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Research Article

Childlessness and Health Among Older Adults: Variation Across Five Outcomes and 20 Countries

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Abstract

Objectives: No previous study to the best of our knowledge has examined the association between childlessness and health using a wide range of countries and health outcomes. This study improves previous literature by examining the relationship between "childlessness" (1 = childless for any reason, 0 = parent of biological, step, or adopted child) and health across 20 countries and five health outcomes.

Methods: Drawing on cross-sectional harmonized data from the family of Health and Retirement Surveys across the United States (HRS, Wave 11), Europe (SHARE, Waves 4 and 5), Mexico (MHAS, Wave 3), and China (CHARLS, Wave 2), we use logistic regression models to estimate the association between childlessness and poor health (poor self-rated health, 1 or more ADL limitations, 1 or more IADL limitations, 1 or more chronic conditions, and depression) in a sample of adults aged 50 and older across 20 countries (N = 109,648).

Results: Our results point to an absence of associations between childlessness and health, and suggest that childlessness may be associated with better (e.g., Mexico, Hungary) or worse health (e.g., Austria, Estonia, Netherlands, Poland) in certain contexts and for certain measures.

Discussion: We discuss these findings in light of the meaning of childlessness, as well as cross-national economic, social, and cultural contexts to provide suggestions for aging policy and future research.

Keywords: Cross-national, Family, Global aging, Harmonized data, Well-being

Although rates of childlessness have varied over the last century by country and cohort (Dykstra, 2009) and reasons for childlessness vary by individual (e.g., infertility, death, choice, etc.) and contextual characteristics (e.g., social norms, formal support systems), the demographic trend toward fewer children continues to expand—primarily due to persistent declines in fertility and marriage rates cross-nationally (e.g., Verdery, Margolis, Zhou, Chai, & Rittirong, 2019). This demographic shift is of high interest to gerontologists, as the existence of adult children is typically perceived as a crucial source of support for older adults, and support from children is generally linked to better well-being in older ages (Merz, Schulze, & Schuengel, 2010).

Although having a child available does not guarantee support or high-quality support, children are a potential resource that is not available to older adults without children. Therefore, a majority of existing literature assumes that older adults without children have poorer well-being (Dykstra, 2009). However, children may also

be a source of strain—economic and/or social—across the life course (Umberson, Pudrovska, & Reczek, 2010). Furthermore, cultural norms about family formation and solidarity and state-based support for parents differs by country, potentially shaping the balance of support-to-strain associated with parenthood and later life well-being (Hansen, Slagsvold & Moum, 2009; Zoutewelle-Terovan & Liefbroer, 2018). Potential health risks of older adults with and without children may also vary by the type of health outcome examined (e.g., mental or physical health; Keenan & Grundy, 2019). Thus, the association between childlessness and health is complex, particularly cross-nationally, and deserves further study. Yet, to the best of our knowledge, no study currently exists that examines associations between childlessness and health in a cross-national sample with multiple countries, regions, and health outcomes.

Existing cross-national research on the relationship between childlessness and later life health contains important limitations, including: (a) reliance on data from a single region, or within-region comparisons only, primarily in Europe (Hank & Wagner, 2013; Gibney, Delaney, Codd, & Fahey, 2017); (b) comparisons of a small number of countries from different global regions (Kendig, Dykstra, van Gaalen, & Melkas, 2007); (c) use of a single or few measures of health (Grundy, van den Broek, & Keenan, 2019; Sironi, 2019); and (d) different operationalizations of childlessness (e.g., total number of children, Hank & Wagner, 2013; childless older adults compared to parents, Gibney et al., 2017; kinlessness, which combines absence of child and spouse, Verdery et al., 2019). Therefore, it is unclear from previous research if and to what extent childlessness is associated with older adults' health cross-nationally.

This study addresses these gaps by drawing on cross-sectional harmonized data for adults aged 50 years and older in 20 countries from four global regions (Europe, North America, Latin America, and Asia) to explore associations between childlessness and five health outcomes (self-rated health, ADL, IADL, chronic conditions, depression). Due to data limitations, we conceptualize and define childlessness as the absence of children for any reason (e.g., infertility, choice, deceased children), which captures older adults who lack one of the most crucial social ties. To the best of our knowledge, this study is the first attempt to document cross-national variation in the association between childlessness and health using a large and diverse sample of countries, multiple health indicators, and a consistent measurement of childlessness across countries.

