Extended Abstract

Disease Incidence and Family Solidarity: Evidence from the SHARE and HRS Data

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Introduction

Individuals and households fulfill their needs using three kinds of resources: their own employment and savings; public programs; and family members. The unexpected occurrence of a major disease is likely to produce a reorganization in all three areas. The likelihood of employment declines, health costs increase, and income is likely to decline (Smith 2005). Disability and lower income may mean greater dependence on state income support. It is also likely that the onset of a serious health event will to lead to changes in the family.

This paper examines the implications of a recent serious cardiovascular disease incidence – a new heart attack within the last two years – for parent-child contact using data from both the Survey of Health, Ageing, and Retirement in Europe (SHARE) and the Health and Retirement Study (HRS) in the United States. Therefore it presents one test of the hypothesis that a parental health event increases family solidarity. This measures of health and solidarity differ from most research on the topic. Health has been usually measured by self-evaluated health (e.g., Attias-Donfut, Ogg, and Wolff 2005; Brandt, Haberkern, and Szydlik 2009). and the outcome measure has been help provided. These studies show poor health in the older generation is associated with more help provided by children (Attias-Donfut, Ogg, and Wolff 2005; Brandt, Haberkern, and Szydlik 2009; Deindl and Brandt 2011).

A heart attack may not lead to disability that requires helping. Full recovery is possible. One might expect, however, that a parent' s heart attack would lead children to become more aware of the parent's mortality risk and seek more contact. In such cases, parent-child contact may be considered an indicator of family solidarity and closeness as well as show how families respond to changed situations. The research reported here advances the study of family solidarity in by focusing on a specific disease, thereby providing a more concrete focus compared to self-evaluated health measures.

Method

Data and Modeling Approach

In SHARE, contact with each child and heart attack in the last two years, are measured in wave 6 (2015) with other covariates measured in wave 5 (2013). HRS contact and heart attack are measured in the 2016 wave with other variables measured in 2014. Both data sets are restricted to age-eligible respondents (age 50 and older) with one or more children or step-children. Only non-resident children are included in the analysis. Models are estimated separately for men and women to allow for gender differences in family contact.

Both data sets measure contact with each child. These data are used to model parental contact with each child, clustering children in families and adjusting standard errors to account for clustering within families. Because of differences in measurement of child contact, described below, the SHARE models are estimated using logistic regression while the HRS models are estimated using regression.

Variables

SHARE measures *contact* as a categorical variable: daily; several times a week; about once a week; about every two weeks; about once a month; less than once a month; and never. For this analysis, the variable is a dichotomy that contrasts daily and several times a week with once a week or less often. This coding maximizes the number of observations in the two categories of the variable. HRS measures contact by asking number of contacts in the last year. For this analysis values greater than 365 are coded as 365. The variable is then logged for the analysis.

Heart attack in the last two years is measured in a similar way in both data sets, as is respondent's *age*, respondent's *number of children and step-children,* and *child's gender*. The categories of *marital status* differ between the two surveys and the HRS data are edited to harmonize with SHARE. The primary change is that the 'separated' category in HRS is not used in SHARE. HRS respondents who are separated are coded as *married, spouse absent*. The log of household income is also included in the analysis.

The final variables differ across data sets because they are designed to measure the major divisions in western Europe and the USA, respectively. The SHARE analysis is limited to western European countries present in both waves 5 and 6. The major division considered is region, measured with a three-category variable with northern countries as the reference category. The coding of countries into regions is:

Northern: Sweden and Denmark

Central: Austria, Belgium, France, Germany, and Switzerland

South: Italy and Spain

In the HRS survey from the USA, the major division is ethnicity. This concept is measured with two variables: one measuring 'race' coded as black and other with white as the reference category. The second variable is a categorical measure of Hispanic versus non-Hispanic.

Results

Basic statistics for the samples analyzed are presented in Table 1 for SHARE and Table 2 for HRS. It should be emphasized that, even though the data are weighted, these results are not population estimates. They come from a sample that is selected for having living children. The data show nearly

equal heart attack incidence for men in HRS and SHARE and lower rates for women in HRS despite the USA having a higher death rate from cardiovascular disease than any of the countries included in this SHARE analysis (Benjamin *et al*, 2019: Table 13-3).

Two differences in the samples stand out. The SHARE data has a higher proportion of respondents who are widowed and fewer who are currently married, particularly among women. Incomes are also lower in the SHARE data though this difference is probably due to differences in definition and data collection procedure. (The reason for this difference is currently under analysis.)

SHARE Logit Models

Tables 3 and 4 present SHARE results for men and women, respectively. Three equations are presented: a bivariate logit predicting child contact from incident heart attack; a main effects model including each of the covariates discussed early; and a final model including an interaction between region and incident heart attack. The last column of the table presents a Wald test of statistical significance of the difference between men and women.

