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Determinants of adolescents' soft drink consumption

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Abstract

Objective: To identify determinants of adolescents' consumption of carbonated soft drinks (regular and diet), both of total consumption and of consumption at school.

Design/Setting/Subjects: Regular and diet soft drink consumption was measured by food frequency questions that were dichotomised. Several potential environmental and personal determinants of consumption were measured. A total of 2870 (participation rate: 85%) 9th and 10th graders, within 33 Norwegian schools, participated in the study. Multilevel logistic regression analyses were preformed for total soft drink consumption (twice a week or more vs. less) and for consumption at school (once a week or more vs. less).

Results: A total of 63% and 27% of the participants reported to drink respectively regular and diet soft drinks twice a week or more, and 24% and 8%, respectively, reported to drink soft drinks once a week or more at school. Preferences, accessibility, modelling and attitudes were the strongest determinants of both regular and diet soft drink consumption. In addition, gender, educational plans and dieting were related to both total soft drink consumption and consumption at school. Pupils with longer distance from school to shop and those in schools with rules concerning soft drink consumption tended to have lower odds of drinking both regular and diet soft drinks at school.

Conclusion: This study shows that gender, educational plans, dieting, accessibility, modelling, attitudes and preferences all seem to be strong determinants of adolescents' soft drink consumption. Parents and the home environment appear as great potential intervention targets.

Keywords
Soft drinks
Adolescents
Determinants

The World Health Organization (WHO) recommends a diet where a maximum 10% of the energy comes from refined sugar (=added sugar)[1]. A recent dietary survey reported that Norwegian children and adolescents consume too much added sugar[2]. On average, 18% of the energy consumption of Norwegian 8th grade pupils comes from added sugar, and 89% of the age group have a diet where more than 10% the energy comes from added sugar[2]. Soft drinks contribute 30% of the total intake of added sugar[2].

It has been speculated that soft drinks may be an important factor in the observed rise in obesity prevalence[3,4]. Studies have found soft drink consumption to be positively associated with energy intake among children and adolescents[3–5], probably because overconsumption is a particular problem when energy is ingested in liquid form and because these drinks to a large extent represent energy added to, not displacing, other dietary intake[6–8]. Added sugar (i.e. from soft drinks) supplies the diet only with empty calories, which means just energy and no other nutrients. A national dietary survey reported negative correlations between intake of added sugar and intake of micronutrients and fruit and vegetable consumption[2]. A diet with less added sugar/soft drinks will therefore be more nutrient-dense. Diet soft drinks contain little or no energy, and are not associated with overweight/obesity[8]. However, all types of carbonated soft drinks pose a risk of dental caries due to enamel erosion caused by their acidity[9,10].

Only a few studies have reported determinants of adolescents' soft drink consumption[11]. Boys tend to drink more soft drinks than girls[4,12–14] and pupils of lower parental occupation status tend to drink more than pupils of higher parental occupation status[14]. In addition, taste preferences, soft drink consumption habits of parents and friends, availability at home and school and television viewing have been reported to be associated with soft drink consumption in one study[13]. Recently, two studies from The Netherlands also linked soft drink consumption to attitude, subjective norm and parenting practices[15], as well as parenting style[16]. As interventions work by mediating variables[17], a better understanding of the

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determinants is needed in order to make interventions that work. It appears that both environmental factors (such as accessibility and modelling) as well as personal factors (e.g. attitude and preferences) are important determinants of soft drink consumption. Therefore an ecological approach might be suitable. Taking a step further from cognitive behavioural models and theories, such as the Theory of Planned Behaviour[18] and Social Cognitive Theory[19], ecological models suggest that environmental factors, in addition to cognitive factors, may also have a direct impact on behaviour[20].

Children and adolescents spend a large portion of their day in school. Schools have the potential to influence pupils' beliefs and attitudes regarding nutrition and they can provide an important opportunity for health promotion[21]. Using the school arena is also an effective way of reaching a large number of young people and their family members[22]. It has been reported that during a random regular school day, 11% of Norwegian pupils drink regular carbonated soft drinks and 2% drink diet carbonated soft drinks without sugar[23]. Sale of soft drinks at school, distance from school to shops and rules against soft drink consumption at school are all factors that might affect soft drink consumption at school.