Conceptualizing Childlessness and Health

Potential advantages and disadvantages of parenthood

The presence or absence of children in an individual's life course yields different trajectories, particularly in terms of economic and social resources, as well as options for support and health (see Dykstra & Hagestad, 2007). Among the childless, these trajectories are likely to be further differentiated depending on whether or not an individual is childless due to infertility, death of a child, or choice. For example, health disadvantages earlier in the life course, infertility, lifelong singlehood, having fewer or greater socioeconomic resources, and other factors may select individuals into childlessness and yield diverse patterns in the association between childlessness and health cross-nationally (Dykstra, 2009; Kendig et al., 2007 for more detailed reviews). Although life course experiences of childlessness cross-nationally are beyond the scope of this study and our data sources, all older adults without children across the globe share a common experience of lacking one of the most salient social ties in later life.

According to the literature, availability, quantity, and quality of parent–child relationships may contribute to health via several mechanisms (Thoits, 2011). Childlessness is often hypothesized to be associated with risk of poor health in later life due to lower social support, weakened sense of meaning, and greater isolation (Hansen, 2012). Children can also be a form of social control that promotes healthy behaviors (lower alcohol consumption, physical activity) as parents develop familial responsibilities and are motivated to protect their health (Umberson, Crosnoe, & Reczek, 2010). Positive health habits can persist into later life (Kendig et al., 2007); thereby reducing risks of poor health outcomes.

On the other hand, parenthood is associated with strains in time, resources, relationships, and other conditions earlier in the life course (Nomaguchi & Milkie, 2003), which can accumulate to poor health in later life. The potential benefits of parenthood for later life health are further conditioned by the age of parenthood, number of children, and quality of parent–child relations (Keenan & Grundy, 2019; Koropeckyj-Cox, 2002). Therefore, although it is often assumed that children promote health as individuals age, being childless has potential to be both health debilitating and enhancing.

Potential Contextual Variation

Conflicting results regarding the association between childlessness and health may also reflect cross-national variation in contextual factors such as formal support options, cultural values, and demographic profiles (Albertini & Mencarini, 2014; Deindl & Brandt, 2017; Schnettler & Wöhler, 2016). For example, income inequality within countries shapes older adults' access to quality health care (Jürges, 2015; Dickman, Himmelstein, & Woolhandler, 2017), which leads to poorer health in countries with greater income inequality (Ploubidis, Dale, & Grundy, 2012). Children may also facilitate health care utilization (Aguila, Díaz, Fu, Kapteyn, & Pierson, 2011; Li & Chi, 2011), but global regions with a stronger reliance on children for support (e.g., Southern and Eastern Europe, Mexico, China) are less likely to have public support

available (Litwin, 2010; Grundy et al., 2019; Aguila et al., 2011; Guo, 2014).

Although the present study does not directly measure contextual traits, these nuances likely contribute to cross-country variation in associations between childlessness and health. Despite such variation, we were unable to locate any study that simultaneously examines childlessness and health among a wide range of countries, using mental and physical health indicators, and consistent measures of childlessness.

Empirical Cross-National Findings

Most empirical research on childlessness and health has examined mental health, such as depression, loneliness, and life satisfaction (Zhang & Liu, 2007; Zoutewelle-Terovan & Liefbroer, 2018). We focus on depression given its increasing global prevalence, higher occurrence in later life, and association with disability and overall health declines (World Health Organization, 2017). Existing studies of childlessness and depression on older European, American, Chinese, Mexican, and Latin American samples yield mixed results.

