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Maternal Employment and Childhood Obesity among Immigrant Families

Qi Zhang, PhD

Abstract

There are continued interests to examine the relationship between maternal employment and childhood obesity. However, little research has been focused on childhood obesity among immigrant families with working mothers. This study used the Panel Survey of Income Dynamics (PSID) and Child Development Supplement (CDS) in 2002 and compared the impact of maternal employment on childhood obesity between immigrant families and US-born families. The positive effect of maternal employment on children's body weight status was much stronger in immigrant families than in US-born families. The full-time employment status of mothers had strong and significant effect on immigrant children's BMI (beta = 3.33, $P < 0.05$). In immigrant families, unemployed mothers had a significantly positive effect on the likelihood of childhood overweight (OR = 4.09, $P < 0.01$). However, in US-born families, unemployed mothers had a significantly negative effect on childhood overweight (OR = 0.87, $P < 0.01$). Acculturation and lack of access to social welfare might explain the additional positive contributions of working mothers to childhood obesity in immigrant families. [N A J Med Sci. 2010;3(2):89-93.]

Key Words: Maternal employment, childhood obesity, immigrant families, body mass index (BMI)

Introduction

Changing patterns of maternal labor force participation have implications for the dietary intakes of children. Over the last three decades, the percentage of working mothers increased from 47.4% in 1975 to 73.1% in 2001.¹ Emerging evidence suggests that working women tend to have obese children. A longitudinal study of 6,283 women with children aged 3-11 found that the average hours worked per week had a strong linkage to childhood obesity. This suggests that mothers play an important daily role in children's food intake and physical activity.² Children of full-time working mothers consistently consumed more soda and fried chips and had lower Healthy

Eating Index (HEI) scores.³ Using data from a national survey on time usage among Americans, Cawley and Liu (2007) found that mothers with longer working hours were more likely to buy prepared foods and reduce grocery shopping and cooking activities.⁴

However, there is little research that studies the relationship between maternal employment and childhood obesity among immigrant families. Based on Census 2000, more than 11% of the U.S. population is foreign-born.⁵ Due to the process of acculturation and employment restrictions, some immigrants work for longer hours and for lower pay. Their more limited discretionary time tends not to be devoted to health-oriented physical activity. More than 16% of immigrants were obese and reported being more sedentary than US-born populations.⁶ Therefore, it is important to examine the effect of maternal employment on immigrant's children's body weight status and compare these effects with those for US-born families.

Methods

Theoretical models

The health production function proposed by Ruhm (2004) suggests that health outcomes of children depend on physical inputs (e.g., food), parents' time inputs (e.g., cooking) and exogenous determinants (e.g., demographics).¹ Parents' time input on children is negatively related to working time. Therefore,

$$C = N(F, W, X) \quad (1)$$

Where C is children's nutritional intake, $N(\cdot)$ acts as the food intake function of the children, F is the food consumed, W is working time, and X represents the demographics or other exogenous variables. Since paternal employment has little impact on children's healthy outcomes, W exclusively represents maternal employment.

Based on classic economic theory, we assume that the food consumed is a function of the family income, other economic factors (such as prices), and demographics.^{7,8} Specifically,

$$F = F(I, Z, X) \quad (2)$$

Where F is the quantity of food consumed, $F(\cdot)$ acts as a food consumption function, I is the income, Z is the other economic factors, and X is a vector of demographic variables. Income can be expressed as a function of maternal employment: $I = I(W)$. Moreover, consumers, particularly working women, have to spend valuable time purchasing

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these foods.⁹ With longer working hours, mothers have less time to spend shopping. Therefore, the food consumption function can be revised as:

$$F = F(W, Z, X) \quad (3)$$

Substitution of equation (2) into equation (1) gives us equation (4):

$$C = N(F(W, Z, X), W, X) \quad (4)$$

Moreover, children's physical activity can also be affected by maternal employment. The longer working hours, the less time there is to be with children, which might increase children's time with sedentary activities such as TV or video games.

$$P = P(W, X) \quad (5)$$

Where P is child's physical activity, W is the maternal employment, and X is the demographics.

