

Research report

Parental socioeconomic status and soft drink consumption of the child. The mediating proportion of parenting practices [☆]

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ABSTRACT

The hypothesis of this study is twofold and states that parental socioeconomic status has an effect on the soft drink consumption of the child, and that this effect is mediated by the soft drink related parenting practices. One thousand six hundred and thirty-nine parents of 2.5–7 year old children from 34 Flemish pre-primary and primary schools, completed a self-administered questionnaire on sociodemographic characteristics, soft drink consumption and soft drink related parenting practices. Causal mediation analyses showed an effect of socioeconomic status on soft drink consumption of the child: children from high socioeconomic status consume 0.42 times the amount of soft drinks of children from lower socioeconomic status. Interestingly, this effect is almost entirely mediated by three soft drink parenting practices: soft drinks served at meals, the child can take soft drink whenever he or she wants and having soft drinks at home.

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Introduction

The increasing prevalence of overweight worldwide is an important health issue (Wang & Lobstein, 2006). Soft drinks can be seen as a possible contributor to this increasing prevalence and related health problems (Agostini et al., 2011; Vartanian, Schwartz, & Brownell, 2007). Prospective cohort studies have found a consistent relation between obesity development and sugar-sweetened beverage consumption (Moreno & Rodriguez, 2007): e.g. consumption of sugar-sweetened soft drinks in 6–13 year-old children has been found to be positively associated with adolescent obesity (Mrdjenovic & Levitsky, 2003). Ludwig, Peterson, and Gortmaker (2001) report that for sugar-sweetened drinks consumed, both body mass index (BMI) ($p = 0.03$) and frequency of obesity increased significantly. However we also have to acknowledge that others assessed that the obesogenic effect of soft drinks might be rather small (Gibson, 2008).

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Moreover, Vartanian et al. (2007) have evidence for a striking link between soft drink consumption and type-2 diabetes ($p < 0.001$). Nonetheless many children in Belgium-Flanders consume soft drinks daily or almost daily (Huybrechts et al., 2008; Vereecken, Inchley, Subramanian, Hublet, & Maes, 2005). In Western European countries soft drink consumption is also lower among adolescents with parents having a high occupational status (Vereecken & Maes, 2006; Vereecken et al., 2005).

Families play an important role in the development of children's dietary habits. For young children in particular, the most important aspect of the environment is the nuclear family. Parents have a great influence through the food they make available and accessible to the child, their own nutritional behaviour and by child-feeding practices (Birch & Fisher, 1998). Grimm, Harnack, and Story (2004) report that children whose parents regularly drank soft drinks were 2.88 times more likely to consume soft drinks five or more times per week compared to those whose parents did not regularly drink soft drinks. van der Horst et al. (2007) showed that perceiving more restrictive parenting practices was found to be associated with less soft drink consumption in secondary school students, which is in accordance with the findings of De Bourdeaudhuij and Van Oost (2000). Nevertheless, other studies among younger children suggest that strict parental practices can increase children's preferences for, and intake of the restricted foods (Brown & Ogden, 2004; Fisher & Birch, 1999).

The parental socioeconomic status (SES) is a significant predictor for children's and adolescents' dietary habits including soft drink consumption, with children and adolescents from lower SES consuming more soft drinks than their counterparts from high SES (Vereecken, Legiest, De Bourdeaudhuij, & Maes, 2009) and this association exists for different SES indicators, e.g. parental education (Vereecken, Keukelier, & Maes, 2004) and parental occupation (Vereecken & Maes, 2006). It is well known that the socioeconomic status is a broader determinant of the parenting practices (Luster, Rhoades, & Haas, 1989). Kelley, Power, and Wimbush (1992) found that parental practices were associated with maternal education (Kelley et al., 1992) and DeGarmo, Forgatch, and Martinez (1999) found that the three most commonly used indicators of SES, income, education and/or occupation are all separately associated with parenting practices.

Moreover children from low SES are more likely to be overweight (Danielzik, Czerwinski-Mast, Langnase, Dilba, & Muller, 2004; Langnase, Mast, Danielzik, Spethmann, & Muller, 2003; Langnase, Mast, & Muller, 2002). As stated by Hupkens et al. (Hupkens, Knibbe, & Drop, 2000; Hupkens, Knibbe, Van Otterloo, & Drop, 1998), middle-class mothers were less permissive and restricted more foods like soft drinks than lower-class mothers, higher class mothers considered health more and costs less often, whereas lower class mothers agreed more often that taste is an important factor.

The hypothesis of this study is that parental SES has an effect on the soft drink consumption of the child among young children, and that this effect is mediated by the soft drink related parenting practices (see Fig. 1).