The purpose of the present study was to assess a number of potential factors (gender, educational plans, age, dieting status, distance from home to shop, accessibility at home, modelling, attitude, preferences, distance from school to shop, school sale of soft drinks and school rules against soft drinks) as determinants of adolescents' carbonated soft drink consumption, both of total consumption and of consumption at school.

Methods

Sample and procedure

This study is part of the Fruits and Vegetables Make the Marks (FVMM) project. FVMM is an intervention project including 38 randomly selected elementary schools in two Norwegian counties. A total of 18 schools were randomly chosen as intervention schools, while the remaining 20 schools served as control schools. The FVMM intervention was conducted in 6th and 7th grade classes in the school year of 2001/02. A baseline survey and two follow-up surveys were conducted while the children were in elementary school. One of the interventions evaluated consisted of free participation in the Norwegian School Fruit programme[24,25], and the other of a fruit and vegetable classroom curriculum including parental involvement[26]. In the school year of 2004/05 the same pupils were in 9th and 10th grade at 33 comprehensive schools (17 in Hedmark, 16 in Telemark). A third follow-up survey was carried out in May 2005 in these 33 schools. In addition to pupils participating in previous surveys, 'new' pupils were invited to participate in the May 2005 survey if the 'old' FVMM pupils constituted more than 30% of the 9th and 10th graders in the respective schools. Participants in the May 2005 survey constitute the study sample in the present study.

A survey questionnaire was completed by the pupils in the classroom in the presence of a trained project worker. One school lesson (45 min) was used to complete the questionnaire. A total of 2870 (out of 3388 eligible; 85%) pupils completed the questionnaire, 1462 boys and 1398 girls. A total of 1468 pupils were in 9th grade and 1402 were in 10th grade. Mean age of the sample was 15.5 years. The main reason why 15% of the pupils did not complete the questionnaire was absence from school on the survey day.

In addition, all school principals were interviewed by phone about food services and school rules concerning soft drink consumption in their school.

Instrument

Questions on soft drink consumption have been included in all FVMM questionnaires, but not previously presented. In order to find the most important determinants of adolescents' soft drink consumption, an ecological approach was taken[20]. Factors and questionnaire items included in the questionnaire were selected on the basis of the results from two separate focus group interviews with 9th and 10th graders, and a pre-test of the questionnaire (including about 100 pupils), both conducted during the spring of 2004. Factors potentially related to soft drink consumption, and included in this study, were categorised into environmental (both physical and social) and personal (more cognitive) factors. All these questionnaire items were assessed twice, once for regular soft drinks and a second time for diet soft drinks, with a few exceptions. In addition, sociodemographic factors and items assessing several health-related behaviours were included in the questionnaire.

Carbonated soft drink consumption

Consumption of carbonated soft drinks was assessed by frequency questions (separate items for regular and diet soft drinks). Total consumption was assessed by one question: 'How often do you drink (diet) soft drinks?' The question had 10 response alternatives; 'never', 'less than once a week', 'once a week' … 'every day', 'several times a day'. These questions were dichotomised into less than twice a week and twice a week or more. Less than twice a week was seen as an acceptable consumption. Based on data from a previous test–retest study involving 114 children from 6th grade (fruit and vegetable reliability has been presented elsewhere[27]), 80% and 85% of the children were classified into the same category on two assessments with 14 days in between, for regular and diet soft drinks respectively. Consumption at school was also assessed by one question: 'How often do you drink (diet)

soft drinks at school?' The question had seven response alternatives; 'never', 'less than once a week', 'once a week' … 'every school day'. Soft drink consumption at school was dichotomised into less than once a week and once a week or more. A consumption of less than once a week was seen as an acceptable consumption at school.

Environmental factors

Three questions assessing the *accessibility* of (diet) soft drinks at home were included: 'How often are (diet) soft drinks to be found in your home?', 'How often are you served (diet) soft drinks for dinner?' and 'How often does your mother/father serve you (diet) soft drinks besides dinner time?' These questions had 10 response alternatives each; 'never', 'less than once a month', 'less than one day a week', 'once a week' … 'every day'. The three questions were added (Cronbach's $\alpha = 0.70$ and 0.78, respectively, for regular and diet soft drinks) and then trichotomised into tertiles (low, medium and high accessibility at home).