Since children's bodyweight status is a function of nutritional intake and physical activity, we can express it as:

$$B = B(C, P) = B(N(F(W, Z, X), W, X), P(W, X)) \quad (6)$$

In summary, maternal employment can influence children's bodyweight status via the following three mechanisms: a) increasing household income which might improve diet quality; b) less time to prepare foods for children, so children tend to eat fast foods; c) less time to be with children, so children are more sedentary.

Data

Panel survey of income dynamics (psid) and child development supplement (cde): The PSID is a longitudinal and national representative survey of U.S. individuals and their households with demographic, socioeconomic, psychological, and health measures. The sample size of the 37-year panel survey has increased from nearly 5,000 families in 1968 to over 8,000 families in 2005. In 1997, 500 immigrant families with 2,840 individuals were added to the PSID. In 2002, additional information about children and their families was collected by incorporating the CDS to understand the dynamic development of children in the PSID families. The CDS in 2002 included 2,019 families, who represented 91% of the PSID families with 5- to 18-year-old children. The CDS provides measured height and weight of the interviewed children.

Measures

Body weight status: Body Mass Index (BMI) = Weight[kg] / Height²[m²]. The Centers for Disease Control and Prevention (CDC) 2000 growth chart will be used to determine the body weight status by age and gender: Overweight if BMI \geq 85th percentile and Obesity if BMI \geq 95th percentile.¹⁰

Maternal employment: a) Employment status based on mothers' answers to the question "Are you working now, looking for work, retired, keeping house, a student, or what?"

The employment status was categorized as "employed" (working now/only temporarily laid off, sick or maternal leave), "unemployed"(looking for work, unemployed), "keeping house," and "others" (student/retired/disabled). b) Weekly work hours in past year. c) Full time working status, which is defined as working more than 20 hours weekly.

Demographics: a) Age of the child: aged 2-20 years old in CDS 2002. b) Race. c) Household structure: number of children and marital status of maternal parental care giver.

Statistical Analyses

We first examined the socio-demographic characteristics and prevalence of overweight and obesity in boys and girls between immigrants and US-born families. Multivariate regression models and logistic regressions models were applied to examine the relationship between maternal employment and childhood body weight status. Sampling weights were used to adjust for sample design effects to produce population-representative estimates. Data management and data analysis were performed by using STATA Version 9 (STATA Corp., College Station, TX, USA).

Results

Table 1 presents the socio-demographic characteristics and body weight status between children in immigrant families and US-born families. The mean ages were 11.6 in children born to immigrant families and 11.9 in children born to non-immigrant families. There were slightly fewer boys (45.3%) in immigrant families than US-born families (50.5%). The striking difference was the racial composition. The proportion of Hispanic children was 69.4% among the immigrant families, while only 3.4% of children in US-born families were Hispanic. Note that the original PSID were initiated in 1968, so the percentage of race/ethnicity groups reflected the racial composition in that year. The immigrant families were added to the PSID in 1997, which reflected the racial composition in late 1990s. The mean BMI of immigrant children was greater than that of children in US-born families (23.1 vs. 21.9). Moreover, the prevalence of overweight among immigrant children was significantly higher than among US-born children (41.2% vs. 32.4%). A similar result was observed for obesity (21.0% vs. 17.8%).

Table 2 summarizes the results of the regression models to examine the relationship between maternal employment and children's body weight status among immigrant and US-born families. The first model is the linear multivariate regression of BMI on maternal employment status, weekly working hours, and full-time status. For immigrant families, children with unemployed mothers and housewives had higher BMI ($\beta=0.53$ and 2.16), compared with employed mothers. Mothers with other employment status, such as students, had a negative impact on children's BMI. However those coefficients were not statistically significant. Children in US-born families with similar unemployment status and housewife status also had higher BMI but with no

significance. The weekly working hours had a weakly = 0.07, $P < 0.10$), but children in US-born families did not have any significant effects from maternal employment (beta = 0.8, $P > 0.10$). The full-time employment status of mothers had strong and significant effect on immigrant children's

significant positive effect on immigrant children's BMI (beta BMI (beta = 3.33, $P < 0.05$). Compared with immigrant families, full-time employment status in US-born families only brought marginally significant effect to children's BMI (beta = 0.80, $P < 0.10$).

