9 Results of the case-control study

In Bornem, thirty-seven cases were identified and 34 controls were selected. Cases and controls were similar for age and gender.

In the other schools, seventy-five cases were identified and 130 controls were selected. The proportion of girls among the cases (96.0%) was superior to the proportion (84.6%) among the controls (p = 0.01). Cases and controls were similar for age.

9.1 Odds of exposure to regular Coca-Cola consumption in Bornem

Among the 37 cases, 34 (91.9%) had consumed regular Coca-Cola at school on the day of the outbreak occurred compared to 8 of the 34 controls (OR = 36.8; 95% CI: 7.6-207.4) (Table 4).

9.2 Odds of exposure to regular Coca-Cola consumption in the other schools

Among the 75 cases, 31 (41.3%) had consumed regular Coca-Cola at school on the day of the outbreak occurred compared to 22 of the 130 controls (OR = 3.5, 95% CI: 1.7-7.0) (Table 4).

Table 4 - Odds of exposure to regular Coca-Cola bought and consumed at school in Bornem, Belgium 1999.

		BORNEM			
		Cases (n=37)	Controls (n=34)	OR	95% CI
Exposure to Regular Coca-Cola	yes	34 (91.9%)	8 (23.5%)	36.8	7.6-207.4
	no	3 (8.1%)	22 (76.5%)		
		OTHER SCHOOLS			
		Cases (n=75)	Controls (n=130)	OR	95% CI
Exposure to regular Coca-Cola	yes	31 (41.3%)	22 (16.9%)	3.5	1.7-7.0
	no	44 (58.7%)	108 (83.1%)		

9.3 Odds of exclusive exposure to specific beverages in Bornem

We compared the odds of exclusive exposure to a specific beverage (bought and consumed at school) among cases and controls. The reference group was consumption of water only or no consumption at all.

In Bornem, students exposed exclusively to regular Coca-Cola were more likely to report health complaints (OR = 21.5; 95% CI: 3.7-235.5) than those who drank either only water or nothing. There was no association between the reporting of illnesses and the consumption of other specific soft drinks (Table 5).

Table 5 - Odds of exclusive exposure to specific beverages [*], Bornem, Belgium 1999.

Beverages	Cases (n=37)	Controls (n=34)	OR	95%CI
Coca-Cola Regular	31	8	21.5	3.7 - 235.5
Fanta	0	9	0	0 - 8.3
Coca light	0	0	-	-
Other Coca products	1	3	1.9	0 - 33.6
Other drinks	0	2	0	0 - 47.2
Water/no drink	2	12	ref	_

[*] Bought and consumed at school on the reference day

9.4 Odds of exclusive exposure to specific beverages in the other schools

In the other schools, the risk associated (OR=5.5; 95% CI: 2.4-13) with exclusive regular Coca-Cola consumption was weaker compared to Bornem. However, there was also an association with Fanta (OR= 3.5; 95%CI: 1.1-10.9) and Coca-Cola light consumption (OR = 12.4; 95%CI: 2.8-77.9) (Table 6).

Table 6 - Odds of exclusive exposure to specific beverages [*], Other schools, Belgium 1999.

Beverages	Cases (n=75)	Controls (n=130)	OR	95%CI
Regular Coca-Cola	26	20	5.5	2.4 - 13
Fanta	9	11	3.5	1.1 - 10.9
Coca light	9	3	12.4	2.8 - 77.9
Other Coca products	5	5	4.3	0.9 - 20.2
Other drinks	1	5	0.9	0 - 8.5
Water/no drink	19	81	ref	_

[*] Bought and consumed at school the day of the outbreak occurred

9.5 Odds of exposure to other risk factors in Bornem

Twenty cases out of the 37 (54.05%) had a low mental health score (OR = 2.4, 95%CI: 0.8-7.3) (Table 7). The school in Bornem did not provided food.

Cases were more likely than controls to notify a bad smell of the beverage (OR =40.2, 95%CI: 7.98 - 407.4) than those who were not exposed (Table 7). The exposure to a bad taste was also associated with the risk of illness. (OR= 26.9, 95%CI: 3.7 - 1206.7) (Table 7).

In Bornem, the bad smell of the regular Coca-Cola was more frequently characterised by the cases as being “nasty, rotten or strange” (Table 8).

Cases were more likely than control to notify a bad smell of the regular Coca-Cola (OR = 10.7, 95%CI 1.5 - 131) (Table 10).

Strange or rotten tastes were more frequently noted for regular Coca-Cola consumption (table 8).

Table 7 - Odds to exposure to other risk factor, Bornem, Belgium 1999.