All three models for both men and women indicate no association between incident heart attack and child contact. Among other variables, the main effects model shows men who are not currently married are disadvantaged in contact compared to women in the same category. Lower income women are likely to have more contact than men with similar income.

Results for both men and women indicate increasing levels of contact as one moves from north to south. The third column, the interaction model, indicates that this ranking is unchanged when estimating the association separately for parents with and without a heart attack. This finding is true for both men and women. Among women, however, the overall test for the region interaction is statistically significant. The interaction indicates that the higher contact in the south compared to other regions is reduced but still maintained for mothers who have had a heart attack.

HRS Regression Models

Results from the HRS survey are presented in Tables 5 and 6. Only the bivariate and main effects equations are shown because the interactions of heart attack with ethnicity and Hispanic are not significant. A heart attack does not increase amount of child contact for men or women. Men who are not married are penalized in child contact but women are not, a finding similar to the European result. Higher income increases contact with fathers but decreases it for mothers. Among the ethnicity variables, blacks have more contact with children than whites and this advantage is greater for women. Hispanics, who can be of any ethnicity, have more child contact than non-Hispanics, and this finding is equally true for both men and women.

Discussion

The results provide no supporting evidence for the hypothesis that a heart attack increases family solidarity measured by contact. Of course, there are many different types of health events and many possible measures of family solidarity. A heart attack may not produce a need for assistance but it does might be expected to bring families closer together. The narrow measures of a health problem and solidarity are both a strength and a weakness of the analysis. They are a weakness in that they are a very limited test of the association between health and family solidarity. However they are also a strength because they point to the diversity of both health problems and family solidarity. The field needs an accumulation of studies using different measures to fully map the link between health and solidarity.

Beyond this main result, the analysis also indicates the significance of underlying societal divisions for this measure of family solidarity. In the USA data, there is evidence for greater child contact by minority groups though these differences do not vary by heart attack status.

In the European data, there are large differences in child contact in the south compared to the north. These differences exist in both the group with and without a heart attack though, at least among women, the differences are smaller in the group with a heart attack. Future research might well focus on elaborating this regional difference because similar results have been shown in other studies (e.g., Brandt, Haberkern, & Szydlik 2009; Hank & Buber 2009). An agenda for future research should explore these regional differences in other measures of health event and family solidarity.

References Cited

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Table1. SHARE: Basic Statistics (Weighted)

		Men		Women	
		Mean	Percent	Mean	Percent
Child Contact More than Once/Week			56.2%		59.6%
Heart Attack 2013-2015			1.9		1.6
Age		66.2		68.2	
Number of Children		2.5		2.5	
Household Income Reported 2013		€ 37,938		€ 29,777	
Child is Male			53.0		52.1
Marital Status					
	Married, Spouse Present		73.1		49.7
	Partnership		1.2		0.6
	Married, Spouse Absent		2.4		1.7
	Never Married		2.3		2.4
	Divorced		10.8		11.4
	Widowed		10.2		34.2
Region					
	North		6.6		5.8
	Central		63.7		63.7
	South		29.7		30.5

Results based on 8576 and 11,287 male and female respondents for all variables except child's gender which is based on 18,022 children of men and 24,274 children of women.

Table 2. HRS: Basic Statistics (Weighted))

		Men		Women	
		Mean	Percent	Mean	Percent
Contact with Children		150.9		163.7	
Heart Attack 2014-2016			2.0%		1.2%
Age		66.1		65.3	
Number of Children		3.2		3.2	
Household Income Reported 2014		$104,496		$89,589	
Child is Male			49.1		49.2
Marital Status					
	Married, Spouse Present		78.5		65.3
	Partnership		3.9		2.7
	Married, Spouse Absent		2.3		2.0
	Never Married		1.3		2.6
	Divorced		9.7		13.5
	Widowed		4.4		14.0
Ethnicity					
	White		83.7		82.9
	Black		9.5		10.5
	Other		6.8		6.8
Hispanic			8.3		9.4

Results based on 4558 and 6407 male and female respondents for all variables except child's gender which is based on12,376 children of men and 17,265 children of women.

Table 3. Logit Model for Child Contact More Than Once a Week

SHARE Results for Men 2015

	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Wald
Heart AttackI 2013-2015	-0.008	0.130		-0.103	0.135		-0.516	0.322		
				-0.016	0.002	**	-0.016	0.002	**	
N. Children				-0.169	0.016	**	-0.169	0.016	*	*
Marital (Ref: Married,Spouse Present)										
Partnership				-0.861	0.166	**	-0.867	0.166	**	
Spouse Absent				-0.827	0.187	**	-0.830	0.187	**	
Never Married				-0.221	0.151		-0.220	0.150		**
Divorced				-0.898	0.072	**	-0.900	0.072	**	
Widowed				-0.017	0.076		-0.017	0.076		**
Log Household Income 2013				-0.013	0.024		-0.014	0.024		
Child's Gender (Male)				-0.321	0.033	**	-0.321	0.033	**	**
Region (Ref: Northern)										
Cemtral				0.168	0.046	**	0.158	0.046	**	
South				1.799	0.071	**	1.789	0.072	**	
Interactions With First MI										
Central							0.539	0.366		
South							0.481	0.441		*
Intercept	0.055	0.019	**	1.680	0.327	**	1.690	0.327	**	

