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Original Article

## Adolescent Weight Status: Associations With Structural and Functional Dimensions of Social Relations

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### ABSTRACT

**Purpose:** To examine the associations between weight status and structural and functional dimensions of social relations among 11- to 15-year-old girls and boys.

**Methods:** Analyses were based on cross-sectional data from the Danish contribution to the international Health Behavior in School-aged Children study 2010. The study population (n = 4,922) included students in the fifth, seventh, and ninth grade from a representative sample of Danish schools. Multinomial logistic regression analyses were used to study the associations between weight status and social relations, supported by a conceptual framework for the study of social relations.

**Results:** Among girls, overweight/obese weight status was associated with spending less time with friends after school compared to normal-weight status (0 days/week: odds ratio: 6.25, 95% confidence interval: 2.18–17.95, 1 day/week: 2.81, 1.02–7.77, 2 days/week: 3.27, 1.25–8.56, 3 days/week: 3.32, 1.28–8.61, and 4 days/week: 3.23, 1.17–8.92, respectively vs. 5 days/week). Among girls, overweight/obese weight status was associated with being bullied (2.62, 1.55–4.43). Among boys, overweight/obese weight status was associated with infrequent (1 to 2 days vs. every day) communication with friends through cellphones, SMS messages, or Internet (1.66, 1.03–2.67). In the full population, overweight/obese weight status was associated with not perceiving best friend as a confidant (1.59, 1.11–2.28). No associations were found between weight status and number of close same-sex and opposite-sex friends, mother/father as confidant, and perceived classmate acceptance.

**Conclusions:** This study shows that overweight/obese adolescents have higher odds of numerous poor social relations than their normal-weight peers both in terms of structural and functional dimensions of social relations.

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### IMPLICATIONS AND CONTRIBUTION

Overweight/obese girls spend less time with friends after school, and overweight/obese boys report more infrequent E-communication compared to normal-weight adolescents. Relatively more overweight/obese adolescents do not perceive their best friend as a confidant. The paper offers a conceptual framework to support the examination of social relations.

In the short term, adolescent overweight/obese weight status is associated with clustering of cardiovascular and metabolic risk factors such as increased blood pressure, dyslipidemia, and impaired glucose metabolism [1]. In the long term, overweight/

obese weight status is associated with increased risk of diabetes, ischemic heart disease, and stroke in adulthood [2]. Adolescent overweight/obese weight status has also been linked to body dissatisfaction [3], low quality of life, low self-esteem [4], and poor social relations, e.g., greater risk of being socially isolated and being bullied [5–11].

In early adolescence, the structure and function of social relations undergo rapid changes from a family-centered

**Conflicts of Interest:** The authors have no conflicts of interest to disclose.

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environment to a broader environment open to influences of peers [12]. At this developmental stage, positive social relations are vital for learning social skills and competencies [13,14]. Adolescents with mutual friendships are less likely to be lonely, have fewer adjustment problems, have higher self-esteem, and greater school achievements [14]. Adolescents with few friends have higher risks of feeling depressed, nervous, lonely, and being bullied [12,14].

Research in adolescent weight status and social stigmatization goes back to the 1960s [15], but there are still inconsistencies in studies on social consequences of overweight/obesity. One reason may be the lack of a conceptual framework for the study of social relations [5,7,8,16]. Prior conceptual models separate social support [17] and social network [18]. Due et al. [19] introduced a conceptual framework defining social relations as the main concept and structure and function of social relations as subdimensions (Figure 1). The structural dimension has two elements: formal relations and the informal relations forming the social networks. Number and type, frequency, and duration of social relations as well as diversity, density, and reciprocity are aspects of the structural dimension. The functional dimension includes social support (emotional, instrumental, and informational support as well as appraisal), relational strain, and social anchorage. Relational strain includes conflicts and excessive demands. Social anchorage includes social integration within formal and informal groups.