Risk factor	Cases (n=37)	Controls (n=34)	OR	95%CI
Food provided by school	0*	0*	-	-
Having a friend being ill	36	30	4.7	0.4 - 242.8
Mental SF36 score< median	20**	11**	2.4	0.8 - 7.3
Bad smell	27	2	40.2	8.0 - 407.4
Bad taste	17	1	26.9	3.7 - 1206.7

* Bornem school did not provide food

** 1 missing value among the cases and 2 missing values among the controls

Table 8 – Characteristics of the bad smell noted by cases exposed to regular Coca-Cola, Belgium 1999.

Bad smell	Bornem (47) *	Other schools (49) *
Nasty / rotten	15	1
Bizarre / strange	14	0
Gasoline	4	0
Acid / citric	1	1
Musty	2	0
Other	3	0
Total	39	2

* Number of consumed cans or bottles of regular Coca-Cola

Table 9 - Characteristics of the bad taste noted by cases exposed to regular Coca-Cola, Belgium 1999.

Bad taste	Bornem (47) *	Other schools (49) *
Bizarre / strange	6	0
Nasty / rotten	5	0
Bitter	2	1
Acid / citric	2	4
Other	3	3
Total	18	8

* Number of consumed cans or bottles of Coca-Cola

Table 10 - Odds of experiencing bad smell among students drinking regular Coca-Cola, Belgium 1999.

		BORNEM			
		Cases (n=34)	Controls (n=8)	OR	95% CI
Experiencing bad smell	yes	27	2	10.7	1.5 - 131.0
	no	7	6		
		OTHER SCHOOLS			
		Cases (n=31)	Controls (n=22)	OR	95% CI
Experiencing bad smell	yes	2	0	_	_
	no	29	22		

9.6 Odds of exposure to other risk factors in the Other schools

Cases were more likely than controls to belong to the low mental health group (OR = 2.4; 95%CI: 1.3 - 4.5) (Table 11).

In the other schools 6 cases were exposed to a bad smell and none among the controls (Table 5).

The exposure to a bad taste was associated with the risk of illness in the other schools (OR= 21.88, 95%CI 3.06 - 961.49) (Table 11). Citric or rotten tastes were more frequently noted for regular Coca-Cola consumption (table 9).

Table 11 - Odds to exposure to other risk factor, Other schools, Belgium 1999.

Risk factor	Cases (n=75)	Controls (n=130)	OR	95%CI
Food provided by school	6	26	0.3	0 - 0.9
Having a friend being ill	65	101	1.9	0.8 - 4.4
Mental SF36 Score< median	47	54	2.4	1.3 - 4.5
Bad smell	6	0	-	-
Bad taste	11	1	21.9	3.1 – 961.5

9.7 Odds of exposure to regular Coca-Cola stratified by the mental health score (SF36)

9.7.1 Bornem

Among students who had a low mental score (< median) 17 cases (85%) had consumed regular Coca-Cola whereas 2 (18.2%) controls did (OR = 21.7, 95%CI: 2.8 - 308.52) (Table 12).

Among students who had a high mental score (> median) all cases (16) had consumed regular Coca-Cola whereas 6 (28.7%) out of the 21 controls did ($p < 0.0001$) (Table 12).

Table 12 - Odds to exposure to regular Coca-Cola stratified on the SF36, Bornem, Belgium 1999.

HIGH SF36 (> median)					
Exposure		Cases (n = 16)	Controls (n = 21)	OR	(95%CI)
Regular Coca-Cola	yes	16 (100%)	6 (28.6%)	∞	_
	no	0	15 (71.4%)		
LOW SF36 (< median)					
Exposure		Cases (n = 20)	Controls (n = 11)	OR	(95%CI)
Regular Coca-Cola	yes	17 (85%)	2 (18.2%)	21.74	2.8 - 308.5
	no	3 (15%)	9 (81.8%)		

$Crude_{OR}$ = 36.8, 95%CI 7.6 - 207.4; MH_{OR} = 59, 95%CI 9.12 - 382

9.7.2 Other schools

Forty-seven (63.5%) cases and 54 (41.2%) controls had a low mental score (OR = 2.4; 95%CI: 1.3 - 4.5). There were 3 missing values (one among the cases and 2 among the controls).

Among students who had a low mental score (< median) 18 cases (38.3%) were exposed to regular Coca-Cola consumption whereas 8 (14.8%) controls were exposed to regular Coca-Cola (OR = 3.57, 95%CI 1.25 - 10.47) (Table 13).

