Lone Motherhood in Early-Middle Adulthood and Late Life Disability and Health in the US and Europe

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Abstract

Objective To compare the associations between lone motherhood in early-middle adulthood and women's disability and self rated health in later life in the United States, England, and 13 countries in continental Europe.

Design Observational study with retrospective life histories of lifetime lone motherhood experiences.

Participants Women aged 50 and older who have had at least one biological child and participated between 2004 and 2007 in the Health and Retirement Study (US), the English Longitudinal Study of Aging (England), and the Survey of Health, Ageing and Retirement in Europe. The study sample contained 24956 women in 15 countries.

Main outcome measures Any activities of daily living (ADL) limitations, any instrumental activities of daily living (IADL) limitations, and fair/poor self-rated health (SRH).

Results Adjusting for age, education, and current marital status, we found that in the US, lone motherhood was associated with increased prevalence of ADL limitations (relative risk (RR) = 1.26, 95% confidence interval 1.14 to 1.40), IADL limitations (RR = 1.27, 1.14 to 1.42), and fair/poor SRH (RR = 1.32, 1.22 to 1.42). Similarly, in England, lone motherhood was associated with increased prevalence of all three outcomes: ADL limitations (RR=1.54, 1.31 to 1.80), IADL limitations (RR=1.68, 1.38 to 2.05), and fair/poor SRH (RR=1.63, 1.44 to 1.83). Within continental Europe, for ADL limitations, RRs were only statistically significant in Scandinavia (RR = 1.45, 1.06 to 1.99), and non-significant in Western Europe, Southern Europe, and Eastern Europe. The associations between lone motherhood and IADL limitations were not significant in any of the four regions in Europe. For fair/poor SRH, RRs were significant for Scandinavia (1.25, 1.04 to 1.50) and Western Europe (1.24, 1.09 to 1.40). For ADL limitations, RRs in England were statistically greater than those in the US and Eastern Europe, and indistinguishable from those in Scandinavia, Western Europe and Southern Europe. For IADL limitations and fair/poor SRH, RRs in England were statistically greater than those in the other five regions. The health disadvantage associated with lone motherhood for US women was greatly attenuated by

adjustment for household income and wealth, but not for women in England or continental Europe. In the US nonmarital childbearing and lone motherhood due to divorce were associated with disability and worse SRH but lone motherhood due to widowhood was not associated with any outcome.. Across all regions being a lone mother at younger ages (before age 30) was more harmful than at older ages. The association between lone motherhood and health was robust to extensive controls for early life circumstances that may influence selection into lone motherhood.

Conclusion Health risks related to lone motherhood were often greatest in England, followed closely by the United States Being a lone mother at earlier ages was consistently related to poorer function and self-rated health at older ages. Early women's family experiences whether they influence social, economic or health trajectories appear to take a toll at later ages.

Introduction

In the United States, England, Sweden, Italy and Canada lone motherhood is associated with substantially worse self rated health (SRH), elevated cardiovascular risk profiles, and poorer mental health and is some cases mortality.[1-15] With the exception of a few intriguing comparative studies of two or three countries,[7 11 15] no studies have systematically compared the magnitude of these associations across Europe and the United States using closely harmonized exposure and outcome measures. Prior studies have primarily focus on the contemporaneous effect of lone motherhood on health, but little is known about the long-term health effects of earlier lone motherhood experiences. Lone motherhood is associated with socioeconomic disadvantage, health damaging behaviors and prolonged stressful experiences, which in turn are likely to have devastating health consequences at older ages. This is an increasing concern because current cohorts of middle-aged women are increasingly more likely to have experienced a spell of lone parenting compared to prior cohorts. This pattern of increasing life-time prevalence of lone motherhood across cohorts is likely to result in a larger fraction of poor health attributable to prior experiences of lone motherhood in more recent generations if such risks are etiologically related to later health experiences.

An important question is whether lone motherhood experiences relate to health differently across countries with varying histories of social policy and different cultures. For example, lone motherhood is strongly associated with poverty in most societies, but this association is considerably stronger in the US than in European countries.[16 17] The more generous European welfare states may ameliorate the harmful effects lone motherhood that are mediated by poverty and poor living conditions. Similarly, particularly in Southern European countries, stronger social networks and family support from may alleviate some of the potentially health damaging effects of lone motherhood as compared to England or the United States, where lone mothers may receive less support from family and friends. In support of this hypothesis, Ruspini found that lone mothers' risk of poverty was offset by the availability of family support from

family and kin members, as well as family policies that enable combining motherhood with labor force participation".[18]

We hypothesize that the cumulative disadvantage and the long term strains of lone parenthood take their tolls at older ages and that lone motherhood would be most damaging in countries such as the United States and the United Kingdom, with relatively weak social welfare protections. We tested these hypotheses using data from three populations based on studies covering the US, England, and 13 continental European countries.

Methods

Data

We used three longitudinal surveys on health and ageing: the US-based Health and Retirement Study (HRS), the English Longitudinal Survey of Aging (ELSA), and the Survey of Health, Ageing, and Retirement in Europe (SHARE) representing 13 continental European countries. We categorized the 13 continental European countries in SHARE into four geographical regions: Scandinavia (Denmark and Sweden), Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic). These surveys have been described in detail previously.[19-23] Briefly, the surveys were designed to be harmonized, with biennial assessments of nationally representative samples of non-institutionalized adults age 50+ in the respective countries.

To improve statistical power, we included up to two observations for each woman, when data were available. Data from the 2004 and 2006 HRS waves were included. ELSA data were also from 2004 and 2006; the ELSA life history interview regarding childbearing and marriage was conducted in 2006, so only ELSA respondents who completed the 2006 interview wave were included in this analysis. Data for SHARE included older Europeans who participated in the third wave of SHARE (SHARELIFE), which collected life history interviews on childbearing and marriage. We restricted the sample to SHARE

participants that had had a baseline assessment either in 2004/2005, except Poland and Czech Republic where baseline assessments took place in 2006/2007.

We excluded women with no biological children before age 50. In total, the analytic sample contained 24956 women aged 50 and over and 42553 observations (17866 from HRS, 6205 from ELSA, and 18482 from SHARE).

Outcomes

We examined three binary outcomes: limitations in basic Activities of Daily Living (ADLs), limitations in instrumental ADLs (IADLs), and fair/poor self-rated health (SRH). In all surveys, questions were asked about difficulties in five basic ADLs: bathing, dressing, eating, getting in and out of bed, and walking across a room. Participants were asked if they had any difficulty with these because of a physical, mental, emotional or memory problem. They were told not to consider any difficulties expected to last less than three months. Individuals were classified as having any ADL limitation if they reported limitations with one or more of the five activities. Limitations in IADLs were assessed with questions about difficulties in the following five activities: making meals, shopping, making phone calls, taking medications and managing money. Women who reported having at least "some difficulty" with any of the five activities were classified as having an IADL limitation. SRH was assessed in all three studies with the question "Would you say your health is …" with a 5 item Likert scale response (excellent/very good/ good/fair/poor). We dichotomized fair/poor vs all other.