Distance from home to shop was assessed by one question: 'How far from your home is it to the closest place where you can buy soft drinks?' This question had 10 response alternatives ranging from 'less than 50 m to 'more than 10 km, but it was trichotomised to less than 100 m, 100–500 m, and more than 500 m.

A similar item in the school principals' questionnaire assessed how far from the school was the closest place where the pupils could buy soft drinks (*distance from school to shop*). In addition, questions regarding regular sale of soft drinks at school (yes/no) and whether the school had rules against soft drink and candy consumption (yes/no) were included in the school principals' questionnaire. As only one school offered soft drinks for sale, this variable was not included in the analyses.

Modelling (the behaviour of important others) was investigated by four questions: 'How often does your mother/father/sibling/best friend drink (diet) soft drinks?' The modelling items had 10 response alternatives; 'never', 'less than once a week', 'once a week' … 'every day', 'several times a day'. The four questions were added (Cronbach's $\alpha = 0.68$ and 0.74, respectively, for regular and diet soft drinks) and then trichotomised into tertiles (low, medium and high modelling).

Personal factors

Attitudes towards soft drinks were measured by three statements: '(diet) soft drinks are well suited at meals', '(diet) soft drinks are well suited as a thirst-quencher' and '(diet) soft drinks are good for your health'. The attitude items had five response alternatives, each ranging from 'I totally agree' to 'I totally disagree'. The attitude items were added to one scale (Cronbach's $\alpha = 0.65$ and 0.67, respectively, for regular and diet soft drinks) and then trichotomised into tertiles (low, medium and high attitude). *Preferences* were measured by one item: 'On a scale from 0 to 10, how tasty do you find (diet) soft drinks?' These scales were also trichotomised into tertiles (low, medium and high preferences).

Sociodemographic factors and dieting

The questionnaire also included questions about grade (9th/10th), gender, future educational plans about university or college education (yes/no) and dieting: 'Are you trying to lose weight?' (yes/no).

Statistical analysis

Descriptive analyses of the proportion of adolescents drinking (diet) soft drinks twice a week or more, and once a week or more at school, in relation to the determinants were conducted using SPSS version 14 (SPSS Inc.). Multilevel logistic regression analyses were preformed with adolescents' soft drink consumption as the dependent variable, using MLwiN version 2.02[28]. All regression models included first gender, educational plans, grade and dieting as independent variables, as well as school as a random factor. The individual environmental and personal factors were then added to the models for total soft drink consumption. Distance from school to shop and rules in school were added as a second step in the analyses for soft drink consumption at school. Odds ratio (OR) with confidence interval (95%) are given for each independent variable.

Results

A total of 63% and 27% of the participants reported to drink respectively regular and diet soft drinks twice a week or more (Table 1). Similar figures for soft drink consumption once a week or more at school were respectively 24% and 8%. Table 1 also shows how the different proposed determinants (unadjusted) relate to soft drink consumption.

Boys (OR = 2.1) and those without education plans (OR = 1.5) had greater odds for drinking regular soft drinks twice a week or more (model 1, Table 2). Those on a diet (OR = 0.6) had reduced odds. When including the personal determinants (model 2), the odds for boys and those without education plans were reduced, while the odds for those dieting remained the same. Accessibility at home (e.g. high vs. low: OR = 5.0), modelling (e.g. high vs. low: OR = 3.8), attitude (e.g. high vs. low: OR = 1.9) and preferences (e.g. high vs. low: OR = 5.5) were all strongly significant for regular soft drink consumption. Those without education plans (OR = 1.4) and those on a diet (OR = 1.8) had greater odds for drinking diet soft drinks twice a week or more (model 3, Table 2). When introducing the personal determinants (model 4), these odds remained similar. Accessibility at home (e.g. high vs. low: OR = 8.0), modelling (e.g. high vs. low: OR = 4.0),

Table 1 Description of the proposed determinants and the unadjusted relationship between these factors and soft drink consumption (proportions with 95% CI)