Using the Survey of Health, Ageing, and Retirement in Europe (SHARE), Hank and Wagner (2013) found that older adults with no living children had higher depression only when compared to parents with two children. Using data from the Generations and Gender Survey (GGS), Grundy and colleagues (2019) found that older adults with no children or one child were at greater risk for depression, particularly in Eastern Europe (compared to Western Europe). Among Norwegian older adults, however, childlessness was not associated with depression (Hansen et al., 2009). In the United States, studies generally demonstrate that childless older adults do not differ from older parents in the likelihood of experiencing depression net of sociodemographic, economic, and health factors (Bures, Koropeckyj-Cox, & Loree, 2009; Zhang & Hayward, 2001). Yet, some U.S. studies found that childlessness is associated with worse psychological health among women (Koropeckyj-Cox, 1998) and widowed or divorced men (Zhang & Hayward, 2001). Likewise, Kendig and colleagues (2007) observed marital status and gender differences in later life depression among formerly married childless older adults (men in Finland and women in Australia). In China, Guo (2014) found that childless older adults are not more vulnerable to depression, yet other studies find that older childless Chinese experience higher depression even after controlling for individual-level factors (Chou & Chi, 2004; Djundeva, Emery, & Dykstra, 2017), particularly in rural areas (Djundeva et al., 2017). Finally, Feng (2017) found that older Chinese who are voluntarily or involuntarily without children report less depression compared to parents or parents who lost all children to death. Quashie and Andrade (2020) found that childless older adults in Mexico City do not differ from parents in depression likelihood. Finally, to the best of our knowledge, only one study has examined childlessness using the Mexican Health and Aging Study (MHAS) and found that those aged 50–74 with zero to two children report fewer depressive symptoms compared to those with five or more children (Díaz-Venegas et al. 2017).

Beyond mental health, studies of childlessness and physical or self-rated health are less common. Kendig and colleagues (2007) found that childlessness was associated with more limited physical activity among a subgroup of formerly married men in Australia, Finland, and the Netherlands. Sironi (2019) found older childless European men were more likely than fathers to report chronic diseases, and Keenan and Grundy (2019) found that older men without children or who have four or more children are at higher risk for metabolic diseases. Finally, Mexican older adults with zero to two children report fewer chronic conditions compared to those with five or more children (Díaz-Venegas et al., 2017), and older Chinese without children (voluntary or involuntary) were less likely to report difficulty with instrumental activities of daily living (IADLs; Feng, 2017). Although there is partial evidence of a pattern of poorer health among childless older adults in some contexts, variation in measurement, and contexts across countries makes it difficult to compare findings. More research is needed that incorporates harmonized measures of childlessness and health outcomes across multiple global regions and countries.

Research Questions

Therefore, this study explores the following research questions:

(1) What is the association between childlessness and health in a cross-national sample of 20 countries, using multiple health indicators (self-rated health, ADL, IADL, chronic conditions, and depression)?
(2) Do associations between childlessness and health vary by country and health outcome?
(3) If so, what patterns, if any, emerge regarding childlessness and health cross-nationally?

Due to the complexity of factors that lead to childlessness, the potential positive and negative associations between childlessness and health, and possible cross-national variation, we adopt an exploratory approach to identify patterns that can inform more specific and nuanced hypotheses in future studies. We focus on the dichotomy of childlessness, rather than number of children, to conceptually and analytically map potential variation in health risk, or lack thereof, among older adults without living children. We expect to find variation in the direction and magnitude of the association between childlessness and health cross-nationally, as well as variation across countries regarding the type of health outcome examined.

Method

Data

We use data from several surveys belonging to the Health and Retirement Study (HRS) family of surveys. The HRS is a nationally representative longitudinal survey of individuals age 50+ in the United States, administered every 2 years since 1992. It includes detailed information on health, sociodemographic, and economic characteristics and has spawned other international aging surveys that share objectives with a mutual desire to harmonize content (Sonnega et al., 2014) for cross-national comparisons (Brønnum-Hansen, 2014).

To analyze these harmonized data sources, we use the Gateway to Global Aging Data, a platform designed to facilitate use of these data through metadata (e.g., questionnaires), item comparability and availability, and software syntax (see Lee, 2015). We combine cross-sectional data for comparable years from the HRS (Wave 11, 2012–2013), MHAS (Wave 3, 2012), China Health & Retirement Longitudinal Study (CHARLS, Wave 2, 2013), and Survey of Health, Ageing & Retirement in Europe (SHARE, Wave 5, 2013; data for Hungary and Poland are from Wave 4, 2011–2012). All of these surveys are nationally representative and use stratified probabilistic samples, but vary in stratification methods, respondent selection, and interview method (Lee, 2015). For more detailed information on each of these surveys, please refer to the Gateway to Global Aging Data platform website (http://gateway.usc.edu).

To be consistent across surveys, we restrict analysis to age 50 and older (n = 118,700). After omitting cases with missing data on health outcomes and number of children (n = 9,052, or 7.6%), our analytic sample included 109,648 older adults from 20 countries (Austria, Belgium, China, Czechia, Denmark, Estonia, France, Germany, Hungary, Italy, Luxembourg, Mexico, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, United States).