Predictors

The key predictor of interest was a binary indicator of lifetime history of having a spell as a lone mother between ages 15-49. Each woman was asked to report birth dates of her children and the beginning and ending dates of each marriage. For each year when she was aged 15-49, we made an indicator of whether the woman had any biological children under age 18 and an indicator of whether she was married. A woman was considered a "lone mother" in any year when she had children under age 18 but was not

married. Using these data, we created a binary indicator of whether a woman ever experienced an episode of lone motherhood during the ages 15-49.

We further characterized lone motherhood experience by the reasons for lone motherhood (non-marital childbearing, widowhood, or divorce) and by age when lone motherhood occurred (before age 20, between age 20 and 29, between age 30 and 39, or age 40+).

Statistical analysis

We estimated relative risks for each health outcome associated with lone motherhood in each region using Poisson regressions with robust variance clustered at the individual level. We used relative risks instead of odds ratios because all three health outcomes are fairly common.[24-27] For the main analysis, the key independent variables were the interactions of the six country/region dummy variables (US, England, Scandinavia, Western Europe, Southern Europe, and Eastern Europe) with an indicator of lone motherhood. We additionally adjusted for: year of assessment, age, age squared, education attainment, current marital status (married or not) and fixed effects for country/region. We allowed the effects of all above covariates to vary by country/region by additionally including region-covariate interaction terms. We conducted Wald tests to assess whether the relative risks of lone motherhood are equal across different country/regions.[28]

In a second set of specifications, we examined whether adjustment for current income and wealth attenuated the association between lone motherhood and the health outcomes in each region. For these models, we added interactions of the six country/region dummies with per capita household income quintiles and per capita household wealth quintiles. Per capita household income and per capita household wealth income were generated by dividing the household income/wealth by the square root of the household size. Income and wealth quintiles are country- and time- specific.

Finally, we compared the associations between lone motherhood and each health outcome by reasons of lone motherhood and by age of being a lone mother. In these models, we only considered regions in

which there was an overall association between lone motherhood and poor health: the US, England, Scandinavia and Western Europe.

Cross-sectional sampling weights were used in descriptive and regression analyses and robust variance were estimated. All analyses are conducted in Stata Special Edition, version 11 (StataCorp, College Station, Texas).

Sensitivity analyses

First, to test the robustness of the definition of lone motherhood , we investigated whether having a partner while being a lone mother was associated with higher or lower health risks compared to lone motherhood without a partner. These analyses were based on ELSA and SHARE because HRS does not assess partnership history. Second, previous studies have found that lone mothers were more likely to be smokers.[3 7 29 30] To investigate to what extent health behaviors mediate the relationship between lone motherhood and health outcomes, we added to the controls indicators for smoking status (ever/ current/ never) and currently obese (Body Mass Index (BMI) >= 30 kg/m^2)). Third, to examine whether the estimates were sensitive to the unobserved selection into lone motherhood, based on the first set of model specifications, we added four childhood experience variables: fair/poor SRH at age 10, average number of people per room at age 10 (obtained by dividing the number of household members by the number of rooms), number of books at home at age 10, and whether living with both natural parents at age 10. Those variables have been documented to impact health care utilizations in later life in the SHARE data.[31] We excluded HRS from this analysis as there are not comparable questions. Finally, using HRS we compared the lone motherhood effects by race/ethnicity: Hispanic, non-Hispanic black, and non-Hispanic white. Tables showing the results of these analyses are included in appendix material.

Results

History of lone motherhood among women age 50+

For each of the six countries or regions, Table 1 shows the fraction of mothers aged 50 years and older who had experienced a period of lone motherhood at some point when aged 15-49. In the US, 32.8% of

mothers had experienced lone motherhood, compared to 22.2% of English mothers, 38.6% of Scandinavian mothers but only 10.3% of mothers in Southern Europe. Divorce was the most common cause of lone motherhood in all countries. Breaking down the overall lone motherhood experience by age of becoming a lone mother, in the US 4.2% of women had a spell of lone motherhood before age 20, compared to 12.5% during ages 20-29 and 10.2% ages 30-39. Less than 6% of US mothers experienced a spell of lone motherhood at age 40. For other countries, we observe a similar age pattern for lone motherhood. The last row of Table 1 shows the prevalence of lone motherhood based on an alternative definition that treats partnership the same as marriage. Under this definition, the prevalence of lone motherhood is lower, especially in Scandinavia in which partnership was more common: the prevalence of lone motherhood in this region was 27.0% instead of 38.6%.

Sample characteristics by lone motherhood status

Women with lone motherhood experience were younger than other mothers in every region: with the smallest difference of 0.5 years in Southern Europe and the largest difference of 5.9 years in Scandinavia (Table 2). Despite being younger, lone mothers had higher prevalence of any ADL limitations in five out of the six regions, except for Eastern Europe, in which the prevalence was 20.7% for non-lone mothers and 17.8% for lone mothers. The contrast was most dramatic in England: 18.3% for non-lone mothers and 26.3% for lone mothers. Patterns were similar for IADL limitations, reported by 19.9% of English mothers who experienced lone motherhood compared to 11.8% of continuously married mothers in England. In all regions except Eastern Europe, lone mothers were more likely to report having fair/poor SRH relative to non-lone mothers. For example, the prevalence was 34.4% versus 23.9% in the US, 42.8% versus 27.3% in England, 23.2% and 21.1% in Scandinavia, but 57.6% and 59.3% in Eastern Europe. In the US and England, lone mothers were more likely to only have primary education or less, but that was not observed for the other regions. Lone mothers were much less likely to be currently married as older adults, with the difference ranging from 20 percentage points in Scandinavia to 50.3 percentage points in England. Lone mothers were also more likely to be in the bottom of the per-capita

household income and wealth quintiles, though in Scandinavia the differences were smaller than elsewhere.

Are the associations between lone motherhood and functioning and health the same across countries?

We first estimated relative risks of lone motherhood for the three health outcomes in each of six country/regions (Table 3, Model Specification I). The first three columns of Table 3 show the point estimates and the 95% confidence intervals of the relative risks of lone motherhood by region for ADL limitations, IADL limitations, and fair/poor SRH. Lone motherhood was associated with higher risk of disability and poor health in four out of the six regions. For any ADL limitations, the RR associated with lone motherhood history was highest in England (RR=1.54; 95% confidence interval: 1.31, 1.80), followed by Scandinavia (RR=1.45; 1.06, 1.99), and the US (RR=1.26; 1.14, 1.40). The RRs in Western Europe, Southern Europe and Eastern Europe were close to one and not significant. Wald tests confirmed that the RR in England was statistically higher than in the US (p=0.044) but indistinguishable from that in Scandinavia (p=0.746).

