



Restrictive rules of Dutch mothers regarding their children's dietary intake between meals



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ABSTRACT

The use of restrictive food rules by parents has been found to be associated with dietary intake in their children. The aim of this study was to explore the use of restrictive rules of Dutch mothers regarding their child's food intake between main meals in detail, to generate necessary input for setting priorities for further research and intervention development. A cross-sectional questionnaire study on nine restrictive rules was completed by 359 mothers of primary school children aged 4–12 years. Mothers reported to use an average of 4.1 (SD 2.1) out of nine restrictive food rules and all rules measured in this study were used. The rules mother's reported to use most were not eating shortly before meals, not eating certain foods too often and not eating too much of certain foods. The rules varied according to different foods, but particularly applied to the intake of potato chips, nuts and savory snacks, candy and chocolate. Mothers of a younger age, lower educated mothers and mothers with a higher BMI were less likely to use (certain) restrictive rules. This study showed that mothers use a large variety of rules, particularly to restrict the intake of unhealthy foods and reported on several subgroups that were less likely to use (certain) rules. Our results direct further research and inform the development of interventions.

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1. Introduction

A major lifestyle problem in Western society is the frequent intake of foods between main meals among young people (Currie et al., 2004; National Institute for Public Health and the Environment, 1998; Ocké et al., 2007). These between meal snacks, such as sweets, cookies, and soft drinks are often high in calories, sugar or fat, have low nutritional value (World Health Organization, 2003) and contribute to overweight and obesity (Currie et al., 2004; WHO, 2003). The Netherlands Nutrition Centre (NNC) recommends limiting the number of food occasions between the three main meals to a maximum of four (Netherlands Nutrition Centre, 2011).

Parents can have a strong influence on their child's dietary intake through food-specific parenting practices (Ventura & Birch, 2008). The

present study focused on the use of restrictive food rules (i.e. the extent to which negative behavior around food is forbidden in the family (De Bourdeaudhuij & Van Oost, 2000)). Multiple observational studies in Europe have linked the use of restrictive rules to favorable dietary intakes among children (De Bourdeaudhuij, 1997; De Bruijn, Kremers, de Vries, van Mechelen, & Brug, 2007; Ezendam, Evans, Stigler, Brug, & Oenema, 2010; Haerens et al., 2008; Van der Horst et al., 2007; Verzeletti, Maes, Santinello, Baldassari, & Vereecken, 2010). These findings suggest that taking measures aimed at promoting the use of these rules by parents is important.

Specific knowledge is needed on which specific food rules are used, how many parents and which parents use them, and which specific food rules are most favorable in order to assist intervention developers. However, there is limited knowledge on the use of restrictive food rules. Earlier measures of restrictive food rules focused on a limited number of types of rules parents might use (e.g. De Bourdeaudhuij, 1997; De Bourdeaudhuij & Van Oost, 2000; Ezendam et al., 2010; Francis, Hofer, & Birch, 2001; Musher-Eizenman, Holub, Hauser, & Young, 2007; Verzeletti et al., 2010; Wardle & Carnell, 2007). Furthermore, restrictive food rules were not measured for specific foods (e.g. De Bourdeaudhuij, 1997; De Bruijn et al., 2007; Van der Horst et al., 2007), while food parenting practices, including these food rules, might differ across food categories (Musher-Eizenman & Kiefner, 2013).

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As a first step, this study explored the full range of possible food rules mothers of children aged 4–12 years may use to restrict the consumption of foods between main meals. We investigated (1) which specific food rules mothers use to restrict food intake between main meals; (2) differences in the use of restrictive food rules between different subgroups of mothers; and (3) to which foods these restrictive rules apply.

2. Methods

2.1. Participants and recruitment

Mothers ($n = 680$) of children aged 4–12 years were recruited. Data collection took place through a research agency, which invited members of their research panel to fill in a web survey in exchange for gift vouchers. A subset of this panel was selected with a distribution in terms of region and educational level that was comparable to the Dutch population. The study was exempt from ethical review according to prevailing Dutch standards because the study was considered to be low risk, participation was voluntary and anonymous, and completion of the survey was considered to be equivalent to assent by parents (Central Committee on Research Involving Human Subjects, 2014).

2.2. Questionnaire

Four in depth-interviews with mothers and pretests among mothers and health promotion experts were conducted to inform the development of the questionnaire. Mothers were asked to answer all child-related questions for their youngest child attending primary school.