Regarding social network ties, overweight/obese adolescents are at greater risk of being socially isolated and having peripheral relationships compared to normal-weight adolescents [7,8,16]. Also, overweight/obese adolescents are more likely to be victims of bullying [9–11].

Only few studies have examined the relationship between adolescent weight status and social support. One study on peer support showed that obese boys—but not girls—were more likely than normal-weight boys to feel that their friends do not care about them [16]. A study of perceived parental support showed no difference between obese and nonobese adolescents [20].

Previous studies about peer acceptance show conflicting results. One study found no difference in peer acceptance among normal-weight and obese 10-year-old girls [21], whereas another study found lower peer acceptance among obese children aged 8- to 16-year-olds [22].

Several studies on weight status and social relations highlight the importance of gender [6–8,16]. The age span from late childhood to adolescence is a period with substantial changes in social relations and in gender roles, but there are few studies on the relevance of age for the association between weight status and social relations. In summary, there is a need for additional studies and studies with a theoretical foundation [5,7,8,16]. The use of a theoretical framework enables a clear distinction between aspects of social relations and enhances comparison across studies. The aim of this study was therefore to examine associations between weight status among adolescents age 11–15 years and social relations using the conceptual framework by Due et al. [19]. Further, the aim was to examine whether these associations differ by age and gender.

The available data did not allow analyses of all aspects of social relations defined in the model by Due et al. [19]. From the structural dimension, this study covers number and frequency of contacts with social network members. From the functional dimension, this study includes an indicator of emotional social support, social anchoring, and relational strain.

## Methods

### Study population

We used the Danish 2010 data from the international research project: Health Behavior in School-aged Children—a World Health Organization Collaborative Cross-national Study. The study applies an internationally standardized and self-administered questionnaire in three age groups: 11-, 13- and 15-year-old students [23] corresponding to the fifth, seventh, and ninth grades, respectively. A total of 140 schools were

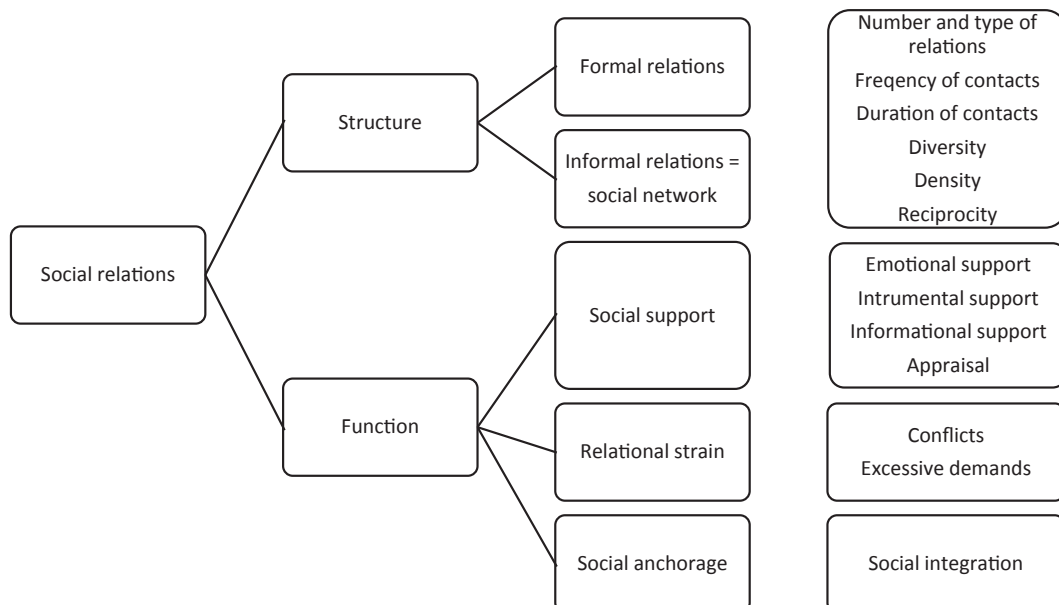


Figure 1. Social relations. Conceptual framework by Due et al., 1999.

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