The prevalence of any IADL limitations was significantly associated with lone motherhood experience only in England (RR=1.68; 1.38, 2.05) and the US (1.27; 1.14, 1.42). Wald tests showed that the RR in England was significantly higher than RRs in the other five regions. For Fair/poor SRH, lone motherhood is associated with higher risk in all regions but Southern and Eastern Europe. The RR for fair/poor SRH associated with lone motherhood in England was statistically higher than the RRs in the other five regions.

Do income and wealth mediate associations between lone motherhood and functional& health outcomes?

Adjusted for income and wealth quintile, the RRs for any ADL and IADL limitations in the US were attenuated by more than 65 percent and no longer statistically significant (Table 3, Income and wealth adjusted models). The RR for fair/poor SRH in US mothers was substantially attenuated (from 1.32 to 1.16) but remained statistically significant. Adjustment for income and wealth attenuated the RRs in England only modestly, for example from 1.54 to 1.42 for any ADL limitations. In England, lone

motherhood experience was significantly associated with all three poor health outcomes even adjusted for income and wealth. In Scandinavia, the RR for ADLs attenuated from 1.45 (1.06, 1.99) to 1.34 (0.98, 1.84) with adjustment for income and wealth. The Scandinavian RR for fair/poor SRH changed from 1.25 to 1.15 and was no longer significant. We conclude that income and wealth may be one of the central links between lone motherhood and poorer outcomes in later adulthood in the United States particularly, with a less clear role in other countries.

Is type of lone mothering or age of lone mothering associated with differential outcomes?

In the US, lone motherhood due to non-marital childbearing and divorce were positively and significantly associated with poor health in all three outcomes, but lone motherhood due to widowhood was not associated with worse health (Table 4). In England, lone motherhood was associated with worse health for all three outcomes regardless of whether lone motherhood resulted from nonmarital childbearing, widowhood, or divorce. For Scandinavia and Western Europe none of the RRs for ADLs and IADLs were statistically significant, with wide confidence intervals reflecting limited sample size. For the outcome of fair/poor SRH, in Scandinavia, RRs were 1.61 (1.07 to 2.42) for lone motherhood due to widowhood, and 1.39 (1.13 to 1.71) for lone motherhood due to divorce, and not significant for lone motherhood due to nonmarital childbearing. For Western Europe, the RRs were 1.24 (1.06 to 1.46) for lone motherhood due to divorce, and not significant for lone motherhood due to widowhood or nonmarital childbearing. Further controlling for income and health attenuates the RRs in a similar pattern as shown in Table 3.

The associations between age of first experience of being a lone mother and poor health outcomes were similar for US, England, Scandinavia, and Western Europe, so we show pooled RRs (Figure 1). For all three health outcomes, there was a graded relationship such that the RRs associated with lone motherhood attenuated with older ages of lone motherhood.

Sensitivity analyses

We found no evidence that being partnered without being legally married during the years of lone motherhood significantly attenuated the association between lone motherhood and poor health in England or Europe (Appendix Table A1).

Although lone motherhood was associated with current and ever smoking status (Table A2), adjusting for smoking status and current obesity did not substantially attenuate the associations between lone motherhood and poor health (Table A3). We further addressed the selection issue of lone motherhood by including additional variables on childhood experience (childhood health and family background) in ELSA and SHARE where these data are available. In the first step we examine how age, education and childhood conditions predict the risk of being a lone mother. For each country/region of England, Scandinavia, and Western Europe, we run a Poisson regression with the dependent variable as ever being a lone mother, and with the following covariates: age, age squared, education categories, whether childhood health at age 10 is poor, number of people per bedroom at age 10, number of books while age 10, and living with both natural parents at age 10. For Scandinavia and Western Europe we also control for country fixed effects. Relative risks and 95% CIs are shown in Appendix Table A4. We focus on the relative risks of education categories and childhood conditions. The reference category for education is tertiary. In England, education of primary school or less level is statistically associated with higher probability of being a lone mother, with relative risk of 1.52 (1.16 to 2.00). For Scandinavia and Western Europe, education was not statistically associated with the risk of being a lone mother. As for childhood conditions, the most important predictor is living with both natural parents while age 10 : RRs were 0.76 (0.63 to 0.91) for England, 0.79 (0.63 to 0.98) for Scandinavia and 0.56 (0.42 to 0.75) for Western Europe. Number of people per room at age 10 was significantly associated with lone motherhood only in Scandinavia: 1.10 (1.02 to 1.18). Childhood health and number of books at age 10 were not statistically associated with lone motherhood risk in any region. As a second step we incorporate childhood conditions as control variables in regressions similar to those shown in Table 3, only that the US data are excluded. Results are shown in Appendix Table A5. Compared to RRs in column 1 to 3 of Table A5

without the controls of childhood conditions, adding childhood conditions changed little the relative risks of lone motherhood on health outcomes in England and Western Europe, but slightly reduced the association between lone motherhood and ADLs in Scandinavia: RR changed from 1.45 (1.06 to 1.99) to 1.32 (0.95 to 1.85) and was no longer statistically significant. We conclude that selection is not a major issue for estimating the effects of lone motherhood on health after controlling for education. Finally, as race/ethnicity is associated with both the risk of being a lone mother and often independently associated with health outcomes in the United States, we single out the HRS data and estimate how the health risks of lone motherhood differ by race/ethnicity (Appendix Table A6). Stratifying by race/ethnicity, we found that the RRs of lone motherhood for three outcomes were not significant for Hispanic women. For non-Hispanic black women, the RRs for ADL limitations were not significant but the RRs for IADL limitations and fair/poor SRH were greater than one and significant. For non-Hispanic white women, the RRs were significantly larger than one for all three outcomes. Wald test confirms that for fair/poor SRH, RRs for Hispanic women were statistically lower than those in non-Hispanic blacks and whites.

Discussion

Key results

Lifetime experiences of lone motherhood were associated with increased risks of ADL and IADL limitations and fair/poor SRH in England and the US, with the relative risks in England significantly higher than those in the US. Lone motherhood experienced initially under the age of 40 was associated strongly and consistently with worse health outcomes. Within Europe, lone motherhood was associated with increased risk of ADL limitations only in Scandinavia, but not in Western, Southern, or Eastern Europe. Lone motherhood was not associated with more IADLs in Europe. For fair/poor SRH, lone motherhood was associated with increased risks in Scandinavia and Western Europe, but not in Southern and Eastern Europe. When examining by causes of lone motherhood, in the US, lone motherhood caused by nonmarital childbearing and divorce were associated with poorer health and functioning. In England, lone motherhood resulting from all causes was equally harmful. In Scandinavia and Western Europe,

there were no statistically significant relationships between a specific cause of lone motherhood and (I)ADL limitations. For fair/poor SRH, the RRs of lone motherhood caused by nonmarital childbearing were not significant while lone motherhood caused by widowhood and divorce were associated with increased risk. Finally, the associations between lone motherhood and health outcomes were robust in various sensitivity analyses.