Table 1. Sociodemographics and Body Weight Status of Children among Immigrant and US-born families.

	All		Children In Immigrants' Families		Children in US-born families	
	Mean or %	SE	Mean or %	SE	Mean or %	SE
Age	11.8	0.01	11.6	0.01	11.9	0.01
Male	49.6	0.08	45.3	0.02	50.5	0.08
Race						
White	65.6	0.07	7.1	0.01	76.8	0.07
Black	15.5	0.05	3.3	0.01	17.8	0.06
Hispanic	13.9	0.05	69.4	0.17	3.4	0.03
Asian	3.03	0.02	15.7	0.13	0.6	0.01
Other	1.9	0.02	4.5	0.01	1.4	0.02
BMI	22.2	0.002	23.1	0.005	21.9	0.002
Overweight	33.9	0.01	41.2	0.02	32.4	0.01
Obesity	18.4	0.01	21	0.01	17.8	0.01

The relationship between maternal employment and childhood overweight was highly significant. In immigrant families, unemployed mothers had a significantly positive effect on the likelihood of childhood overweight (OR = 4.09, $P < 0.01$). However, in US-born families, unemployed mothers had a significantly negative effect on childhood overweight (OR = 0.87, $P < 0.01$). Being housewives and other employment statuses have a negative effect on the risks of childhood overweight among both immigrant and US-born families: all ORs were below 1. But the OR of housewives in immigrant families was not significantly different from 1. Other employment had a larger negative effect on immigrant children than children in US-born families (OR = 0.31 vs. OR = 0.90). Weekly working hours had the same positive effect on the risks of childhood overweight (OR = 1.01, $P < 0.01$). The full-time employment status had significantly positive effects on children's overweight risks in both immigrant and US-born families. However, the positive effect was greater on immigrant children than on children in US-born families (OR = 1.58 vs. OR = 1.30). Both ORs were highly significant ($P < 0.01$).

Maternal employment had significant effects on childhood obesity. All ORs were highly significant ($P < 0.01$). The directions and the scales of the effects on risks of obesity were almost the same as the effects on risks of overweight. The only difference was that the unemployed mothers in US-

born families were more likely to have obese children (OR=1.03, $P < 0.01$).

Discussions

Using nationally representative data, I examined the relationship between maternal employment and children's body weight status in immigrant families and compared the relationship with those among US-born families. Clearly the positive effect of maternal employment was observed among immigrant children as well in the US-born families. However, the scale of the positive effects was much stronger in immigrant families than in the US-born families. Various factors and reasons contributed to the larger positive effect of maternal employment on childhood obesity among immigrant families.

Immigrants came from different countries and were influenced by both the home country culture and the U.S. culture. As indicated in this paper, the majority of the immigrants were Hispanic and Asian. Therefore, there was a transition from the original recipe or diet of the home culture to the U.S. food culture, which is often unhealthy or fast food based. Compared with US-born mothers, immigrant mothers have an additional pressure to adjust from the original culture to the U.S. culture, which takes time.¹¹ Therefore, for working mothers, the transition has to be shortened since they have pressures from their jobs as well. The results were

that children of those working mothers were more likely to adopt the same unhealthy fast food behaviors as their peers with US-born mothers. Moreover, under the double pressure of work and acculturation, the positive effects of maternal employment was observed among immigrant children as well

in the US-born families. However, the scale of the positive effects was much stronger in immigrant families than in the US-born families. Various factors and reasons contributed to the larger positive effect of maternal employment on childhood obesity among immigrant families.

Table 2. Relationship between Maternal Employment and Children's Body Weight Status.