Measures

Table 1 presents an overview of all variables in our analyses. We analyze five health indicators: poor self-rated health, ADL difficulties, IADL difficulties, chronic conditions, and feelings of depression (this single item indicator is the only harmonized depression measure available across all 20 countries). All outcomes are dichotomous with 1 indicating worse health conditions. Our independent variable is a dummy variable indicating childlessness compared to having at least one living child (1 = childless, 0 = parent). The harmonized data set does not distinguish between biological, step, or adopted children, and does not specify the pathway to "childlessness" (e.g., infertility, death, voluntarily, etc.). Despite these limitations, our measure still captures older adults' access to one of the most crucial forms of social ties in later life—a child. We also include covariates often associated with health and childlessness, including: age, gender, marital status, number of living siblings, location of residence, education, employment status, household income (Table 1).

Analysis

Descriptive statistics of key variables by country are displayed in Figure 1. We then conduct multivariate logistic regression analysis by country to compare associations between childlessness and poor health across five health outcomes (Table 2). Model 1 (M1) controls for gender and age, Model 2 (M2) introduces family support variables (marital status, having living siblings), and Model 3 (M3) adds controls for socioeconomic status (place of living, employment status, education, income quartiles).

Due to unobserved heterogeneity, coefficients, and odds-ratios estimated from different samples (i.e., countries) cannot be directly compared (Mood, 2010). To address this limitation, we report average marginal effects (AMEs), which are less subject to the influence of unobserved heterogeneity. AMEs of childlessness can be interpreted as the difference in percentage points (abbreviated hereon as "pp") between childless older adults and older parents in the probability of each health problem (e.g., an AME of 0.1 for depression means that childless older adults are 10 pp more likely than parents to report depression). Because we examine three models across five health outcomes and 20 countries, we have a total of 300 AMEs (i.e., 3 × 5 × 20) to report from our analysis. To condense and organize our results, Table 2 displays only AMEs of interest (i.e., for the childless dummy) and Figure 2 provides a visual summary of the results across countries with a focus on the mostly unadjusted model (M1) and fully adjusted model (M3). In Table 2 and Figure 2, countries are arranged in a gradient from left to right that represents positive (poor health) to negative (better health) associations by count of how many health outcomes in the fully adjusted model yield significant AMEs for each country. Countries with no significant AMEs are displayed in the middle of the chart, with Italy being a slight exception. In the text, we describe results from M1 and summarize changes in results as controls are added to the models (M2, M3).

Finally, because average number of children differs by country and cohort and associations between childlessness and health may be impacted by number of children, we perform a robustness check that replicates all analyses by weighting each observation by the distribution of children in each country-cohort (Supplementary Materials). Weighted and unweighted results are similar in magnitude and significance; therefore, we present unweighted results and conclude that the results are not heavily driven by distribution of number of children.

Table 1. Measurement Details for All Variables

Variable	Description (survey question)	Measurement	Categories (reference category in bold)
Self-rated health	Respondents' self-reported health, scale excellent to poor	Dichotomous	**Good (excellent, very good, good), Poor** (poor and fair) (missing (1.9%), omitted)[a]
Activities of daily living (ADL)	Wallace Scale, 0–3. Derived variable counting number of at least some difficulties in bathing, dressing or eating	Dichotomous	**No ADL limitations,** at least 1 (missing (1.4%), omitted)
Instrumental activities of daily living (IADL)	Constructed using difficulty with managing money, taking medications, shopping, preparing meals	Dichotomous	**No IADL limitations,** at least 1 (missing (9%), omitted)
Chronic conditions	Constructed using ever diagnosed with high blood pressure, diabetes, cancer, stroke, lung disease, and heart disease	Dichotomous	**No conditions,** at least 1 condition (missing (1.3%), omitted)
Depression	Single item measure: felt depressed in the week prior to the interview	Dichotomous	**Not depressed,** depressed (missing (4.6%), omitted)
Childlessness	Number of living children	Dichotomous	**At least 1 living child,** childless (missing (0.2%), omitted)
Age	Respondents' age	Continuous	Years
Gender	Respondents' sex	Dichotomous	**Men**, women
Marital status	Current marital status	Categorical	**Partnered**, widowed, separated/divorced/never married, missing (0.8%)
Living siblings	Number of living siblings	Dichotomous	**At least 1**, no siblings, missing (1.04%)
Location of residence[b]	Respondent's living region	Categorical	**Urban**, rural, missing (2.6%)
Education	Harmonized education levels	Categorical	**Less than lower secondary,** upper secondary & vocational, tertiary, missing (0.4%)
Employment status	Currently working	Categorical	**Not working**, working, missing (0.7%)
Household income quartile	Total household income, adjusted for household size	Categorical	**Q1**, Q2, Q3, Q4, missing income (3.5%)
Living arrangements[c]	Number of people in household	Dichotomous	**With others**, Alone