Conclusions

Among the strengths of our study we were able to harmonize data across many more countries as compared to previous studies, which included comparisons of several selected countries. We were also able to adjust for a wide variety of conditions that might have confounded the associations between lone parenthood and functioning in older ages. These conditions include both some selected early life exposures (parental marital status etc) as well as current conditions (economic and behavioral risks). Among the limitations, the most important is the reliance on self report for health outcomes. While functional outcomes related to activities of daily living and instrumental activities of daily living are commonly assessed from self report, it would be ideal to have some more objective indicators of outcomes. Unfortunately, there are none that are harmonized across all the three studies at this time. Furthermore, while some of these self reports, especially self reported health, are known to vary by country in poorly understood ways, our comparisons of risk are essentially within country, not across countries

Secondly, selection into lone motherhood might be a concern. Women with lone motherhood experience might have unobserved disadvantages that increased both their risk of being a lone mother and worse health at older ages. In the main analysis we control for education, an important confounder. To examine the sensitivity of the estimates we include childhood experience regarding childhood health and family background. Controlling for childhood experience and family background does not change the overall results, suggesting that selection by these variables is unlikely to explain our findings. In terms of differential selection mechanisms into lone motherhood across different regions, we did not find a

systematic pattern. It would be reasonable to assume that in countries with lower prevalence of lone motherhood, lone mothers were on average a more disadvantaged group, relative to non-lone mothers. But in the two regions with the lowest prevalence of lone motherhood - Southern Europe and Eastern Europe - lone motherhood was not associated with increased risks of any health outcomes. This is consistent with a study published in 2010 showing that current lone mothers in Italy, Sweden, and Britain in the period 1991-2001 all had higher prevalence of poor SRH relative to coupled mothers, but the absolute and relative differences were much smaller in Italy.[7]

Thirdly, we do not extensively explore or identify the underlying mechanisms by which lone motherhood might affect health outcomes and why the associations differ by region. We do find that current economic conditions explain most of the health disadvantage associated with lone motherhood in the US, but it is less so in other regions. Across all regions, lone mothers were more likely to be smokers but not more likely to be obese, and controlling for smoking and obesity modifies the results very little. Even though there is a straightforward link between welfare system and poverty and employment rates among lone mothers in Europe,[32] we do not find that lone motherhood was least harmful in the region with the most generous welfare system - Scandinavia. Similarly, two previous studies have shown that current lone mothers in both Sweden and Britain had higher prevalence of poor SRH and limiting long-standing illnesses relative to coupled mothers, and the magnitudes of the relative differences were similar.[7 15]

In future studies, we will have to go beyond current economic conditions, smoking and obesity to explain the remaining health disadvantages of lone motherhood in US, England, Scandinavia and Western Europe. Potential conditions may be related to social stigma associated with lone motherhood and availability of social support for lone mothers. Trajectories of disadvantage may relate to cumulative biological insults relating in later health decrements and/or missed social and economic opportunities that might have occurred in early and middle adulthood for these women had they been able to share more child rearing responsibilities with their spouses. Thus, both social and biological “trajectories” may produce later life health disadvantages. We are limited in our ability to explore these trajectories in these

studies. Our unexpected findings relate to the increased risk in England, followed closely by the United States. While the lack of economic support may play a role in linking lone motherhood to poor health in later life in the United States, it appears to be a less likely pathway in other countries, especially in Scandinavian countries. In our data, we do not have retrospective information about those aspects at time of being a lone mother so we cannot explicitly examine their effects, either related to social stigma, economic conditions or social networks. Only a few studies have examined social support and social networks associated with lone motherhood and their role in mediating the relationship between lone motherhood and health outcomes. [33-35] However, we have some suggestive evidence that social support might play an important role: we find that in the two regions which emphasize family solidarity - Southern Europe and Eastern Europe - lone motherhood was not associated with increased health risks. Also, in the US we found that lone motherhood was associated with higher health risks among non-Hispanic black and white women, but not among Hispanic women, who might have more social/family support relative to other race/ethnicity groups. A study by Williams et al. also found that nonmarital childbearing was negatively associated with midlife health for white and black women, but not for Hispanic women.[1]

The findings from this study add to the growing recognition that lone motherhood may not only have adverse consequences for children but also may add to the cumulative disadvantage of women which then takes its toll in older ages.[1 11 36] As lone motherhood experiences become more common in many countries, our findings suggest that we may see the toll these experiences on health and functional outcomes at older ages. Formal policies and informal social structures that serve to protect women from these potentially harmful experiences will be essential to maximize their health and well being across the life course.

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Table 1. Lone motherhood experience among women ever had children and aged 50+, by region

	US (n=17866)		England (n=6205)		Scandinavia (n=2907)		Western Europe (n=8494)		Southern Europe (n=5278)		Eastern Europe (n=1803)	
No (%) Lone motherhood	5429	(32.8)	1329	(22.2)	1056	(38.6)	1680	(22.9)	471	(10.3)	311	(20.6)
Lone motherhood due to												
Never married	248	(1.4)	104	(1.8)	102	(4.3)	200	(2.3)	27	(0.9)	22	(1.7)
Nonmarital childbearing[+]	1462	(7.4)	249	(4.5)	423	(14.3)	404	(6.5)	101	(2.3)	71	(4.1)
Widowhood	829	(4.8)	181	(3.0)	74	(3.0)	300	(4.5)	193	(4.5)	76	(6.1)
Divorce	3494	(22.6)	869	(14.4)	549	(20.6)	865	(11.3)	157	(2.8)	154	(9.7)
Lone motherhood at age												
<20	868	(4.2)	88	(1.6)	122	(4.4)	153	(2.3)	32	(0.9)	26	(1.1)
20 to 29	2046	(12.5)	394	(6.9)	464	(16.2)	612	(8.7)	120	(2.8)	113	(8.4)
30 to 39	1558	(10.2)	513	(8.5)	313	(11.8)	551	(7.4)	148	(2.9)	103	(6.9)
40 to 49	957	(5.8)	334	(5.2)	157	(6.2)	364	(4.4)	171	(3.7)	69	(4.3)
% lone motherhood - alternative definition[#]	NA		1098	(18.4)	700	(27.0)	1415	(19.4)	405	(8.8)	274	(17.9)

Notes:

Lone motherhood is defined as having ever experienced one more years with one or more biological children under age 18 and was not married during the ages 15-49.

Number of observations and the percentages (in parentheses) are shown. Sampling weights are used for estimating percentages.