		All day				At school			
		Twice a week or more (proportion)				Once a week or more (proportion)			
	n	Regular	(95% CI)	Diet	(95% CI)	Regular	(95% CI)	Diet	(95% CI)
All	2870	0.63	(0.61, 0.65)	0.27	(0.26, 0.29)	0.24	(0.23, 0.26)	0.08	(0.07, 0.09)
Individual-level determinants									
Gender									
Boys	1462	0.72	(0.70, 0.75)	0.25	(0.23, 0.27)	0.36	(0.34, 0.39)	0.10	(0.08, 0.11)
Girls	1398	0.53	(0.50, 0.56)	0.30	(0.27, 0.32)	0.12	(0.10, 0.14)	0.06	(0.05, 0.07)
Higher education plans									
No plans	1288	0.69	(0.66, 0.71)	0.30	(0.28, 0.33)	0.31	(0.28, 0.33)	0.10	(0.08, 0.12)
Plans	1242	0.57	(0.54, 0.60)	0.24	(0.22, 0.26)	0.17	(0.15, 0.19)	0.06	(0.04, 0.07)
Grade									
9th	1468	0.63	(0.60, 0.65)	0.28	(0.26, 0.30)	0.21	(0.19, 0.23)	0.07	(0.06, 0.08)
10th	1402	0.63	(0.60, 0.66)	0.26	(0.24, 0.29)	0.28	(0.25, 0.30)	0.09	(0.07, 0.10)
Dieting									
Not dieting	2361	0.66	(0.64, 0.68)	0.25	(0.23, 0.27)	0.26	(0.24, 0.27)	0.07	(0.06, 0.08)
Dieting	440	0.48	(0.43, 0.53)	0.39	(0.34, 0.43)	0.18	(0.14, 0.22)	0.11	(0.08, 0.14)
Distance from home to shop									
Less than 10 m	1119	0.61	(0.58, 0.64)	0.28	(0.25, 0.31)				
100–500 m	1108	0.64	(0.61, 0.67)	0.25	(0.23, 0.28)				
More than 500 m	584	0.64	(0.60, 0.68)	0.28	(0.25, 0.32)				
Accessibility at home (diet)									
Low (diet)	886 (973)	0.32	(0.29, 0.35)	0.03	(0.02, 0.04)				
Medium (diet)	917 (807)	0.67	(0.64, 0.70)	0.20	(0.17, 0.23)				
High (diet)	991 (1000)	0.87	(0.84, 0.89)	0.57	(0.54, 0.60)				
Modelling (diet)									
Low (diet)	858 (726)	0.38	(0.35, 0.41)	0.05	(0.03, 0.07)				
Medium (diet)	793 (924)	0.69	(0.66, 0.72)	0.18	(0.16, 0.21)				
High (diet)	753 (756)	0.83	(0.81, 0.86)	0.56	(0.53, 0.60)				
Attitude (diet)									
Low (diet)	932 (814)	0.39	(0.36, 0.42)	0.08	(0.06, 0.10)				
Medium (diet)	894 (1183)	0.66	(0.63, 0.69)	0.27	(0.24, 0.29)				
High (diet)	973 (796)	0.83	(0.80, 0.85)	0.48	(0.44, 0.51)				
Preferences (diet)									
Low (diet)	791 (824)	0.27	(0.24, 0.30)	0.03	(0.02, 0.05)				
Medium (diet)	1016 (1016)	0.70	(0.67, 0.73)	0.20	(0.18, 0.22)				
High (diet)	972 (923)	0.84	(0.82, 0.86)	0.57	(0.54, 0.60)				
School-level determinants									
Distance from school to shop									
Less than 100 m (schools)	692 (9)					0.23	(0.20, 0.27)	0.08	(0.06, 0.11)
100–500 m (schools)	1525 (17)					0.29	(0.26, 0.31)	0.08	(0.07, 0.10)
More than 500 m (schools)	653 (6)					0.15	(0.12, 0.18)	0.06	(0.04, 0.07)
Rules at school									
No rules (schools)	1263 (12)					0.28	(0.25, 0.30)	0.09	(0.08, 0.11)
Rules (schools)	1607 (21)					0.21	(0.19, 0.24)	0.07	(0.05, 0.08)

CI – confidence interval.

