Family structure and child health in the UK: pathways to health

Lidia Panico[1], Mel Bartley[2], Anne McMunn[2], Yvonne Kelly[3], Amanda Sacker[3]
[1]Institut National Etudes Demographiques, [2]University College London, [3]University of Essex

A large body of literature has shown marked differences in the average level of resources and the average level of child well-being across different family structures. The average level of resources will vary across different family types. At the same time, the environment in which British children are born and raised has changed significantly in the last 5 decades. In the 1960s, about 6% of children were born to unmarried parents; by 2010 the proportion of children born to unmarried parents stood at 47% (Office for National Statistics, 2011). Three main phenomena, notably increases in lone parent households, in cohabiting households, and in divorce rates, have lead to an increased variety of family structures in the UK.

Although studies examining cognitive, educational and behavioural outcomes are more numerous, there is some evidence of differentials in physical health (Harknett, 2009). Evidence suggests that children living with two married parents are relatively advantaged; children living with two cohabiting unmarried parents generally have slightly worse outcomes than those living with married parents; while those living with a lone parent fare the worst (for reviews see Amato and Keith, 1991a; Amato and Keith, 1991b; Amato, 2000; McLanahan and Sandefur, 1994; Sigle-Rushton and McLanahan, 2004).

Most research on family structure and child outcomes has concentrated on describing differentials, or testing whether the association between family structure and child well being is "real". Less emphasis has been placed on understanding the underlying proximate processes that explain the link between family structure to child health. A wide range of statistical methods have been deployed in an attempt to remove selection bias and identify the direct 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 understanding the underlying proximate processes that explain the link family structure to child health. However, as McLanahan and Percheski (2008) point out, testing hypotheses about the specific pathways that may link family structure to child outcomes is a way to address selection bias: while selection could be operating at each turn in the pathway, it is a more conservative approach than just looking at the correlation between family structure and child outcomes as each pathway can be empirical tested individually. Furthermore, knowledge about the factors and processes that underlie the relationship between

family structure and child outcomes is policy relevant to the extent that they are likely to be amenable to intervention.

Exploiting patterns of heterogeneity within crude measures of family structure can help us to better understand proximate processes that link family structure and child well-being. The resources available to different family types and the form and function of the family, especially in the context of parenthood, differ across within the broad groups often used in family research: one versus two parent households, married versus unmarried parents. The diversity and inequalities of different family settings is often debated in the public discourse, while academic literature, sometimes limited by cross-sectional data, cannot always fully capture the intrinsically dynamic quality of family life. The underlying assumption of many studies is that children's family environments are fairly static over their childhood, perhaps allowing for one event such as parental divorce. However, many children experience a variety of family structures before adulthood, and some of the changes might be quite subtle (for example, brief periods of unmarried cohabitations). This variety of family settings is significant here, because as Kiernan and Mensah (2010) and Panico et al (2010) both show, using the British Millennium Cohort Study, the array of partnership trajectories that children can experience over their first 5 years of life is closely linked to the resources available to these households differ, along with markers of both child and parental well being.

This presentation will show results from the British Millennium Cohort Study which investigates the relationship between the household's socio-economic background, family structure and changes in family structure over the first five years of life, and various markers of child health. Here, as well as describing the stark socio-economic differences across family structures in the UK and exploring the role of poverty in the relationship between family structure and child health, we focus on explicitly mapping the possible proximate processes that link family structure to children's physical health. Especially, the role of family stress will be explored. These analyses employ graphical chain models, a statistical technique that lends itself well to longitudinal data, to test these relationships.

Data

This work will use a recent, nationally representative, British prospective cohort study. The Millennium Cohort Study involves over 19,000 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, with disadvantaged residential areas and areas with a high proportion of

ethnic minority population being over represented. This paper uses data from the third sweep of interviews, carried out through home visits when the cohort member was aged approximately 5 years, although we envisage adding data from the fourth sweep of data, when children are aged about 7 years old. The main respondent is usually the mother (98%), although information about their partners is also collected in a separate interview with them. The overall sample size for sweep 3 was just over 15,000.

The Millennium Cohort Study contains detailed information on socio-economic, housing circumstances, and health behavior variables. Three groups of child health outcomes are examined and compared: respiratory health, overweight and unintentional injury. Questions on asthma and wheezing were available at all sweeps as part of the interview with the main carer. The questions were taken from the ISAAC (International Study of Asthma and Allergies in Childhood) core questionnaire, a widely used and validated instrument (ISAAC Steering Committee, 2000). Anthropometric measurements were taken by the interviewer at sweep 3 and include the cohort members' height, weight, and waist circumference. Body Mass Index international cut-off points for BMI according to the child's age as defined by Cole et al (1998) for overweight and obesity are used. The main carer was asked about any accidents that required contact with health services or a hospital visit (either to visit Accident and Emergencies, or due to a referral to a hospital ward).