[+]With one or more marriages. In subsequent analysis, the "never married" group is combined with this group as the sample size for "never married" lone mothers is very small.

[#]The "alternative definition" of lone motherhood treats partnership as marriage and thus fewer women had lone motherhood experience. HRS doesn't collect information on partnership history.

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Data sources: Health and Retirement Study (HRS) in year 2004 and 2006; English Longitudinal Study of Aging (ELSA) in year 2004 and 2006; Survey of Health, Ageing, and Retirement in Europe (SHARE) in year 2004 and 2006 and SHARELIFE in year 2008.

Table 2. Sample characteristics by lone motherhood status, among women aged 50+, by region

	US (n=17866)		England (n=6205)		Scandinavia (n=2907)		Western Europe (n=8494)		Southern Europe (n=5278)		Eastern Europe (n=1803)	
Mean age (years)												
Non-lone	67.1		66.5		67.7		65.3		66.1		64.5	
Lone	62.5		62.4		61.8		63.7		65.6		62.7	
No (%) Any ADLs limitations												
Non-lone	1863	(15.0)	853	(18.3)	140	(8.5)	582	(9.6)	492	(12.2)	228	(20.7)
Lone	1089	(18.9)	327	(26.3)	89	(9.4)	154	(10.5)	64	(14.3)	39	(17.8)
Any IADLs limitations												
Non-lone	1711	(13.8)	531	(11.8)	117	(7.5)	439	(7.5)	400	(9.9)	177	(16.6)
Lone	929	(16.1)	234	(19.9)	50	(5.6)	107	(6.8)	50	(11.1)	28	(11.6)
Fair/poor SRH												
Non-lone	3098	(23.9)	1253	(27.3)	373	(21.1)	1923	(33.0)	2045	(49.4)	762	(59.3)
Lone	2020	(34.4)	520	(42.8)	239	(23.2)	578	(40.8)	207	(52.3)	165	(57.6)
Secondary education												
Non-lone	4741	(40.2)	1758	(33.7)	541	(28.3)	2226	(39.0)	760	(12.8)	606	(42.0)
Lone	1958	(36.2)	502	(33.7)	344	(32.4)	572	(42.5)	86	(16.3)	126	(45.4)
Primary education or less												
Non-lone	2421	(17.4)	2591	(58.0)	759	(43.9)	3241	(42.0)	3664	(82.8)	780	(52.1)
Lone	1522	(22.5)	715	(59.6)	361	(36.2)	759	(37.8)	345	(77.8)	164	(51.5)
Currently married												
Non-lone	7569	(67.4)	3172	(77.1)	1398	(65.2)	5027	(69.1)	3716	(70.1)	1073	(63.6)
Lone	2078	(39.3)	304	(26.8)	590	(45.7)	635	(32.9)	123	(25.0)	107	(28.0)
Bottom income quintile												
Non-lone	2109	(15.7)	733	(16.1)	277	(18.7)	1166	(17.3)	885	(18.9)	253	(19.3)
Lone	1820	(30.2)	324	(26.6)	148	(15.6)	386	(23.8)	116	(23.8)	84	(27.2)
Bottom wealth quintile												
Non-lone	1787	(13.7)	605	(14.1)	203	(12.8)	940	(14.2)	802	(17.5)	224	(18.5)
Lone	1955	(33.8)	448	(37.6)	208	(22.3)	466	(30.4)	130	(31.9)	64	(22.7)

Notes:

"Non-lone" indicates women who ever had any biological children and without lone motherhood experience.

"Lone" indicates women with lone motherhood experience.

"(I)ADLs": (Instrumental) activities of daily living.

SRH: Self-rated health.

Number of observations and the percentages (in parentheses) are shown. Sampling weights are used for estimating percentages.

Data sources: HRS in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008.

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Table 3. Adjusted Relative risks of lone motherhood on disability and SRH among women aged 50+, by region

	Model specification I			Model specification II		
	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
	(1)	(2)	(3)	(4)	(5)	(6)
Lone motherhood in						
US	1.26***	1.27***	1.32***	1.09	1.09	1.16***
	(1.14 to 1.40)	(1.14 to 1.42)	(1.22 to 1.42)	(0.98 to 1.20)	(0.98 to 1.21)	(1.08 to 1.24)
England	1.54***	1.68***	1.63***	1.42***	1.42***	1.47***
	(1.31 to 1.80)	(1.38 to 2.05)	(1.44 to 1.83)	(1.21 to 1.67)	(1.16 to 1.73)	(1.31 to 1.66)
Scandinavia	1.45*	0.96	1.25*	1.34	0.84	1.15
	(1.06 to 1.99)	(0.61 to 1.50)	(1.04 to 1.50)	(0.98 to 1.84)	(0.55 to 1.31)	(0.96 to 1.38)
Western Europe	1.09	0.98	1.24***	0.99	0.89	1.17**
	(0.80 to 1.49)	(0.68 to 1.42)	(1.09 to 1.40)	(0.73 to 1.35)	(0.61 to 1.29)	(1.04 to 1.33)
Southern Europe	1.15	1.08	1.07	0.98	0.96	1.05
	(0.81 to 1.61)	(0.74 to 1.58)	(0.93 to 1.23)	(0.69 to 1.39)	(0.66 to 1.38)	(0.91 to 1.21)
Eastern Europe	0.95	0.84	1.01	0.92	0.82	1.01
	(0.68 to 1.34)	(0.56 to 1.25)	(0.89 to 1.15)	(0.65 to 1.30)	(0.56 to 1.21)	(0.89 to 1.15)
P-value of Wald test of equivalence of relative risks of lone motherhood						
UK vs US	0.044	0.015	0.003	0.007	0.021	0.001
UK vs Scandinavia	0.746	0.025	0.017	0.756	0.034	0.023
UK vs Western Europe	0.054	0.012	0.002	0.045	0.030	0.008
UK vs Southern Europe	0.127	0.043	0.000	0.061	0.066	0.000
UK vs Eastern Europe	0.013	0.002	0.000	0.027	0.014	0.000

*** P<0.001, ** P<0.01, * P<0.05

Notes: Each column of Column (1) to (6) presents relative risks (point estimates and 95% confidence intervals) of lone motherhood by region, obtained from Poisson regressions with robust variance clustered at individual level. Data are weighted by sampling weights. Other control variables in "Model specification I" include the interactions of six country/region dummies with age, age squared, secondary education, primary education or less, and current marital status, as well as country and time fixed effects.

Extra control variables are in "Model specification II": per-capita household income quintiles and per-capita household wealth quintiles.

Data sources: HRS in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008.