Table 2 Multilevel logistic regression analyses of greater soft drink consumption than twice a week

	Regular soft drinks (twice a week or more often)				Diet soft drinks (twice a week or more often)			
	Model 1		Model 2		Model 3		Model 4	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Boys vs. girls	2.1	(1.8, 2.5)	1.4	(1.1, 1.8)	0.8	(0.7, 1.0)	0.9	(0.7, 1.2)
No education plans vs. education plans	1.5	(1.3, 1.8)	1.1	(0.9, 1.4)	1.4	(1.1, 1.6)	1.5	(1.1, 1.9)
10th vs. 9th grade	1.0	(0.9, 1.2)	0.9	(0.7, 1.1)	0.9	(0.7, 1.0)	0.8	(0.6, 1.0)
Not dieting vs. dieting	0.6	(0.5, 0.7)	0.6	(0.4, 0.8)	1.8	(1.4, 2.2)	1.5	(1.1, 2.2)
Medium vs. short distance*			0.9	(0.7, 1.2)			0.8	(0.6, 1.0)
Long vs. short distance*			0.9	(0.7, 1.3)			0.8	(0.6, 1.1)
Medium vs. low accessibility			2.6	(2.0, 3.4)			3.3	(1.9, 5.9)
High vs. low accessibility			5.0	(3.6, 6.8)			8.0	(4.5, 14.2)
Medium vs. low modelling			2.4	(1.8, 3.1)			1.3	(0.8, 2.2)
High vs. low modelling			3.8	(2.8, 5.3)			4.0	(2.4, 6.8)
Medium vs. low attitude			1.6	(1.2, 2.1)			1.6	(1.1, 2.3)
High vs. low attitude			1.9	(1.4, 2.7)			2.7	(1.8, 4.0)
Medium vs. low preferences			4.1	(3.1, 5.4)			3.3	(2.0, 5.5)
High vs. low preferences			5.5	(4.0, 7.6)			10.1	(6.1, 16.8)

OR – odds ratio; CI – confidence interval.
*Distance from home to the closest place the children could buy soft drinks.

attitude (e.g. high vs. low: OR = 2.7) and preferences (e.g. high vs. low: OR = 10.1) were all strongly significant for diet soft drink consumption. Distance from home to the closest place the children could buy soft drinks was not significant for either regular or diet soft drink consumption.

In the logistic regression models of soft drink consumption at school, boys (OR = 4.4), those without education plans (OR = 1.9) and 10th graders (OR = 1.6) had greater odds for drinking regular soft drinks once a week or more (model 1, Table 3). Boys (OR = 1.7), those without education plans (OR = 1.9) and those dieting (OR = 1.9) had greater odds for drinking diet soft drinks at school (model 3, Table 3). When introducing the school-level determinants (models 2 and 4), the odds for gender, education plans, grade level and dieting status remained the same. Distance from school to shop and rules about soft drink consumption both tended to reduce the odds for drinking both regular and diet soft drinks at school, but variables were only borderline significant.

Discussion

This study shows that several Norwegian adolescents consume soft drinks more often than acceptable, also during school hours. Gender, educational plans, dieting, accessibility, modelling, attitudes and preferences all seem to be strong determinants of adolescents' soft drink consumption.

There are large gender differences in soft drink consumption, and boys drink more often than girls. This gender difference appears larger for regular than for diet soft drinks, and larger at school than outside school. That boys report greater soft drink consumption than girls is consistent with findings from other studies investigating total daily consumption of soft drinks[4,12–14]. Our results also show that pupils planning college or university education have lower odds of drinking both regular and diet soft drinks, both at school and of daily consumption. These findings indicate that it is the vulnerable health groups, males and adolescents of low socio-economic status, who consume the most soft drinks. Only small differences are seen between 9th and 10th graders. The 9th graders have lower odds of drinking regular soft drinks than 10th graders at school. Other studies have reported that consumption of soft drinks increases with age[14,29,30]. A reason for this might be the increasing opportunities for teenagers, as they grow older, to select and purchase their own food and drinks outside the home. Dieting is related to an increased frequency of diet soft drink consumption, and a decreased frequency of regular soft drink consumption. This is a reasonable finding since dieters tend to avoid sugar. When introducing the psychosocial variables into the statistical models, gender and education plans became less significant for regular soft drink consumption, indicating that some of the effect of gender and education plans on regular soft drink consumption might be mediated through accessibility, modelling, attitudes and preferences.