Among students who had a high mental score (> median) 13 cases (48%) out of the 27 were exposed to regular Coca-Cola consumption whereas 13 (17.5%) out of the 74 controls were exposed to regular Coca-Cola (OR = 4.36, 95%CI 1.49- 12.94) (Table 13).

The odds ratio between the two strata was not statistically different (p = 0.7) as also was indicated by a non-significant interaction term in a logistic model. After controlling for the mental health-score the OR did not change substantially, giving no strong evidence for a confounding effect of the mental health status and the likelihood of reporting health complaints.

Table 13 - Odds to exposure to regular Coca-Cola stratified on the SF36, Other schools, Belgium 1999.

HIGH SF36 (> median)					
Exposure		Cases (n = 27)	Controls (n = 74)	OR	(95%CI)
Regular Coca-Cola	yes	13 (48.1%)	13 (17.6%)	4.4	1.5 - 12.9
	no	14 (51.9%)	61 (82.4%)		
LOW SF36 (< median)					
Exposure		Cases (n = 47)	Controls (n = 54)	OR	(95%CI)
Regular Coca-Cola	yes	18 (38.3%)	8 (14.8%)	3.6	2.3 - 10.5
	no	29 (61.7%)	46 (85.2%)		

$Crude_{OR}$ = 3.5, 95%CI 1.7-7.0; MH_{OR} = 3.9%CI: 9.2.0 - 7.7

9.8 Odds of experiencing a low mental health (SF36) stratified on the consumption of regular Coca-Cola

9.8.1 Bornem

Thirty-four (90.1%) cases and 8 (23.5%) controls consumed regular Coca-Cola (p<0.001). There were 3 missing values for the SF36 (one among the cases and 2 among the controls).

Among students who consumed regular Coca-Cola 17 cases (50%) experienced a low mental score whereas 2 (25%) controls experienced a low mental score (OR = 3.1; 95%CI: 0.5 - 35.8) (Table 14).

Among students who did not consume regular Coca-Cola all cases (3) experienced a low mental score whereas 9 (37.5%) out of the 24 controls experienced a low mental score (p < 0.0001) (Table 14).

Table 14 - Odds of experiencing a low mental health (SF36) stratified on the consumption of regular Coca-Cola, Bornem, Belgium 1999.

Regular Coca-Cola consumption					
Exposure		Cases (n = 34)	Controls (n = 8)	OR	(95%CI)
Sf36	yes	17 (50%)	2 (25%)	3.1	0.5 - 35.8
< median	no	17 (50%)	6 (75%)		
No regular Coca - Cola consumption					
Exposure		Cases (n = 3)	Controls (n = 24)	OR	(95%CI)
Sf36	yes	3 (100%)	9 (37.5%)	_	_
< median	no	0	15 (62.5%)		

$Crude_{OR}$ = 2.4; 95%CI: 0.8-7.3; CMH_{OR} = 5.32, 95%CI 1.06 - 26.65

9.8.2 Other schools

Thirty-one (41.3%) cases and 22 (16.9%) controls consumed regular Coca-Cola ($p<0.001$). There were 3 missing values for the SF36 (one among the cases and 2 among the controls).

Among students who consumed regular Coca-Cola 18 cases (58.0%) experienced a low mental score whereas 8 (38.0%) controls experienced a low mental score (OR = 2.2, 95%CI: 0.6 - 8.3) (Table 15).

Among students who did not consume regular Coca-Cola, 29 (67.4%) out of the 43 cases experienced a low mental score whereas 46 (43.0%) out of the 107 controls experienced a low mental score (OR = 2.8, 95%CI 1.2 - 6.2) (Table 15).

There was no interaction between the SF36 and "consumption of regular Coca-Cola" ($p=0.7$). Furthermore, the crude OR (2.4) and the MH_{OR} (2.6) were similar, giving no strong evidence for a confounding effect of the mental health status and the likelihood of reporting health complaints.

Table 15 - Odds of experiencing a low mental health (SF36) stratified on the consumption of regular Coca-Cola, Other schools, Belgium 1999.

Regular Coca-Cola consumption					
Exposure		Cases (n = 31)	Controls (n = 21)	OR	(95%CI)
Sf36	yes	18 (58%)	8 (38%)	2.3	0.6 - 8.3
< median	no	13 (42%)	13 (62%)		
No regular Coca - Cola consumption					
Exposure		Cases (n = 43)	Controls (n = 107)	OR	(95%CI)
Sf36	yes	29 (67.4%)	46 (43%)	2.8	1.2 - 6.2
< median	no	14 (32.6%)	61 (57%)		

$Crude_{OR}$ = 2.4; 95%CI: 1.3 - 4.5; MH_{OR} = 2.59, 95%CI 1.39 - 4.82