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Table 4. Adjusted relative risks of lone motherhood, by causes and by region

	Any ADLs limitations RR (95% CI) (1)	Any IADLs limitations RR (95% CI) (2)	Fair/Poor SRH RR (95% CI) (3)
US: lone motherhood due to			
Nonmarital childbearing	1.30***	1.19*	1.35***
	(1.13 to 1.49)	(1.03 to 1.38)	(1.24 to 1.48)
Widowhood	1.09	1.14	1.10
	(0.91 to 1.31)	(0.94 to 1.37)	(0.97 to 1.25)
Divorce	1.27***	1.33***	1.27***
	(1.13 to 1.44)	(1.17 to 1.52)	(1.17 to 1.38)
England: lone motherhood due to			
Nonmarital childbearing	1.32*	1.68***	1.44***
	(1.04 to 1.67)	(1.28 to 2.20)	(1.22 to 1.70)
Widowhood	1.74***	1.64*	1.57***
	(1.30 to 2.33)	(1.08 to 2.48)	(1.23 to 2.00)
Divorce	1.47***	1.53***	1.54***
	(1.20 to 1.79)	(1.20 to 1.95)	(1.34 to 1.77)
Scandinavia: lone motherhood due to			
Nonmarital childbearing	1.20	1.02	0.95
	(0.79 to 1.83)	(0.60 to 1.73)	(0.75 to 1.20)
Widowhood	1.47	1.24	1.61*
	(0.71 to 3.04)	(0.49 to 3.17)	(1.07 to 2.42)
Divorce	1.45	0.81	1.39**
	(0.97 to 2.16)	(0.42 to 1.57)	(1.13 to 1.71)
Western Europe: lone motherhood due to			
Nonmarital childbearing	0.86	0.71	1.12
	(0.51 to 1.44)	(0.36 to 1.39)	(0.95 to 1.33)
Widowhood	1.14	1.73	1.22
	(0.64 to 2.04)	(0.98 to 3.03)	(0.96 to 1.56)
Divorce	1.22	0.89	1.24**
	(0.84 to 1.78)	(0.60 to 1.34)	(1.06 to 1.46)

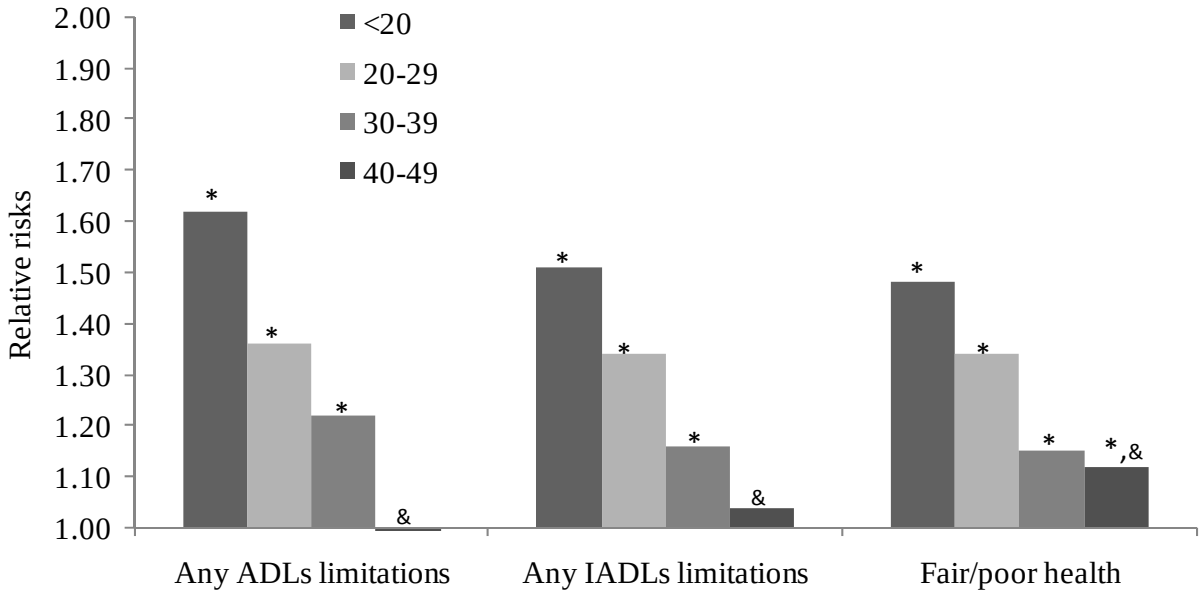
*** P<0.001, ** P<0.01, * P<0.05

Notes: Each column of Column (1) to (3) presents relative risks (point estimates and 95% confidence intervals) of lone motherhood by cause and by region, obtained from Poisson regressions with robust variance clustered at individual level. Data are weighted by sampling weights. Other control variables include the interactions of four country/region dummies with age, age squared, secondary education, primary education or less, and current marital status, as well as country and time fixed effects.

Data sources: HRS in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008 (only countries from Scandinavia and Western Europe included in this analysis).

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Figure 1. Adjusted relative risks of lone motherhood on disability and SRH by age of being a lone mother



Notes:

* Relative risks are statistically significant at 5% level.

&: For the specific health outcome, relative risk on being a lone mother while age 40-49 is statistically smaller the relative risk on being a lone mother before age 20 at 5% level.

Data from US, England, Scandinavia and Western Europe were used in this analysis. Poisson regressions with robust variance clustered at individual level were estimated. Data were weighted by sampling weights. Key independent variables are indicators of lone motherhood at different ages: <20, 20 to 29, 30 to 39, and 40 to 49. We present relative risks of lone motherhood without interacting lone motherhood indicators with regional dummies, though the region-specific estimates reveal the same pattern: relative risks of lone motherhood at younger ages are larger than those at older ages. Other control variables include age, age squared, secondary education, primary education or less, and current marital status, as well as country and time fixed effects.

Data sources: HRS in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008 (only countries from Scandinavia and Western Europe included in this analysis).

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Table A1. Adjusted relative risks of lone motherhood and had partner while being a lone mother, by region

	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
England			
Lone motherhood	1.60***	1.75***	1.67***
	[1.36,1.89]	[1.43,2.14]	[1.48,1.89]
Had partner while being a lone mother	0.74	0.75	0.85
	[0.51,1.07]	[0.48,1.18]	[0.67,1.07]
Scandinavia			
Lone motherhood	1.54*	0.98	1.26*
	[1.09,2.17]	[0.61,1.57]	[1.03,1.53]
Had partner while being a lone mother	0.75	0.91	0.98
	[0.39,1.44]	[0.35,2.39]	[0.72,1.33]
Western Europe			
Lone motherhood	1.08	0.98	1.22**
	[0.78,1.51]	[0.66,1.46]	[1.07,1.39]
Had partner while being a lone mother	1.06	0.98	1.10
	[0.53,2.10]	[0.42,2.29]	[0.83,1.46]

*** P<0.001, ** P<0.01, * P<0.05

Notes:

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Data were weighted by sampling weights. Other control variables include the interactions of three country/region dummies with age, age squared, secondary education, primary education or less, and current marital status, as well as country and time fixed effects.