Methods

Graphical chain models, a statistical technique that lends itself well to longitudinal data and temporally ordered frameworks, are used. This technique is particularly pertinent to test hypotheses examining complex relationships between a large number of variables, including variables with different measurement properties, as they allow complex models to be broken down into parts that are more easily modelled. The model represents the associations running from background variables to the outcome, with variables ordered a priori. The appropriate weights are used in all analyses.

Results

Asthma and wheezing are common illnesses during childhood: in the third sweep of the Millennium Cohort Study, when children were on average 5 years old, 15% had ever had asthma and a similar proportion had wheezed in the last year; just over 22% were overweight or obese; and 25% had had an accident that required a hospital visit since the previous interview. Across all outcomes and at all sweeps, a strong cross-sectional gradient was seen across family structures:

children living with two married parents reported the lowest rates of illness, those living with a lone parent the highest, while those living with two cohabiting parents were in between. As expected, in cross sectional analyses, reported rates of poor health outcomes presented strong socio-economic gradients: poorer households, households in more disadvantaged occupations, households with fewer educational qualifications and households were the mother was younger were more likely to report poor outcomes.

A typology of family change showed that children always living with two continuously married parents reported the best health outcomes. Those who experienced a change were a heterogeneous group with diverse outcomes. Some, such as children living with cohabitees who married, reported relatively good outcomes, while those who experienced more than one change in family structure tended to report worse outcome (see Figure 1). Children always living with a lone parent throughout the first five years of life had the worst outcomes across all health measures.

Socio-economic variables such as maternal age, parental education, income, and car ownership were powerful predictors of health outcomes at all ages. A graphical chain model allowed exploring the longitudinal relationship between socio-economic factors and family structure to childhood health in a hierarchical manner. Results indicated that more proximal determinants of childhood respiratory health such as damp, breastfeeding initiation and maternal mental health and structured parenting, are heterogeneous across various typologies of changes in family structures. The final model shows that the variables tested absorbed most of the differential across the typologies of family change, suggesting the model specified satisfactorily identified proximal mediating pathways.

Conclusion

Using a large, representative cohort study of British children born in 2000-2002, a striking and consistent gradient in health outcomes by socio-economic factors and family structure was shown at 9 months, 3 years and 5 years. This gradient is consistent with previous literature, which highlighted differences in cognitive, behavioural, educational, and, to a limited extent, health outcomes among children living with one versus two parent families, or in married versus unmarried households. This work confirms that such findings apply to physical health outcomes.

Bibliography

Amato, P. R. and Keith, B. 1991a. "Parental Divorce and Adult Well-Being: A Meta-Analysis." Journal of Marriage And The Family 53:43-58.

—. 1991b. "Parental Divorce and the Well-Being of Children: A Meta-Analysis." Psychological Bulletin 110:26-46.

Amato, P. R. 2000. "The Consequences of Divorce for Adults and Children." Journal of Marriage and Family 62:1269-1287.

Cole, T. J., Freeman, J. V. & Preece, M. A. 1998. British 1990 growth reference centiles for weight, height, body mass index and head circumference fitted by maximum penalized likelihood. *Statistics in Medicine,* 17**,** 407-429.

Harknett, K. 2009 "Why are Children with Married Parents Healthier? The Case of Pediatric Asthma" *Population Research and Policy Review* 28: 347-365.

Isaac Steering Committee. 2000. *ISAAC Phase Three Manual.* Auckland: International Study of Asthma and Allergies in Childhood.

Kiernan, K. & Mensah, F.K. 2010. Partnership trajectories, parent and child well-being. *In:* Hansen, K., Joshi, H. & Dex, SH. (eds.) *Children of the 21st Century–The First Five Years*. Bristol: The Policy Press.

McLanahan, Sara and Gary D. Sandefur. 1994. Growing up with a single parent - what hurts, what helps? Cambridge, MA: Harvard University Press.

McLanahan, Sara and Percheski, Christine, 2008, Family Structure and the Reproduction of Inequalities. Annual Review of Sociology, Vol. 34.

Panico, L., Bartley, M., Kelly, Y., McMunn, A. & Sacker, A. 2010. Changes in family structure in early childhood in the Millennium Cohort Study. *Population Trends,* 142**,** 78-92.

Sigle-Rushton, W. and McLanahan, S. 2004. "Father absence - a critical review." in The Future of the Family, edited by D. P. Moynihan, L. Rainwater, and T. Smeeding: Russell Sage Foundation.

Steele, F, Sigle-Rushton, W. and Kravdal, Ø. 2009. "Consequences of Family Disruption on Children's Educational Outcomes in Norway." *Demography* 46:553-575.