Notes: [a]These percentages represent the total missing for the respective variable but there are country differences in the percentage of missing cases. Missing categories were included for the control variables to avoid losing cases and variability in the sample size for each outcome variable. Our initial sample included 118,700 older adults. We omitted missing cases on the outcome variables and the number of living children. This accounted for a total of 9,052 cases representing 7.6% of the sample, producing our analytic sample of 109,648 older adults. Missing values for control variables were considered in a specific category.
[b]In the case of Mexico, respondents' urban–rural residence was determined by merging the MHAS Wave 3 data with the 2015 Master file to determine the household's location of residence. Following the methods of Salinas and colleagues (2010) urban areas combines locations with population size 15,000 to 99,999 (semi-urban) and 100,000 and more (urban). Rural households combine locations with population size of 2,500 to 14,999 (semi-rural) and those <2,500(rural).
[c]This variable was added as an additional control in a robustness check.

Results

Descriptive

Figure 1 illustrates distributions of childlessness and health across 20 countries. In the pooled sample, 7.7% are childless, but percentages vary cross-nationally from lowest in China (2.0%), Mexico (4.1%), Czechia (4.2%), and Poland (4.8%) to highest in Switzerland (16.3%) and other parts of Europe (12% in Luxembourg, Italy, Belgium, Germany, Austria). Overall, 44.4% reported poor self-rated health and this measure has the greatest cross-national variation (e.g., from 17% in Switzerland to 75.2% in China). Average prevalence of ADL limitations is 10.5% and ranges from 5.4% in Switzerland to 15% in Poland and Portugal. Prevalence of IADL limitations is 10.8% on average, ranging from 3.8% in Switzerland to 17.9% in China. Chronic conditions are the most prevalent form of poor health with the least amount of cross-national variation. About 72.4% report at least one chronic condition, ranging from 63% in Switzerland and the Netherlands to about 80% in Czechia, Poland, and the United States. Finally, about 39.2% report feelings of depression, from a low in the United States (13.8%) to a high in Poland (51.3%) and Portugal (50.1%).

Multivariate

Unadjusted associations between childlessness and health (M1 Models)

We begin by examining the association between childlessness and health from models that only adjust for age and gender (M1, Table 2) for each health outcome separately.

IADL limitations

The highest frequency of statistically significant AMEs is found in the association between childlessness and IADL limitations (11 countries). Childless older adults are more

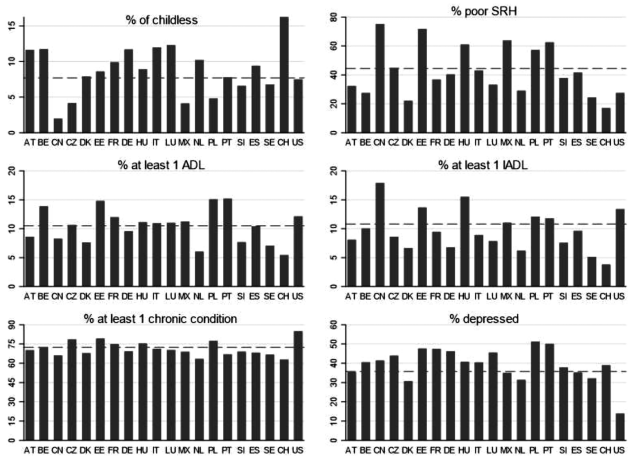

Figure 1. Percentage distributions of childlessness and health outcomes by country. Note: Dashed lines represent the average % on the pooled sample of all countries of each variable. Country code correspond to ISO 3166-2 country codes: AT (Austria), BE (Belgium), CN (China), CZ (Czechia), DK (Denmark), EE (Estonia), FR (France), DE (Germany), HU (Hungary), IT (Italy), LU (Luxembourg), MX (Mexico), NL (Netherlands), PL (Poland), PT (Portugal), SI (Slovenia), ES (Spain), SE (Sweden), CH (Switzerland), and US (United States of America).

likely to report IADLs in 10 countries (Austria, Belgium, Czechia, Denmark, Estonia, Germany, Luxembourg, Netherlands, Spain, and Sweden) and less likely to report IADL limitations in Mexico only. The highest magnitude is found for the Netherlands (5 pp).

