



## New results on the effect of maternal work hours on children's overweight status: Does the quality of child care matter? ☆

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### ABSTRACT

Existing empirical research on child overweight derives mainly from North America and points at rising maternal employment as an explanation for the increasing trend in child weight. These results cannot be replicated in Denmark, where an increase in maternal work hours does not increase the likelihood of weight problems for their children. This paper tests four possible explanations for this difference: (1) the effect of maternal employment on child obesity is heterogeneous and varies according to the country's weight distribution; (2) the quality of child care is on average higher in Denmark; (3) the counterfactual care provided by Danish mothers is of lower quality; and (4) Danish fathers contribute significantly to their children's health. This paper finds evidence consistent with the hypotheses that Danish child care and fathers play a significant role in explaining the absence of a significant relationship between maternal work hours and children's overweight status.

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### 1. Introduction

Recent research shows that the well-documented general increase in the tendency towards overweight and obesity in both developed and less developed countries particularly affects children. Some researchers even speak of childhood obesity as a global epidemic, with its persistence into adulthood posing an ever-growing threat to health all over the world (WHO, 2000). The categorization of this obesity trend as an epidemic carries the implicit assumption that obesity is something that an individual becomes “infected by”—and consequently a situation for which the individual cannot be entirely blamed. While both genetic and social factors are indeed underlying explanations for obesity, they are particularly so for children's overweight status. In general, children neither purchase their own food nor decide what to have for dinner; decisions such as these lie primarily in the parental domain. As children do not choose their own

parents and as obesity runs in families, a natural concern for social research should be a focus on the causes of child overweight and the ways in which public interventions can affect habit formation from an early age.

This paper examines how maternal work hours can affect children's weight through its effect on children's eating patterns and levels of exercise. When parents' total work hours increase, time spent on the household is reduced. Parents' spending less time in the household might affect activities related to child diet and physical activity. A study from the U.S. (Cawley and Liu, 2007) finds that employed mothers spend significantly less time playing and eating together with their children than non-employed mothers. Moreover, employed mothers cook less and purchase more ready-made food. A study from Denmark shows that when employed mothers work more hours a week, they spend less time cooking. However, whether Danish mothers work few or many hours a week, there is no difference in the amount of time they spend on child care or cooking (Greve and Bonke, 2011).

Most of the economic literature on overweight children and maternal employment derives from the U.S., where the increase in the proportion of children who are overweight has been relatively high compared to the rest of the world. North America has seen an increase in the labor market participation of women parallel to the increase in the proportion of overweight children. In trying to explain this observed correlation, the economic literature on children's overweight status hypothesizes that increased labor market participation leads to

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less time spent in the household (e.g., cooking, supervising, or carpooling) and results in more time during which the children remain unsupervised by their parents (Anderson et al., 2003; Chia, 2008; Ruhm, 2008). Leaving the children alone or in the care of others might prove important for children's passive and active activities and eating patterns if those who take care of the children are less concerned with the children's health.

All previous studies on the relationship between maternal employment and child overweight look at different age groups and use different definitions of child overweight. These differences in definition to some extent explain the differences in the magnitude of the results. Furthermore, different studies use different sets of control variables and use different methods for identifying the relationship between child overweight status and maternal employment. Most of the studies are based on data from the U.S. (Anderson et al., 2003; Classen and Hokayem, 2005; Liu et al., 2009; Fertig et al., 2009; Courtemanche, 2009; Ruhm, 2008) but there are also studies based on data from Australia (Zhu, 2007), Canada (Phipps et al., 2006; Chia, 2008), Spain (Garcia et al., 2006) and UK (von Hinke Kessler Scholder, 2008). Nonetheless, all of them consistently show that when mothers start working (more hours), their children are more likely to be overweight or obese. The studies that control for endogeneity cannot reject the exogeneity of the effect of mother's employment on child overweight (Anderson et al., 2003; von Hinke Kessler Scholder, 2008; Chia, 2008).<sup>1</sup>

This paper is the first to analyze the relationship between maternal employment and children's overweight status in a society in which most women participate in the labor market and in which the norm is that mothers return to work after one year of maternal leave. Most importantly, this study analyzes the effect of maternal employment in an environment in which publicly subsidized child care institutions are of relatively high quality. In contrast to the situation in the U.S., the Danish employment rate among women with small children (1 to 7 years) has been relatively high since the 1980s, with the prevalence of overweight children increasing from 5% to 14% for girls and from 7% to 21% for boys (Pearson et al., 2005). From 1997 to 2002, however, the employment rate among women with children increased from 7 to 9% (Fig. 1), while the average number of hours worked decreased 9% (Fig. 2). During this time, the average number of working hours among women with small children has been almost equivalent to the average number of working hours among all women.