Restrictive food rules were assessed by nine yes–no items, relating to whether there are foods between meals the child is (1) never allowed to consume, (2) not allowed to consume very often (e.g. not too often a week), (3) not allowed to consume too much of (e.g. not a large amount or portion each time), (4) not allowed to consume shortly before a main meal, (5) only allowed to consume on certain days of the week (e.g. only on Saturday), (6) only allowed to consume at certain times of the day (e.g. only in the evening), (7) only allowed to consume certain types of foods (e.g. only multigrain cookies), (8) only allowed to consume on special occasions (e.g. only on birthdays), and (9) only allowed to consume in certain places (e.g. only at home or at the sports club). Mothers were shown a list of food categories and asked to indicate which foods they used in the context of the restrictive rules (i.e. potato chips, nuts and/or savory snacks; cookies; pastry and cake; ginger cake; bread; crackers and biscuit rusk; breadsticks; chocolate; candy bars; candy; French fries; deep fried snacks; cheese; sausage; ice cream; yoghurt and soft curd cheese; pudding; fruit; raw vegetables; water; soft drinks; fruit juice; milk; chocolate milk and yoghurt drink; other drinks; other.)

Additionally, we assessed background characteristics including country of birth of mother and father (to determine the child's ethnicity (Keij, 2000)); weight and height (to calculate BMI (WHO, 2015)), perceived body size of the mother (i.e. I am too thin, I am a little bit too thin, I have a normal weight, I am a little bit too heavy, I am too heavy); and level of education of the mother (classified according Verweij, 2008). Mothers were also asked to report their child's age and gender. The research agency provided data on the mother's age, postal code (used to calculate a factor score indicating socioeconomic position (SEP), which was split in tertiles (The Netherlands Institute for Social Research, 2006)), and total number of children.

2.3. Data analysis

Data were analyzed using SPSS 20.0. Cronbach's alpha was calculated to assess the internal consistency of the restriction items. To determine associations of response (i.e. whether or not mothers participated), a logistic regression analysis was conducted with mother's age, SEP, and number of children living at home as independent variables.

To examine associations of using particular food rules, logistic regression analyses were used with mother's age, educational level, SEP, BMI, and perceived body size; use of child care; the child's age, gender, perceived body size, and ethnicity; and the mother's familiarity with the NNC recommendation as categorical independent variables. To determine the associations of the number of restrictive rules the mothers used, a similar linear regression analysis was conducted. Contrasts of the associations with the independent variables were tested by replicating the regression analyses on the associations of using food rules, using a different reference group for each categorical independent variable each time. P values < 0.05 were considered to indicate statistical significance.

3. Results

3.1. Response and participants

Of the 680 mothers invited, 24 were excluded since they did not have children attending primary school. Of the remaining mothers, 359 responded within the requested one week period (56%). No significant differences in demographic characteristics were found between participants and non-participants.

The mean age of the mothers was 38.3 (SD 5.5) years, 22% were low-educated, and 47% had an intermediate education. Mean BMI was 25.8 kg/m² and nearly half of the mothers (48%) were classified as overweight or obese. The mean age of the focal children was 7.0 (SD 2.7), 55% of them were boys, and about 90% were of Dutch origin. Most mothers were not familiar with the NNC recommendation (79%), indicated that their child did not use child care (62%), thought they were slightly too heavy (62%), and found their child to be normal weight (73%).

3.2. Use of specific restrictive food rules

The restrictive food rules items had a Cronbach's alpha coefficient of 0.67. Mothers reported using an average of 4.1 (SD 2.1) restrictive food rules (range 0–9). Of the 359 mothers, 5.0% reported using none of the rules, 31.9% used 1 to 3 rules, 51.7% reported to use 4 to 6 rules, and 11.4% used more than 6 rules. Table 1 shows that the majority of mothers did not allow their child to consume certain foods shortly before meals (88.0%), to eat certain foods too often (70.1%) or to eat too much of certain foods (68.7%). Food rules that allow the child to consume certain foods only in certain places were reported least often (7.5%).

3.3. Subgroup differences

Table 1 shows that younger mothers (aged 30 to 40 years) reported using less restrictive food rules than older mothers (aged 45 and older). Mothers with an intermediate or low educational level used less restrictive rules than those with a high level of education. Furthermore, obese mothers used less restrictive rules than normal weight mothers. Additionally, mothers with children aged 10–12 used less restrictive rules compared to mothers of younger children. Subgroups differences regarding the use of specific food rules were found for mother's age, educational level, and BMI.

3.4. Restrictive food rules and food choice

The rules forbidding the child to eat shortly before main meals, to eat too much between main meals and to eat too often between main meals were applied to the largest numbers of foods, i.e. for an average of 15, 11 and 8 foods, respectively. On average, a particular restrictive rule was applied by the mothers to six foods out of the 26 food categories as provided in the questionnaire. Mother's restrictive rules most often applied to potato chips, nuts and savory snacks, candy and chocolate (Table 2).

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