STUDY

Carbonated beverage consumption in New Zealand adults

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New Zealand (NZ) is ranked the third most obese country in the OECD behind the US and Mexico.[1] The link between sugar sweetened beverage (SSB) consumption and high BMI, dental disease, diabetes, gout and cardiovascular diseases is well established.[2-5] In New Zealand, sugar sweetened beverages (SSB) are the largest contributor of added sugar to the diets of both children and adults.[6,7] Few studies in New Zealand have described in detail sugary drink intake among New Zealand adults. In this study, we have investigated consumption patterns of sugary drink intake (specifically carbonated beverages), the relationship with body mass index (BMI) and associations by age, gender, ethnicity, and deprivation.

Participants and methods

The Diabetes, Heart and Health Survey 2002/2003 was conducted in the Auckland area and was a cross-sectional survey, the fourth in a series measuring cardiovascular risk factors of Aucklanders aged between 35 and 74 years. Approximately 4000 participants (of Auckland, NZ) answered a food frequency questionnaire in 2002-03 about their diet habits including fizzy drink consumption. They also answered a General questionnaire that recorded their socio-demographic details and weight and height were measured to calculate body mass index. A number of papers have been published from this study that detail the methods used to carry-out this study.[8,9] Within the food frequency questionnaire participants were asked: **About how often did you usually have these drinks? (Over the last month)** From a list of responses participants could then record a number and frequency next to a specific option that read: **Glass of fizzy drink (eg: Coke, Fanta).** The following results were based on this measure of SSB consumption. Three categories of carbonated beverage consumers were created: low, medium and high. These categories were established based on where clear breaks in the distribution of responses occurred. The cut-offs for these groups were: low ≤ 1 drink per week, medium >1 and < 14 drinks per week, high ≥ 14 drinks per week.

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Table 1. Fizzy-drink intake by gender, age, ethnicity and deprivation

Proportion (%) of Fizzy Drinks consumed per week								
	<1	1-2	2-3	3-4	4-5	5-6	6+	Number
Sex								
Male	55.3	14.1	9.1	7.3	2.3	1.4	10.5	1775
Female	69.1	10.9	6.5	4.6	1.7	1.2	6.0	1943
Age								
<45	47.0	15.6	10.3	9.6	3.4	1.3	12.8	984
45-54	57.5	13.4	8.5	6.1	1.8	2.3	10.4	974
55-64	69.7	12.8	6.5	4.5	1.4	0.7	4.4	915
65+	67.8	11.3	6.3	4.9	2.1	0.9	6.7	845
Ethnicity								
Māori	61.6	11.8	8.6	5.1	1.8	1.6	9.5	997
Pacific	54.2	15.0	9.6	8.3	1.8	1.6	9.5	992
Other	67.8	11.3	6.3	4.9	2.1	0.9	6.7	1729
NZDep								
1-2	69.4	10.7	6.3	3.9	1.8	0.6	7.3	671
3-4	61.8	13.3	8.2	6.1	2.2	1.7	6.7	595
5-6	67.0	11.7	7.4	5.3	1.5	1.2	5.9	591
7-8	61.4	11.6	8.8	6.4	2.1	1.4	8.3	722
9-10	57.2	14.0	7.9	6.9	2.0	1.5	10.5	1139
Total	62.8	20.0	5.9	1.9	1.3	0.4	7.8	3857
BMI								
≤ 25 kg/m²	23.0	16.2	14.9	15.6	19.4	29.2	18.8	772
>25 - ≤30 kg/m²	36.3	34.8	34.2	29.4	27.8	22.9	30.1	1288
≤30 kg/m²	40.7	49.0	50.9	55.0	52.8	47.9	51.1	1656

Table 2. Uni/Multi-variate relative risks (95% CI) for 'high' carbonated beverage consumers (≥14/week)

Model 1 - Univariate*				Model 2 - Multivariate**			
Variable	Relative risk	95% CI	p-value	Variable	Relative risk	95% CI	p-value
European	1.00	-	-	European	1.00	-	-
Māori	1.46	1.02-2.10	0.0379	Māori	1.39	0.89-2.17	0.1424
Pacific	1.37	0.95-1.98	0.0873	Pacific	0.99	0.61-1.61	0.9766
Male	1.90	1.33-2.72	0.0004	Male	2.16	1.51-3.09	<0.0001
NZDep2001	1.14	1.07-1.21	<0.0001	NZDep2001	1.13	1.05-1.21	0.0007
Age (yrs)	0.95	0.93-0.97	<0.0001	Age (yrs)	0.95	0.94-0.97	<0.0001

Results

Patterns of carbonated beverage intake are presented in Table 1 by gender, age, ethnicity, deprivation and BMI groups. Overall 37 percent of adults surveyed consumed 1 or more fizzy-drink/s per week. Consumption was generally higher in males, younger age groups, Pacific and Māori peoples, and higher deprivation groups and higher BMI groups.

Table 2 shows the univariate and multivariate models for being a high carbonated beverage consumer. Model 1 show nearly 1.5 times higher risk for Māori and Pacific ethnic groups (compared to European) as well as for male gender. The multivariate Model 2 saw a reduction of the risk in both Māori and Pacific compared to European making the difference non-significant. Although a clear increasing gradient was observed in BMI with increasing carbonated beverage consumption - a statistically significant relationship was only observed between low, middle and high drinkers for males and are presented in Table 3.

Table 3. Mean BMI levels in men and women- for high, medium, and low carbonated beverage consumer groups (adjusted for age)

Analysis Variable: Body mass index (BMI)			
Weekly fizzy drinks	N	Mean	95% CL for Mean
Men			
high	251	28.7	28.11 - 29.29
medium	643	29.0	28.59 - 29.36
low	881	27.9	27.60- 28.25
Women			
high	172	31.6	30.46-32.54
medium	551	31.7	31.09-32.27
low	1220	29.8	29.45-30.23

Comment

This study shows that carbonated beverage intake in adults was less widespread than for children and youth. Findings from Youth 2007 found 29% of youth consumed 4+ carbonated beverages per week10 the present study found that approximately 9% of adults consumed 4+ carbonated beverage weekly. Although this is still high, these findings confirm the need to prioritise efforts to reduce intake in youth before adults. The impact that high carbonated beverage intake has on BMI (shown in the male cohort of this study - Table 3) support the rational to target carbonated beverages s as a means to address unhealthy weight gain. For adults, this study shows that targeting younger and male adults and more economically deprived localities should guide any targeted approach.

References

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