Family Structure, Maternal Nativity Status and Childhood Overweight and Obesity: Evidence from the UK

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A large body of research has documented marked differences in the average level of child well-being across different family structures. Children living with two married parents are relatively advantaged, and those who experience other living arrangements, even those with two cohabiting biological parents, generally have worse outcomes (for reviews see Amato and Keith, 1991a; Amato and Keith, 1991; Amato, 2000; McLanahan and Sandefur, 1994; Sigle-Rushton and McLanahan, 2004). Although studies examining cognitive, educational and behavioural outcomes are more numerous, there is some evidence of differentials in physical health (Panico, 2012; Harknett, 2009; Sigle-Rushton 2012). Researchers have posited that the observed relationship between family structure and child well-being is driven by differential access to resources by family structure: on average, married parents are better educated, have more stable employment and higher incomes relative to cohabiting and lone parents. Focusing on the link between family structure and health outcomes, some researchers have suggested that the privileged position of married parents allows them to provide a clean, safe, and healthy home environment (Sigle-Rushton 2012). They may also practice better health behaviors which benefit their children and contribute to family structure differentials.

Although researchers have presented a range of plausible explanations for variations in child outcomes by family structure, most of the extant research has concentrated on describing differentials, or examining whether the association between family structure and child wellbeing is confounded by observed and unobserved characteristics that cause people to sort into different family structures. A wide range of statistical methods have been deployed in an attempt to remove selection bias and to identify the direct (sometimes referred to as the "causal") effect of family structure on child outcomes (see Sigle-Rushton and McLanahan, 2004 or Steele, Sigle-Rushton and Kravdal, 2008 for a discussion). Less emphasis has been placed on developing models and methods that allow us to identify and understand the underlying proximate explanatory processes. This is unfortunate because knowledge about the factors and processes that underlie the relationship between family structure and child outcomes, and the extent to which different combinations can amplify or ameliorate the risk of poor outcomes, is policy relevant to the extent that the processes are likely to be amenable to intervention (Sigle-Rushton and McLanahan, 2004; Sigle-Rushton 2012).

Because the resources available to different family types, and the form and function of the family, are likely to vary across different population groups, a closer examination of heterogeneous effects may shed light on the underlying processes that drive gaps in well-being by family structure. In this regard, heterogeneous effects by migration and nativity status may be particularly informative. In the UK, as in many other wealthy countries,

immigrants are often married, but they tend also to be disadvantaged socio-economically. Nonetheless, immigrants also tend to have better health outcomes, sometimes referred to as the "healthy migrant" effect. Immigrants, and to some extent the second generation, are likely to be influenced by the norms and attitudes that prevail in their or their parents countries of origin, including those that relate to family and family formation practices (Adsera et al 2012). Therefore, the selection process into and away from marriage may differ from that of the longer established populations. Moreover, the meaning, the cultural expectations, and the socio-economic advantages associated with marriage, might differ in important ways, especially for groups that are subject to discrimination or other barriers to integration in their destination country. For these reasons, a closer examination of immigrant and second generation populations, and a better understanding of what makes them distinct, may help us to identify and evaluate the relative importance of different pathways, and allow us to explore the possibility of multiple, potentially substitutable, protective pathways in the production of child health (Abraido-Lanza et al., 1999; Singh and Siahpush, 2002).

Building on previous work showing a strong relationship between both cross sectional and longitudinal measures of family structure and various measures of child health (Panico, 2012, Sigle-Rushton 2012), we use data drawn from the British Millennium Cohort Study (MCS) to examine the relationship between family structure and overweight or obesity at age 5, exploring whether and how it varies by maternal nativity status. Overweight and obesity in childhood, which affects just over one in five children at age 5 in our sample, has been linked to adult obesity and subsequent health complications. We distinguish between children born to three groups of mothers: those who were born abroad, British-born second generation mothers, and British-born mothers whose parents were also British born.

Research from the United States documents healthier behaviours among foreign-born mothers: they are more likely than native-born mothers to breastfeed their children (Kimbro et al. 2008), and less likely to smoke (Harley and Eskenazi, 2006), both of which have been linked to obesity in children (Ino 2012; Monasta et al 2010). Although we know less about such differences in mothers' health behaviours in the United Kingdom, research carried out using the British Millennium Cohort Study suggests that immigrant mothers appeared have healthier smoking behaviour than native-born mothers (Hawkins et al. 2008; Jackson, McLanahan and Kiernan 2012).[1] If, similarly to the U.S., first generation mothers are more likely to adopt healthier behaviors, this may compensate for their poor socio-economic position. In other words, amongst immigrant groups, the processes that are often thought to be protective for children living with married parents (lower levels of stress, more material resources, better quality housing etc.) may be less relevant. In contrast, we might expect that the health behaviors of second generation mothers will more closely resemble those of otherwise similar individuals with UK born parents. To the extent that second generation mothers are socio-economically disadvantaged relative to other UK-born mothers and to the extent that socio-economic disadvantage is more strongly linked to poorer health behaviors amongst second generation mothers than amongst foreign born mothers, we may observe the poorest average health outcomes in that particular group. If this is the case, gaps in health between immigrant and second generation mothers are likely to be due to a greater extent to differences in their health behaviors and differences between second generation and other UK-born mothers are likely to be due to a greater extent to socio-economic differences.