Self-rated health

The association between childlessness and self-rated health is statistically significant in only 5 of the 20 countries. For France, Netherlands, and Switzerland the association is positive, indicating that childlessness is associated with a higher probability of reporting poor self-rated health. However, AMEs tend to be small. The highest value is found for the Netherlands where childless individuals are six pp more likely than parents to self-report poor health status. In two countries (Mexico and Hungary) the association is negative, and the magnitude of the AMEs tends to be higher. For example, Hungarian childless older adults are 13 pp less likely than parents to report poor health.

ADL limitations

Childlessness is associated with ADL limitations in eight countries. For five of these cases (Belgium, Czechia, Denmark, the Netherlands, and US), childless individuals are more likely to report ADLs. Yet in three countries (Hungary, Mexico, and Portugal), childless individuals are less likely to report ADLs. AMEs tend to be small (ranging from 3 to 6 pp).

Depression

Childlessness was statistically significantly associated with depression in six countries, predicting a higher likelihood of depression in four countries (Czechia, the Netherlands, Spain, and Sweden) and a lower likelihood in two countries (Hungary and Mexico). The strongest AMEs were found in Hungary (−8 pp) and Czechia (+11 pp).

Chronic conditions

Chronic conditions are the only health outcome among the five that showed consistently significant negative associations with childlessness, but this pattern was found in only five countries (Germany, Hungary, Mexico, Italy, and United States). The strongest (negative) effects were found for Mexico (7 pp), Italy (8 pp), and Hungary (14 pp).

To summarize, first, among the total of 100 AMEs analyzed (M1; 20 countries × 5 outcomes), a minority ($N = 35$) were statistically significant and even fewer ($N = 15$) were larger than 5 pp. Second, when associations are statistically and substantially significant, they are inconsistent in terms of direction, health outcomes, and countries. For example, Mexico is the only country with a consistent association between childlessness and all five health outcomes, wherein childless individuals report better health across all outcomes examined. Hungary follows a similar pattern, except there is no association with IADL limitations. Of all the health outcomes examined, higher prevalence of chronic conditions is the only outcome that is consistently associated with childlessness, yet most associations are null.

Changes in associations after adjustment for covariates (Models M2 and M3)

Next, we compare results from M1 with those from M2 and M3 that add controls for family support and socioeconomic conditions, respectively (Table 2).

First, adding covariates to the models does not alter the direction (i.e., positive, negative) of any previously statistically significant effect. Second, 19 of the previously statistically significant associations between childlessness and worse health are no longer significant after adjustments and most losses of significance occurred for IADL and ADL limitations. In three cases, statistically significant associations between childlessness and health emerge where they did not previously exist in M1 (e.g., childlessness and higher risk of poor self-rated health in Italy and Poland, and lower risk of depression in Belgium). Finally, in seven cases we find (weak) associations between childlessness and health only in M2.

Overall, the most prevalent changes observed after adding controls are from childlessness being associated with poorer health to no association, potentially signaling selection of childless people into conditions that are associated with poorer health. In other words, the initial health disadvantages observed among those without children may be due to other confounding factors, especially in the Netherlands.

Summary of key findings

Out of 300 regressions (3 models, 5 health outcomes, 20 countries; Table 2), childlessness was associated with health

Table 2. Multivariate Logistic Regression Results of Marginal Effects of Childlessness on Health