Notes:

1. Asterisk indicates statistical significance: * (p<.05) ** (p.<.01)

2. Overall test for Regionc interactions With Heart Attack: chi-square (2) = 2.20 p. = .33

3. The column labeled 'Wald' indicates significant difference between men and women

4. Model estimated on 18022 parent-child dyads in 8576 families

Table 4. Logit Model for Child Contact More Than Once a Week

SHARE Results for Women 2015

	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Wald
Heart Attack 2013-2015	-0.069	0.129		-0.005	0.151		-0.073	0.267		
Age				-0.016	0.002	**	-0.016	0.002	**	
N. Children				-0.215	0.013	**	-0.214	0.013	**	*
Marital (Ref: Married,Spouse Present)										
Partnership				-0.817	0.177	**	-0.818	0.177	**	
Spouse Absent				0.072	0.132		0.072	0.132		**
Never Married				0.111	0.122		0.111	0.122		
Divorced				-0.253	0.053	**	-0.254	0.052	**	**
Widowed				0.228	0.048	**	0.227	0.048	**	**
Log Household Income 2013				-0.067	0.023	**	-0.067	0.023	**	
Child's Gender (Male)				-0.446	0.029	**	-0.446	0.029	**	**
Region (Ref: Northern)										
Central				0.195	0.039	**	0.189	0.039	**	
South				1.740	0.061	**	1.758	0.061	**	
Interactions With First MI										
Central							0.434	0.329		
South							-0.642	0.363		*
Intercept	0.201	0.016	**	2.393	0.309	**	2.387	0.309	**	

Notes:

1. Asterisk indicates statistical significance: * (p<.05) ** (p.<.01)
2. Overall test for Region interactions With Heart Attack: chi-square (2) = 11.9 p. = .003
3. The column labeled 'Wald' indicates significant difference between men and women
4. Model estimated on 24274 parent-child dyads in 11287 families

Table 5. Regression Model for Number of Child Contacts in Last Year

HRS Results for Men 2016

	Coef.	Std. Err.		Coef.	Std. Err.		Wald
Heart Attack 2014-2016	-0.054	0.125		0.046	0.126		
Age				-0.002	0.002		
N. Children				-0.113	0.010	**	
Marital (Ref: Married,Spouse Present)							
Partnership				-0.155	0.087		
Spouse Absent				-0.407	0.115	**	
Never Married				-0.878	0.195	**	**
Divorced				-0.710	0.075	**	**
Widowed				-0.402	0.082	**	**
Log Household Income 2013				0.021	0.014		*
Child's Gender (Male)				-0.383	0.026	**	**
Ethnicity (Ref: White)							
Black				0.040	0.048		**
Other				-0.038	0.065		
Hispanic				0.405	0.058	**	
Intercept	4.212	0.018	**	4.845	0.219	**	

Notes:

1. Asterisk indicates statistical significance: * (p<.05) ** (p.<.01)

2. Overall test for Ethnicity and Hispanic interactions With Heart Attack: F (3/,4577 df) = .32 (p. = .81)

3. The column labeled 'Wald' indicates significant difference between men and women

4. Model estimated on 12,376 parent-child dyads in 4578 families

Table6. Regression Model for Number of Child Contacts in Last Year

HRS Results for Women 2016

	Coef.	Std. Err.		Coef.	Std. Err.		Wald
Heart Attack 2014-2016	0.15968	0.138		0.122	0.125		
Age				-0.001	0.002		
N. Children				-0.128	0.007	**	
Marital (Ref: Married,Spouse Present)							
Partnership				-0.164	0.077	*	
Spouse Absent				-0.154	0.092		
Never Married				0.033	0.086		**
Divorced				-0.090	0.043	*	**
Widowed				-0.058	0.039		**
Log Household Income 2013				-0.012	0.010		*
Child's Gender (Male)				-0.447	0.021	**	**
Ethnicity (Ref: White)							
Black				0.303	0.037	**	**
Other				0.043	0.058		
Hispanic				0.355	0.047	**	
Intercept	4.34188	0.015	**	5.192	0.166	**	

Notes:

1. Asterisk indicates statistical significance: * (p<.05) ** (p.<.01)
2. Overall test for Ethnicity and Hispanic interactions With Heart Attack: F (3/6455 df) = .35. P=.779
3. The column labeled 'Wald' indicates significant difference between men and women
4. Model estimated on 17,265 parent-child dyads in 6456 families