[1] A larger literature on ethnic differences shows an ethnic minority advantage in smoking behaviour (Kelly et al. 2009) and higher rates of breastfeeding in minority groups (Kelly et al., 2006).

Hypotheses

Drawing on findings from the extant literature on child health and on migrant assimilation/adaptation, we generate four hypotheses about how the relative importance of (indicators of) socio-economic advantage and health behaviours will vary by mothers' nativity status.

Taking into account the "healthy migrant" effect, and our expectation that the health behaviours of the second generation will more closely resemble those of other British-born mothers, we expect that (H1) *Relative to other mothers, immigrants and second generation mothers will have lower average levels of socio-economic well-being, and second generation mothers will have the poorest average health behaviors which are related to their children's risk of overweight and obesity.* If this is the case, we expect that (H2) *Across the three groups, children born to second generation mothers will have the highest risk of overweight and obesity.* In addition, the unique social and cultural position of immigrant and second generation mothers leads us to expect that markers of advantage that, for the wider population, reflect greater access to resources, will reflect within group differences less well for them than for women whose families are longer established in the UK. For this reason, we expect that (H3) *Differentials in access to resources and in health behaviours by family structure will be less pronounced amongst immigrant and second generation mothers and narrowest amongst the former.* If this is the case, our final hypothesis posits that if family structure differentials are due to access to resources and if marriage brings fewer resources to immigrant and second generation mothers (H4) *Health differentials by family structure will be less pronounced amongst children of immigrant and second generation mothers than is observed in the rest of the population.*

Data

We analyze data from a recent, nationally representative, British prospective cohort study. The Millennium Cohort Study (MCS) involves over 18,000 households containing an infant born in the UK during a 12-month period from 2000 to 2001. The sample has a probability design and is clustered at the electoral ward level. Disadvantaged residential areas and areas with a high proportion of ethnic minority populations are over-represented.

The Millennium Cohort Study contains detailed information on the parents' socio-economic status, relationship and co-residency status, and health behaviors. The main respondent is usually the mother (98%), although additional information about their partners is also collected in a separate interview with them.[2] When the mother could not understand or speak English, the resident father was asked to be the main respondent. If neither of the resident parents could undertake the interview in English, another household member above the age of 16 was asked to translate; otherwise a translator was used. The overall sample size for sweep 3 was just over 15,000.

[2] For ease of exposition and because we limit our sample to those cases where the mother is the main respondent, in what follows, we refer to the group of main respondents as mothers in what follows.

Variables

Overweight and obesity

In this paper we construct one indicator for overweight and a second for obesity using the International Obesity Task Force (IOTF) cut-offs for BMI, which are age and gender specific. These cut-offs are internationally accepted measures of overweight/obesity for children aged 2-18 and can be used to assess differences in prevalence of overweight/obesity between countries (Cole et al, 2000).

Maternal migration and nativity status

Our analysis distinguishes and compares three groups of mothers according to their migration and nativity status. Using information provided by mothers about their country of birth and their parents' country of birth, we create indicators for those who were born abroad (first generation), and those who were born in the UK but whose parents were born abroad (second generation). Our aim is to determine whether and in what ways the incidence of overweight and obesity in these two groups differs from main respondents who report that both they and their parents were born in the UK (third generation or higher). Those mothers who have one parent born in the UK and one born abroad are combined with those who have both parents born in the UK. Analyses reveal that, for the variables considered in this study, they are remarkably similar. Where sample sizes permit, we will break down these migrant and nativity groups by ethnicity and/or region of origin.

Family structure

We employ a longitudinal measure of family structure that takes into account stability and change in family structure over the study period. This variable is constructed using the cross sectional variables representing the family structure at each sweep and a retrospective question about family structure when the cohort member was born. Our focal variable identifies mothers that were always co-resident with the father of the cohort member and who report being married to him at sweep 3 (about age 5). As a robustness check, we will also construct an alternative measure which groups together those mothers who were always co-resident (regardless of their eventual marital status) with the father over the same period.