Data sources: English Longitudinal Study of Aging (ELSA) in year 2004 and 2006; Survey of Health, Ageing, and Retirement in Europe (SHARE) in year 2004 and 2006 and SHARELIFE in year 2008 (only countries from Scandinavia and Western Europe included in this analysis).

Countries in each regions are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands).

Table A2. Adjusted relative risks of lone motherhood on health behaviors, by region

	Ever-smoked	Current smoker	Obese
Lone motherhood in			
US	1.29***	1.36***	1.04
	[1.22,1.36]	[1.19,1.55]	[0.96,1.12]
England	1.20***	1.58***	1.04
	[1.12,1.30]	[1.30,1.93]	[0.89,1.21]
Scandinavia	1.26***	1.47***	1.22
	[1.14,1.40]	[1.19,1.82]	[0.97,1.55]
Western Europe	1.22*	1.43**	1.10
	[1.04,1.42]	[1.10,1.85]	[0.89,1.37]
Southern Europe	1.22	1.47	1.22
	[0.86,1.74]	[0.96,2.25]	[0.91,1.64]
Eastern Europe	1.45***	1.40*	0.98
	[1.21,1.74]	[1.06,1.84]	[0.74,1.30]
P-value of Wald test of equivalence of relative risks of lone motherhood			
UK vs US	0.132	0.217	0.964
UK vs Scandinavia	0.453	0.637	0.247
UK vs Western Europe	0.894	0.539	0.651
UK vs Southern Europe	0.936	0.770	0.340
UK vs Eastern Europe	0.057	0.473	0.729

*** P<0.001, ** P<0.01, * P<0.05

Notes:

"Obese" is defined as having body mass index (BMI) of 30 kg/m^2 and over, based on self-reported body weight and height.

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Data were weighted by sampling weights. Other control variables include the interactions of six country/region dummies with age, age squared, secondary education, primary education or less, as well as country and time fixed effects.

Data sources: Health and Retirement Study (HRS) in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008.

Countries in each region are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Table A3. Adjusted relative risks of lone motherhood and health behaviors on disability and SRH, by region

	Model specification II			Model specification III		
	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
	(1)	(2)	(3)	(4)	(5)	(6)
Lone motherhood in						
US	1.09 (0.98 to 1.20)	1.09 (0.98 to 1.21)	1.16*** (1.08 to 1.24)	1.05 (0.95 to 1.17)	1.06 (0.95 to 1.18)	1.14*** (1.07 to 1.23)
England	1.42*** (1.21 to 1.67)	1.42*** (1.16 to 1.73)	1.47*** (1.31 to 1.66)	1.42*** (1.16 to 1.74)	1.42** (1.09 to 1.84)	1.46*** (1.25 to 1.71)
Scandinavia	1.34 (0.98 to 1.84)	0.84 (0.55 to 1.31)	1.15 (0.96 to 1.38)	1.29 (0.92 to 1.82)	0.82 (0.51 to 1.32)	1.09 (0.91 to 1.31)
Western Europe	0.99 (0.73 to 1.35)	0.89 (0.61 to 1.29)	1.17** (1.04 to 1.33)	1.02 (0.74 to 1.39)	0.93 (0.63 to 1.37)	1.16* (1.03 to 1.31)
Southern Europe	0.98 (0.69 to 1.39)	0.96 (0.66 to 1.38)	1.05 (0.91 to 1.21)	0.95 (0.67 to 1.35)	0.99 (0.65 to 1.48)	1.03 (0.89 to 1.19)
Eastern Europe	0.92 (0.65 to 1.30)	0.82 (0.56 to 1.21)	1.01 (0.89 to 1.15)	0.88 (0.61 to 1.28)	0.81 (0.53 to 1.23)	1.00 (0.88 to 1.15)
Ever-smoked in						
US				1.18*** (1.07 to 1.30)	1.19** (1.07 to 1.32)	1.15*** (1.07 to 1.23)
England				1.18 (0.98 to 1.41)	1.11 (0.87 to 1.42)	1.08 (0.93 to 1.26)
Scandinavia				0.86 (0.60 to 1.23)	0.77 (0.50 to 1.19)	1.05 (0.86 to 1.28)
Western Europe				1.37 (0.99 to 1.90)	1.00 (0.64 to 1.57)	0.98 (0.85 to 1.13)
Southern Europe				0.81 (0.48 to 1.36)	1.04 (0.65 to 1.67)	0.96 (0.81 to 1.14)
Eastern Europe				1.08 (0.76 to 1.56)	0.71 (0.41 to 1.26)	1.07 (0.93 to 1.22)

(Table continues on next page)

Table A3. Adjusted relative risks of lone motherhood and health behaviors on disability and SRH, by region (continued)

	Model specification II			Model specification III		
	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
	(1)	(2)	(3)	(4)	(5)	(6)
Current smoker in						
US				1.12 (0.98 to 1.28)	1.17* (1.01 to 1.35)	1.13** (1.04 to 1.23)
England				1.13 (0.88 to 1.44)	1.26 (0.91 to 1.75)	1.31** (1.09 to 1.57)
Scandinavia				1.61* (1.04 to 2.50)	1.36 (0.76 to 2.43)	1.49*** (1.21 to 1.83)
Western Europe				1.03 (0.67 to 1.58)	1.49 (0.83 to 2.67)	1.24* (1.03 to 1.50)
Southern Europe				1.32 (0.69 to 2.51)	0.57 (0.22 to 1.47)	1.03 (0.83 to 1.29)
Eastern Europe				0.94	1.58	0.96
Currently obese in						
US				1.70*** (1.55 to 1.86)	1.42*** (1.29 to 1.57)	1.38*** (1.30 to 1.47)
England				1.97*** (1.67 to 2.33)	1.51*** (1.20 to 1.89)	1.50*** (1.31 to 1.72)
Scandinavia				1.45 (0.99 to 2.12)	1.17 (0.74 to 1.85)	1.59*** (1.33 to 1.91)
Western Europe				1.86*** (1.43 to 2.42)	1.58** (1.17 to 2.14)	1.59*** (1.43 to 1.76)
Southern Europe				1.80*** (1.45 to 2.23)	1.51** (1.16 to 1.95)	1.22*** (1.13 to 1.32)
Eastern Europe				1.18	0.87	1.16**

*** P<0.001, ** P<0.01, * P<0.05

Notes:

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Data were weighted by sampling weights. Results shown in Column (1) to (3) are the same as those in Column (4) to (6) in Table 3. Other control variables in "Model specification II" include the interactions of six country/region dummies with age, age squared, secondary education, primary education or less, current marital status, per-capita household income quintiles and per-capita household wealth quintiles, as well as country and time fixed effects. Extra control variables are in "Model specification III": interactions of six country/region dummies with ever-smoked, current smoker, and obese.

