6	549.0	**50.75**
Named brand (est)	7.7	58.9	2.5	25.2	8.0	3.7*	549.0	**47.09**

Generic brand (unest)	6.2	58.9	2.7	25.2	10.3	0.0	687.4	**67.47**
Generic brand (est)	6.2	58.9	2.7	25.2	10.3	3.7*	687.4	**55.14**

Mean difference (unest)[6]	16.72
Mean difference (est)[6]	8.05

(*) Fiber content estimated from 'Doritos Burn'.

Illustration 3: dietBNI named brands

55%					
50%		*			
45%		*	*		
40%		*	*		
35%		*	*		
30%		*	*		
25%		*	*		
20%		*	*		
15%		*	*		
10%		*	*	*	
5%	*	*	*	*	
mid	p	c	f		fb
max		s	sf		na
5%			*		*
10%			*		*
15%			*		*
20%					*
25%					*

ideal % = grey cells; actual % = asterisk (*)

Illustration 4: dietBNI generic brands

55%					
50%		*			
45%		*	*		
40%		*	*		
35%		*	*		
30%		*	*		
25%		*	*		
20%		*	*		
15%		*	*		
10%		*	*	*	
5%	*	*	*	*	
mid	p	c	f	fb	
max		s	sf		na
5%		*			*
10%		*			*
15%			*		*
20%			*		*
25%					*
30%					*
35%					*

ideal % = grey cells; actual % = asterisk (*)

Methods

Research approach

Exploratory study for comparing the nutritional balance of corn chip products[4] sold under generic and proprietary brands in New Zealand.

Sample

Stratified sample of 37 corn chip products *(Perezgonzalez, 2012a[2])*, including diverse flavors and other relevant categories. Of these products, 11 were from generic brands and 26 were from proprietary brands. Notwithstanding this, the actual products were collected in a convenient manner from four major national supermarket chains. The final sample covered a large proportion of the population of corn chip products available in such supermarkets.

Illustration 5: Corn chips sold under generic brands		
Product 100g	**BNI**	**Generic**
Garden of Eatin' chilli & lime	29.99	No
Garden of Eatin' mini yellow rounds	29.99	No
Red Hot Blues	31.26	No
Doritos salted	38.25	No
Garden of Eatin' sesame blues	40.15	No
Doritos nacho cheese	40.69	No
Doritos salsa	40.75	No
GoNutz Corn Chips cheese	41.43	No
Doritos cheese supreme	43.87	No
GoNutz Corn Chips just salted	46.52	No
Doritos Thai sweet chilli	46.61	No
Doritos flamegrilled BBQ	50.09	No
Home Brand Corn Chips cheese flavored	52.21	Yes
Home Brand Corn Chips salted	55.14	Yes
Home Brand Corn Chips salsa flavored	55.83	Yes
Mexicano Corn Chips tasty cheese	57.70	No
Mexicano Corn Chips jalapeno	58.06	No
Doritos Burn	58.45	No
Mexicano Corn Chips cheese	59.22	No
Mexicano Corn Chips natural	60.83	No
Eta UpperCuts Corn Tapas feta & garlic	62.81	No
Eta Sancho salsa	63.39	No
Eta UpperCuts Corn Tapas sea salt	64.30	No
Eta UpperCuts Corn Tapas vintage cheddar	65.68	No
Eta Sancho nacho cheese	65.82	No
Signature Range Tortilla Chips tangy salsa	70.38	Yes
Signature Range Tortilla Chips double cheese	70.44	Yes
Pams Corn Chips cheese	71.24	Yes
Pams Corn Chips chilli & lime	71.42	Yes
Mexicano Corn Chips tasty salsa	72.73	No
Pams Corn Chips double cheese	74.28	Yes
Eta Skof Corn Chips fiery ranch	74.62	No
Signature Range Tortilla Chips chilli & lime	75.76	Yes
Eta Sancho cheesy cheese	75.91	No
Pams Corn Chips BBQ	77.16	Yes
Pams Corn Chips salsa	77.32	Yes
Eta Skof Corn Chips tasty cheese	79.97	No

Variables

Variables of interest for this research were the following:

- Weight contribution of seven nutrients (protein, carbohydrate, sugar, fat, saturated fat, fiber and sodium) to 100g of a food product.
- The Balanced Nutrition Index (BNI) of each food product, as calculated from above variables.
- Aggregated information for the sample of products (foodBNI).
- Aggregated information about the individual nutrients for the simulation of hypothetical diets (dietBNI).

Materials & analysis

Relevant data were collated after purchasing the food products or by capturing such information from the producers' websites if this information was available and was deemed reliable. The data were then assessed using the Balanced Nutrition Index™ (BNI™) technology *(see Perezgonzalez, 2011[1])*. Missing data for fiber was estimated from 'Doritos Burn', the product with the lowest fiber content.

SPSS-v18 was used for the computation of the BNI, and for descriptive statistical analyses.

References

1. **PEREZGONZALEZ Jose D (2011).** *Balanced Nutrition Index™ (BNI™).* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 20-21.
2. **PEREZGONZALEZ Jose D (2012a).** *Corn utopia.* The Balanced Nutrition Index (ISSN 1177-8849), 2012, issue 6.
3. **PEREZGONZALEZ Jose D (2012b).** *Nutritional balance of corn chips (descriptive statistics) (2e).* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2012, pages 275-278.
+++ **Notes** +++
4. Includes both corn chips and tortilla chips. Thus, they can be defined as thin shapes of pressed corn (usually cut into triangles or circles), and then oven-baked or deep-fried.
5. When interpreting the BNI as 0 = balanced, 1-9 = slightly unbalanced, 10-19 = moderately unbalanced, 20-29 = highly unbalanced, ≥30 = extremely unbalanced.
6. This is the unstandardized effect size.
7. This is the standardized effect size, Hedge's g.

Want to know more?

BNI analysis of individual products
You can access either the BNI™ database or the 'BNI™ journal (2012, issue 6) - Corn utopia' for individual nutrition analyses of each food product in the sample.
Wiki of Science - BNI of kinds of corn chips (further knowledge)
Two Wiki of Science pages provide further introductory and inferential information about the nutritional balance of kinds of corn chips.
Wiki of Science - Nutritional balance of corn chips
This Wiki of Science page provides an introduction to the BNI of corn chips, irrespective of brand.

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