Health behaviours

A number of parental health behavior questions were asked at each sweep, usually to both parents. Making use of information collected about smoking and breastfeeding behavior, we constructed three health measures that the literature has identified as relevant to childhood overweight and obesity. Information on whether the mother smoked during pregnancy and whether she currently smoked was collected at baseline and, at every subsequent sweep, the mother was asked whether she currently smokes. We consider one indicator for smoking during pregnancy and one indicator which identifies mothers who reported, during the sweep 3 interview, that they smoke. The third health variable relates to breastfeeding. The main carer was asked if the cohort member was ever breastfed and the age at which the child was last fed breast milk. The recommended duration of exclusive breastfeeding at the time of the cohort children's birth was 4 months. However, although the vast majority of children in the Millennium Cohort sample were given breast milk at some point, a far smaller share of

children was fed according to the guidelines in place at the time. Consequently, breastfeeding initiation, irrespective of duration, is used in the analyses presented below. Although not our preferred measure, previous work (Panico, 2012, Sacker et al, 2006) has found that this indicator is strongly associated with a number of child outcomes.

In addition, we will construct and consider measures of the health behaviors of the child. Indicators of healthy diet (consumption of sugary drinks) and physical activity (hours spent watching television) -- factors that have also been shown to be associated with overweight and obesity in previous work – will be considered as well.

Family resources

To measure access to economic resources we rely primarily on information about family (rather than household) income. In other words, we consider income earned by the mother and any co-resident partner. This information was provided by the mother, using a banded show card. This measure was then equivalized using the 'Modified *OECD*' equivalence scale to take into account family size. In addition to income, we examined two indicators for the quality of housing the family is able to provide for the child. The first is set equal to one if the mother reports that she lives in government subsidized (social) housing. The second is set equal to one if the family's accommodation is overcrowded. Both indicators reflect socio-economic disadvantage, but they also suggest a more insalubrious home environment. Both have been linked to health outcomes in the extant (mostly U.S. based) literature, and the latter outcome may reflect an obstacle to establishing a healthy sleep regime.

Preliminary Results

As our work is still at an exploratory stage, we have thus far focused on establishing whether and to what extent we observe differentials in health behaviors and economic well-being by nativity and family structure. In the Millennium Cohort Study, immigrant and second generation mothers are less likely to report having smoked both during pregnancy and at sweep 3. Moreover, although mothers who have lived continuously with the father of their child and (eventually) married him, are less likely to smoke in all three groups, family structure gaps are widest in the third-generation group and narrowest in the first generation group. Similarly, compared to other mothers, breastfeeding initiation rates were higher amongst immigrant and second generation mothers. For all three parental health behaviors, the second generation mothers look more similar to the foreign-born group than to other UK-born mothers, but gaps between immigrant mothers and the second generation are consistent with a "healthy migrant" effect. Evidence for a "healthy migrant" effect is less decisive when we examine the child's health behaviors, however. Children born to migrant mothers are least likely to watch television three or more hours per weekday, but their physical activity levels -- either on their own or with a parent – are the lowest of the three groups. The children of second generation mothers watch the most television, and their physical activity levels are only slightly higher than those of children born to immigrant women.

Consistent with our 3rd hypothesis, differentials in health behaviors by family structure are less pronounced amongst immigrant and second generation mothers: groups that are least likely to reap the benefits of living in a stable married two parent family.

We also expected that immigrant and second generation mothers might be less able to reap the same economic benefits of stable marriage that are observed in the wider population. Migrant (and possibly second generation) families may experience more discrimination in the labor market, and even those with higher levels of education might find it difficult to find work commensurate with their skills and qualifications, as issue that has attracted a lot of attention in recent years with the influx of migrants from Eastern European EU-accession countries. To the extent that low incomes limit a family's ability to secure decent housing, we might see more narrow family structure differentials in reliance on social housing and in housing quality amongst first and second generation mothers. Preliminary findings provide partial support for this hypothesis. First and second generation mothers are more likely to have incomes in the bottom quintile of the distribution. Within migrant groups, the consistently partnered, (eventually) married mothers are less likely than other mothers to have a low income. Nonetheless, family structure differentials in low income are narrowest in the first generation group. Second generation mothers who are not in our stable married group fare particularly badly, but family structure gaps within that group are still narrower than for other UK born mothers.

The patterns that emerge when we look at housing indicators are similar. Given their relatively disadvantaged socio-economic circumstances, migrant mothers are most likely to live in social housing and to be observed living in overcrowded housing. For overcrowding, the protective effect of marriage is less pronounced amongst immigrant and second generation mothers. In contrast, the relative risk of social housing by family structure is largest amongst second generation mothers. Continuously married second-generation mothers are nearly as unlikely as other continuously married UK-born mothers to live in social housing, however.

Our next step will be to document and explain differentials in overweight and obesity by maternal nativity status and family structure. In particular we are interested in whether, because the benefits of marriage or partnership are less pronounced, the relationship between family structure and child obesity is weaker for first and second generation mothers than for other mothers.

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