Data sources: HRS in year 2004 and 2006; ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008.

Countries in each region are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands), Southern Europe (Italy, Spain and Greece), and Eastern Europe (Poland and Czech Republic).

Table A4. Adjusted relative risks of age, education, and childhood conditions on ever having lone motherhood experience, by region, using ELSA and SHARE

	Had lone motherhood experience in		
	England	Scandinavia	Western Europe
Age	0.90*	0.86**	0.91
	(0.80 to 1.00)	(0.77 to 0.96)	(0.83 to 1.01)
Age squared	1.00	1.00*	1.00
	(1.00 to 1.00)	(1.00 to 1.00)	(1.00 to 1.00)
Secondary education	1.28	1.08	1.05
	(0.98 to 1.66)	(0.92 to 1.26)	(0.85 to 1.30)
Primary education or less	1.52**	1.06	0.99
	(1.16 to 2.00)	(0.89 to 1.27)	(0.77 to 1.27)
Childhood health good/fair/poor	1.08	1.00	0.95
	(0.93 to 1.24)	(0.86 to 1.16)	(0.80 to 1.12)
Number of people per bedroom at age 10	1.05	1.10*	1.01
	(0.97 to 1.13)	(1.02 to 1.18)	(0.96 to 1.06)
Number of books at age 10	0.98	1.02	1.03
	(0.92 to 1.04)	(0.97 to 1.08)	(0.95 to 1.11)
Living with both natural parents at age 10	0.76**	0.79*	0.56***
	(0.63 to 0.91)	(0.63 to 0.98)	(0.42 to 0.75)

*** P<0.001, ** P<0.01, * P<0.05

Notes:

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Country and time fixed effects were included.

Data sources: ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008 (only countries from Scandinavia and Western Europe included in this analysis).

Countries in each region are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands)

Table A5. Adjusted relative risks of lone motherhood on disability and SRH, by region, using ELSA and SHARE

	Model specification I			Model specification IV		
	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
	(1)	(2)	(3)	(4)	(5)	(6)
England						
Lone motherhood	1.53*** (1.30 to 1.80)	1.67*** (1.37 to 2.04)	1.62*** (1.44 to 1.83)	1.56*** (1.32 to 1.84)	1.68*** (1.36 to 2.07)	1.62*** (1.43 to 1.83)
Poor health at age 10				1.48*** (1.29 to 1.71)	1.67*** (1.39 to 2.00)	1.49*** (1.34 to 1.65)
Number of ppl per bedroom at age 10				1.00 (0.92 to 1.08)	1.01 (0.92 to 1.10)	1.04 (0.99 to 1.10)
Number of books at home at age 10				0.97 (0.90 to 1.03)	0.92 (0.85 to 1.01)	0.93** (0.88 to 0.97)
Living with both natural parents at age 10				1.09 (0.90 to 1.32)	1.10 (0.85 to 1.41)	1.04 (0.90 to 1.21)
Scandinavia						
Lone motherhood	1.45* (1.06 to 1.99)	0.96 (0.61 to 1.50)	1.25* (1.04 to 1.49)	1.32 (0.95 to 1.85)	0.87 (0.53 to 1.42)	1.23* (1.03 to 1.48)
Poor health at age 10				1.55** (1.12 to 2.14)	1.15 (0.78 to 1.72)	1.53*** (1.29 to 1.81)
Number of ppl per bedroom at age 10				1.07 (0.92 to 1.25)	1.03 (0.85 to 1.26)	1.10* (1.02 to 1.20)
Number of books at home at age 10				1.08 (0.93 to 1.25)	0.96 (0.78 to 1.18)	0.95 (0.88 to 1.03)
Living with both natural parents at age 10				0.70 (0.40 to 1.21)	1.07 (0.37 to 3.12)	0.92 (0.65 to 1.30)
Western Europe						
Lone motherhood	1.09 (0.80 to 1.48)	0.98 (0.68 to 1.42)	1.23*** (1.09 to 1.39)	1.13 (0.82 to 1.55)	0.99 (0.68 to 1.44)	1.25*** (1.10 to 1.42)
Poor health at age 10				1.01 (0.78 to 1.31)	0.72* (0.54 to 0.96)	1.23*** (1.11 to 1.37)

Number of ppl per bedroom at age 10	1.08*** (1.05 to 1.12)	1.08*** (1.05 to 1.12)	1.01 (0.97 to 1.06)
Number of books at home at age 10	0.91 (0.80 to 1.04)	0.86* (0.73 to 1.00)	0.90*** (0.85 to 0.95)
Living with both natural parents at age 10	1.35 (0.73 to 2.50)	1.53 (0.81 to 2.88)	1.11 (0.87 to 1.41)

*** P<0.001, ** P<0.01, * P<0.05

Notes:

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Other control variables in "Model specification I" include the interactions of six country/region dummies with age, age squared, secondary education, primary education or less, and current marital status, as well as country and time fixed effects. Four variables on childhood conditions were included as control variables in "Model specification IV".

Data sources: ELSA in year 2004 and 2006; SHARE in year 2004 and 2006 and SHARELIFE in year 2008 (only countries from Scandinavia and Western Europe included in this analysis).

Countries in each region are: Scandinavia (Denmark and Sweden) ,Western Europe (Austria, France, Germany, Switzerland, Belgium, Netherlands)

Table A6. Adjusted relative risks of lone motherhood on disability and SRH, by race/ethnicity in US

	Any ADLs limitations	Any IADLs limitations	Fair/Poor SRH
Lone motherhood among			
Non-Hispanic black	1.17	1.26*	1.21**
	(0.95 to 1.44)	(1.02 to 1.55)	(1.05 to 1.40)
Hispanic	1.24	1.19	0.96
	(0.96 to 1.60)	(0.89 to 1.58)	(0.84 to 1.09)
Non-Hispanic white	1.20**	1.22**	1.35***
	(1.06 to 1.37)	(1.07 to 1.40)	(1.23 to 1.49)
Non-Hispanic black	1.42***	1.29**	1.41***
	(1.19 to 1.70)	(1.08 to 1.54)	(1.24 to 1.60)
Hispanic	1.22*	1.04	1.80***
	(1.01 to 1.47)	(0.85 to 1.27)	(1.62 to 2.00)
P-value of Wald test of equivalence of RRs of lone motherhood by race/ethnicity	0.942	0.947	0.000

*** P<0.001, ** P<0.01, * P<0.05

Notes:

Relative risks (point estimates and 95% confidence intervals) were obtained from Poisson regressions with robust variance clustered at individual level. Data were weighted by sampling weights. Other control variables include age, age squared, secondary education, primary education or less, current marital status, and time fixed effects.

Data sources: HRS in year 2004 and 2006.