Methods

Subjects

This study is part of a project that has been approved by the ethical committee of the Faculty of Medicine and Health Science of Ghent University (EC/2007/570). This project named the POP-project (Prevention of Overweight among pre-school and school children) was an intervention study commissioned by the Flemish Policy Research Centre for Welfare, Health and Family. The goal of this broader project was to prevent childhood obesity. The intervention was set up based on five key messages: (1) increasing daily consumption of water and decreasing soft drink consumption, (2) increasing daily milk consumption, (3) increasing daily consumption of vegetables and fruit, (4) decreasing daily consumption of sweets and savoury snacks and (5) increasing daily PA and decreasing screen-time behaviour. It was conducted in six cities in Belgium-Flanders. These six cities were selected from the research regions in Flanders, as decided by the Flemish Policy Research Centre.

The recruitment of the participants took place in schools. In Flanders, 98% of the children are enrolled in a pre-primary school (age 3–5) and at the age of 6, education is compulsory. All pre-primary and primary schools (hereafter both named 'schools') in

these cities were invited to participate in the study. Participation of the schools was voluntary. Fifty-two schools were eligible and approached for participation, 34 agreed to participate (response: 65%). Within these schools, all children from pre-primary school (age 3–5) and first year of primary school (age 6) and their parents ($n = 3342$) were invited to participate. Written parental consent was required before participation. The questionnaires were distributed to the parents by the teachers in the schools. Parents were asked to complete the questionnaires at home and return the completed questionnaires to the schools in a sealed envelope within four weeks where they were collected by the research team. The potential number of participating children (and their parents) was 3342 of whom 1639 participated (response: 49%).

Instruments

Parental questionnaire

Demographic and socioeconomic factors: Demographic characteristics included in the present study are age and gender of the child, highest educational level of the mother, with those with an educational level of higher secondary education or less classified as low SES, as those with a bachelor's or master's degree classified as high SES.

Soft drink consumption: The soft drink consumption was assessed through a validated food-frequency questionnaire (FFQ) (Huybrechts, De Backer, De Bacquer, Maes, & De Henauw, 2009; Huybrechts et al., 2008). The FFQ was validated using estimated diet records of three days of 650 2.5–6.5 year-old children. Reproducibility ($n = 124$) was measured by repeated FFQ administrations five weeks apart. From the validation study it could be concluded that the reliability and validity assessment of soft drinks was high for the FFQ (correlation for reproducibility was 0.86 and 0.63 for relative validity in comparison with 3 day estimated diaries). The FFQ evaluated the frequency and quantity of soft drink consumption. The frequency was assessed by the categories: 'never or less than 1 day per month', '1–3 days per month', '1 day per week', '2–4 days per week', '5–6 days per week' and 'every day'. The quantity for soft drink consumption was classified by '100 ml or less', '100–199 ml', '200–299 ml', '300–399 ml', '400–499 ml' and '500 ml or more'. The combination of frequency and portion size enabled the calculation of a daily average consumption of soft drinks (ml).

Parenting practices: Parenting practices were selected from a previous study (Vereecken, Keukelier et al., 2004). The parenting practices related to soft drinks were used for the present paper: parenting practices addressed availability at home, accessibility at the dinner table, permissiveness, discouragement through rationale and avoiding negative modelling. All items were measured using a five point scale, ranging from 'never', 'seldom', 'sometimes', 'often' to 'always'. The items for availability and accessibility were: 'How often do you serve soft drinks with the warm meal?' (serve at meal), 'How often do you have soft drinks at home?' (have at home). The item for permissiveness was: 'My child is allowed to take soft drinks whenever he/she wants'. The authoritative item addressing discouragement through rationale was: 'How often do you tell your child sweets or soft drinks are unhealthy?'. The authoritative item addressing avoiding negative modelling behaviour was: 'If I would like to drink soft drinks, I would restrain myself because of the presence of my child'.

Statistical analyses

Data were analysed using SPSS/PC statistical program (version 17.0 for Windows, SPSS, Inc., Chicago, IL.) and R (version 2.12.1).

Although the evidence for within-school correlation was found to be weak, all analyses were based on multilevel models, namely

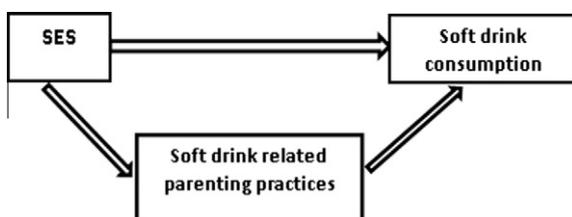


Fig 1. Hypothesized model of the direct and indirect effect of socioeconomic status on soft drink consumption with soft drink parenting practices variables as mediators.

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