Table 3 Multilevel logistic regression analyses of greater soft drink consumption than once a week at school

	Regular soft drinks (once a week or more at school)				Diet soft drinks (once a week or more at school)			
	Model 1		Model 2		Model 3		Model 4	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Boys vs. girls	4.4	(3.5, 5.6)	4.6	(3.6, 5.8)	1.7	(1.3, 2.4)	1.7	(1.2, 2.4)
No education plans vs. education plans	1.9	(1.5, 2.4)	1.9	(1.6, 2.4)	1.9	(1.3, 2.6)	1.9	(1.4, 2.6)
10th vs. 9th grade	1.6	(1.3, 2.0)	1.6	(1.3, 2.0)	1.2	(0.9, 1.7)	1.2	(0.9, 1.7)
Not dieting vs. dieting	1.1	(0.8, 1.5)	1.1	(0.8, 1.5)	1.9	(1.3, 2.8)	1.9	(1.3, 2.8)
Medium vs. short distance*			1.2	(0.7, 2.1)			1.0	(0.6, 1.6)
Long vs. short distance*			0.5	(0.3, 1.0)			0.6	(0.3, 1.1)
Rules vs. no rules at school			0.6	(0.4, 1.0)			0.7	(0.4, 1.0)

OR – odds ratio; CI – confidence interval.
* Distance from school to the closest place the children could buy soft drinks.

Accessibility, modelling, attitudes and preferences all appear as strong determinants of both regular and diet soft drink consumption. Few studies have previously investigated such relationships. Grimm and colleagues found that soft drink intake in school-aged children was most notably correlated to taste preferences, soft drink consumption habits of parents and friends, soft drink availability in the home and school and television viewing[13]. de Bruin and colleagues have reported a negative correlation between soft drink consumption and the attitude towards a limited soft drink intake[15]. In the present study high preferences showed the greatest odds for drinking soft drinks, followed by accessibility, modelling and then attitude. These factors might therefore be important intervention objectives in future intervention studies. Parents clearly appear as important actors in adolescents' soft drink consumption, both as models of the behaviour and as the ones deciding what foods and drinks should be available and accessible at home.

The Norwegian Directorate for Health and Social Affairs has stated in official guidelines that soft drinks should not be offered at school[31]. This study shows that quite some pupils do drink soft drinks at school at least once a week. Further, pupils in schools with longer distance to a shop selling soft drinks and schools with rules concerning soft drinks and candy tend to have lower odds for drinking soft drinks at school. The WHO global strategy on diet, physical activity and health suggests limiting access to unhealthy foods and soft drink sales at school[32]. Few Norwegian schools sell soft drinks, as indicated by sales in only one of the 33 schools included in the present study. However, the results also indicate a possible positive effect of rules concerning soft drink consumption at school, not only sales. Introducing such rules might be an effective way of reducing the consumption of soft drinks during school hours. Altering the distance of shops selling soft drinks nearby schools is not a likely option for change, but could be discussed when planning locations for new schools. More research is needed to state the school's role in adolescents' soft drink consumption. An interesting point that appears from the present study is that the difference between genders and educational plans in soft drink consumption is greater at school than outside school. This could indicate that school might be important arena for reducing social inequalities in soft drink consumption.

However, the consumption of soft drinks at school in Norway is small compared with the consumption outside school; it has been reported that 11% drink regular soft drinks at school on a random school day, while 40% drink regular soft drinks during the whole same day[23]. Adolescents also drink more soft drinks during the weekend than during the weekdays[33]. For future intervention studies, the homes and the parents of the adolescents are clearly important targets. The results of the present study, showing the importance of accessibility at home and modelling (scale including mother, father and siblings), together with other recent studies linking also parental practices[15] and parenting style[16] to adolescents' soft drink consumption, clearly points that interventions should focus on the home environment and on the parents.

Our research has some limitations. The soft drink consumption variables have not been validated. However, the test–retest reliability of total soft drink consumption was high (80% and 85% correctly classified), and validity has been assessed among 6th graders using similar frequency questions assessing fruit, vegetable, fruit juice and potato intake, which gave acceptable results[27]. The participating pupils were from two of Norway's 19 counties only. However, as Norway is a rather homogeneous country we believe the results are likely to be generalisable to the other counties as well. The present study is based on cross-sectional data only and longitudinal analysis is needed in order to investigate whether the identified determinants predict future soft drink consumption.

Conclusion

This study shows that gender, educational plans, dieting, accessibility, modelling, attitudes and preferences all seem to be strong determinants of adolescents' soft drink consumption. Parents and the home environment appear as great potential intervention targets.

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