	BMI				Overweight				Obesity			
	Immigrant		US-Born		Immigrant	US-Born		Immigrant	US-Born			
	Beta	SE	Beta	SE		95% CI	OR		95% CI	OR	95% CI	
Maternal Employment Status												
Employed (Reference Group)	-	-	-	-	-	-	-	-	-	-	-	-
Unemployed	0.53	4.83	0.75	2.24	4.09***	4.05-4.13	0.87***	0.86-0.87	4.35***	4.31-4.39	1.03***	1.02-1.04
Keeping house	2.16	2.11	0.13	0.6	0.99	0.99-1.00	0.95***	0.94-0.95	0.90***	0.89-0.90	0.97***	0.97-0.97
Others	-4.38	3.25	-1.45	1.28	0.31***	0.31-0.32	0.90***	0.90-0.90	0.41***	0.41-0.42	0.69***	0.69-0.70
Weekly working hours	0.07*	0.04	0.01	0.01	1.01***	1.01-1.01	1.01***	1.01-1.01	1.01***	1.01-1.01	1.01***	1.01-1.01
Full time status	3.33**	1.66	0.80*	0.42	1.58***	1.57-1.58	1.30***	1.29-1.30	1.87***	1.86-1.88	1.38***	1.38-1.38

Notes:

1. *: P<0.10; *: <0.05; ***: P<0.01.

2. The model was controlled by age, sex, race/ethnicity, and family size.

Immigrants came from different countries and were influenced by both the home country culture and the U.S. culture. As indicated in this paper, the majority of the immigrants were Hispanic and Asian. Therefore, there was a transition from the original recipe or diet of the home culture to the U.S. food culture, which is often unhealthy or fast food based. Compared with US-born mothers, immigrant mothers have an additional pressure to adjust from the original culture to the U.S. culture, which takes time.¹¹ Therefore, for working mothers, the transition has to be shortened since they have pressures from their jobs as well. The results were that children of those working mothers were more likely to adopt the same unhealthy fast food behaviors as their peers with US-born mothers. Moreover, under the double pressure of work and acculturation, the positive effects of maternal employment are greater for children with foreign-born mothers than children with US-born mothers.

Previous findings have suggested that the positive effects of maternal employment on childhood obesity was driven by high income or white mothers.² However, compared with the US-born families, the total income among PSID immigrant

families were significantly less (US-born families: 64,000 vs. Immigrant families: 46,786, P<0.01). Moreover, the majority of immigrant families were minorities. Therefore, the results in this paper suggest that maternal employment in low income and minority families can have a greater impact on childhood obesity if those mothers were the first generation of immigrants.

It is also interesting to examine the difference between low-income immigrant and US-born families. The U.S. has a well-established social welfare program for eligible low-income families, especially low-income single mother families.¹² Low-income mothers are encouraged to be employed, partially due to changes in welfare policies. In 1996, the Aid to Families with Dependent Children (AFDC) program, a federal cash assistance entitlement plan, was replaced by Temporary Assistance to Needy Families (TANF). TANF is a work-based safety net for low-income households, most of which are single-mother families.¹² However, the employment rates among single mothers in TANF were still below 75% in 2000, and most of them were partially employed.¹³ Moreover, eligible US citizens

are entitled to food stamps, unemployment insurance benefits, and Medicaid. However, only legal immigrants can apply for food stamp benefits, they have partial access to the unemployment insurance benefits, and they are still not eligible for Medicaid even after the welfare reform.¹⁴ Illegal immigrants are almost totally denied any federal social welfare. Therefore, that levies a heavier burden on immigrant mothers to work two or three part-time, low-paying jobs to make ends meet. The consequence is a lack of time to attend to children's nutritional needs and an increase in the risk of childhood obesity.

Since having one or more jobs is so important to immigrant families, unemployment is almost a disaster for the whole family, which might increase the stress level significantly. There is well established literature about the relationship between chronic stress and obesity.¹⁵ In contrast to U.S.-born unemployed families, immigrant families may not receive unemployment insurance benefits and that could lower the total family income further than for those US-born families who have access to this safety net. Given the stress and significantly lower income of immigrant families in these circumstances, low-cost, energy-dense foods are more likely to be consumed, compared with US-born unemployed families. Therefore, there was a significantly positive effect of unemployed mothers on childhood obesity in immigrant families.

There are not enough interventions designed specifically to prevent childhood obesity in immigrant families. More research is needed to explore the mechanisms between working mothers and children's diets, physical activities, and body weight status. The relationship between the duration of residence in the U.S. and its impact on maternal employment and childhood obesity is still not clear. Compared to the U.S.-born families, immigrant families face more challenges with fewer resources. There is a long way to go to control the childhood obesity epidemic among working immigrant families.

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