The results in this paper indicate that maternal work hours have no effect on child overweight in Denmark. This result contradicts all relevant literature from other countries. I test four hypotheses explaining the divergent result. First, I test the importance of heterogeneity in the Danish weight distribution compared to other countries, i.e., whether the effect of maternal employment is different at different points in the BMI (body mass index) distribution in Denmark compared to other countries. Second, I investigate differences in the effect of maternal employment on child overweight by the type of child care that replaces maternal child care at age 3 1/2, i.e., the quality of different types of public child care. Third, I examine whether the counterfactual care provided by Danish mothers is of lower quality and thus their being away from their children is less harmful for the children. Fourth, I analyze Danish fathers' contribution to their children's health.

Understanding the reasons for the difference in the Danish relationship between maternal employment and child overweight is important for policy interventions. In many countries, including the U.S. and the UK, the employment rate among women is high but the focus on the quality of child care is not. However, if maternal employment in itself is not harmful and what supports children's

well-being is the quality of child care institutions, then an obvious justification for policy intervention would exist.

The results in this paper suggest that quality of child care explains part of the difference between the results on maternal employment and child overweight in Denmark and other countries. Subgroup analyses of formal day care (kindergarten) and informal day care (family day care) suggest that among children in family day care – a type of day care considered of lower quality than kindergarten – maternal employment increases the probability of child overweight. However, this result is not statistically significant. Among children in kindergarten, maternal employment significantly reduces the probability of child overweight. This result indicates that the quality of day care matters, explaining in part why the Danish results differ from those found in the literature.

Furthermore, the results in the paper suggest that when Danish fathers work fewer than 40 h there is a negative relationship between maternal work hours and child overweight among women working more than 22 h a week, indicating that Danish fathers indeed contribute significantly to their children's health.

## 2. The institutional setting in Denmark

The relationship between maternal employment and children's overweight status is likely to be influenced by the institutional setting in the country under review. This section briefly describes institutional factors related to maternal employment and child health in Denmark.

Female labor market participation in Denmark is known to be one of the highest among the OECD countries (OECD, 2001). From 1990 through the present – during which period medical research has identified a significant increase in childhood weight problems in most developed countries, including Denmark – the employment rate has been relatively high among women with small children in Denmark (Fig. 1). However, there has been an increase in the female employment rate from 66 in 1996 to 76 in 2002 among women with youngest child aged 1–3 and from 71 in 1996 to 79 in 2002 among women with youngest child aged 4–6. Meanwhile, the average number of working hours among the employed has decreased from 1997 to 2002 both among all women and among women with children aged 1–7 (Fig. 2). In Denmark, collective agreements fix the maximum number of weekly working hours. This maximum has been 37 h since 1986, and standard job descriptions and public opening hours rely on this working time. Overall, the majority of Danish women work full-time and approximately forty percent of them work exactly 37 h a week.

The relatively high labor market participation rate among Danish mothers with young children has been possible primarily because of corresponding welfare policies related to maternity leave and child care. Maternal leave is relatively generous in Denmark: Danish mothers spend an average of 50 weeks on maternal leave, part of the time with full payment and part of the time on maternal leave benefits (Datta Gupta and Smith, 2002).<sup>2</sup>

Almost all Danish children are enrolled in formal day care, and public day care arrangements are highly subsidized, i.e., the parents' contribution does not exceed 30–33% of the actual costs (OECD, 2001).<sup>3</sup> In 1999, 86% of all three-year-old are enrolled in day care facilities in the following arrangements: family day care (16%), day

<sup>1</sup> However, Ruhm (2008), using a measure of future employment to test for endogeneity, raises doubts that the positive relationship between maternal employment represents a causal effect.

<sup>2</sup> It is usually assumed that the Danish maternal leave policy has positive employment effects because it facilitates a firmer labor force attachment for mothers, compared to societies without such policies (Ruhm, 1998). Datta Gupta and Smith (2002) find that the main effect of birth-related leaves in Denmark on mothers' wages appears due to the loss of human capital accumulation during childbirth periods; otherwise, holding experience constant, there are no long-term effects of children on the earnings potential of their mothers.

<sup>3</sup> OECD (2000) shows the percentage of children in different types of care by age breakdown by one-year age intervals for children aged 0–9.

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