	Czechia	Poland	Austria	Netherlands	China	Denmark	Estonia	France	Luxemb.	Italy
IADLs										
M1	0.04***	0.03	0.04***	0.05***	0.03	0.03**	0.02*	0.02	0.03*	0.02
	(0.01)	(0.03)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
M2	0.04**	0.03	0.03***	0.04***	0.03	0.01	0.03*	0.01	0.02	−0.00
	(0.02)	(0.04)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
M3	0.03**	0.03	0.04***	0.03***	0.02	0.01	0.02	0.01	0.03	−0.00
	(0.02)	(0.04)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
SR health										
M1	0.05	0.08	0.01	0.06***	0.01	0.02	0.02	0.05**	0.03	0.03
	(0.03)	(0.05)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
M2	0.05	0.10*	−0.01	0.03	−0.01	−0.01	0.03	0.03	0.02	0.03
	(0.03)	(0.06)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
M3	0.04	0.12**	0.00	0.03	−0.02	−0.02	0.01	0.03	0.02	0.04*
	(0.03)	(0.06)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
ADLs										
M1	0.03*	0.01	0.01	0.03**	0.02	0.03**	0.00	0.01	0.02	−0.01
	(0.02)	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
M2	0.03*	0.03	0.00	0.01	0.01	0.01	0.01	−0.00	0.02	−0.01
	(0.02)	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
M3	0.03	0.03	0.01	0.01	0.01	0.01	0.00	−0.01	0.02	−0.01
	(0.02)	(0.04)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Depression										
M1	0.11***	−0.02	−0.00	0.06***	−0.02	−0.03	0.03	−0.02	0.02	−0.00
	(0.03)	(0.06)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.04)	(0.02)
M2	0.09***	−0.07	−0.03	0.02	−0.06*	−0.05*	0.01	−0.02	0.01	−0.03
	(0.03)	(0.06)	(0.02)	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
M3	0.09**	−0.07	−0.03	0.02	−0.05	−0.05	0.01	−0.02	0.00	−0.03
	(0.03)	(0.06)	(0.02)	(0.02)	(0.04)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
Chronic conditions										
M1	0.03	0.06	0.01	0.01	0.02	0.02	−0.00	−0.03	−0.04	−0.08***
	(0.03)	(0.05)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
M2	0.03	0.08	0.00	0.02	0.03	−0.01	0.01	−0.02	−0.05	−0.08***
	(0.03)	(0.05)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
M3	0.03	0.08	0.00	0.01	0.02	−0.01	−0.00	−0.03	−0.05	−0.07***
	(0.03)	(0.05)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
N	5,435	1,685	4,047	4,086	12,291	4,010	5,488	4,379	1,565	4,571

Notes: M1 controls for age and gender. M2 adds controls for marital status, availability of siblings. M3 adds controls for rural/urban location, education, and income quartile. All outcomes are dichotomous with 1 indicating poor health and 0 good health. ADLs = activities of daily living; IADLs = instrumental activities of daily living; SR = self-reported.

*$p < .1$; **$p < .05$; ***$p < .01$.

in only 26% (N = 79) of cases and only 13% of cases (N = 38) produced AMEs of at least 5 pp. This suggests that childlessness is not consistently associated with health disadvantage or advantage in our sample of 20 countries, yet exceptions exist.

Figure 2 offers a visual summary of findings from M1 and M3. After adjusting for all covariates (M3), childlessness is associated with worse health for one or more health outcome in four countries (Czechia, Poland, Austria, and the Netherlands) and better health in five countries (Mexico, Hungary, United States, Germany, and Belgium). In one country (Italy), we find both positive and negative associations between childlessness and health. For the remaining 10 countries, we find no association between childlessness and health. Mexico and Hungary emerge as countries with a clear health advantage for childless older adults across all measures (with the exception of IADL for Hungary). When childlessness is associated with poorer health, it is typically limited to one health outcome.

Across outcomes, childlessness has the most consistent association with higher risk of IADL limitation, except for Mexico (lower risk of IADL), and self-rated health displays the most conflicting results. Childlessness is associated with lower risk of chronic conditions and ADL limitations in all

Portugal	Slovenia	Spain	Sweden	Switzer	Belgium	Germany	USA	Hungary	Mexico
−0.02	−0.00	0.03**	0.02*	0.01	0.03***	0.02**	0.00	−0.02	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
−0.02	−0.01	0.02	0.01	0.01	0.01	0.01	−0.03**	−0.03	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
−0.02	−0.01	0.01	0.01	0.01	0.01	0.00	−0.01	−0.02	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
0.01	0.00	0.01	0.04	0.04**	0.01	0.01	−0.00	−0.13***	−0.08***
(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
0.03	0.00	0.01	0.01	0.02	−0.01	−0.01	−0.05***	−0.11***	−0.07***
(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
0.02	0.01	0.02	0.00	0.02	−0.01	−0.01	−0.01	−0.09***	−0.05**
(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
−0.06*	−0.01	0.01	0.02	0.00	0.03**	0.01	0.02**	−0.05**	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
−0.04	−0.01	0.00	0.00	0.00	0.01	−0.00	−0.00	−0.06***	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
−0.04	−0.01	−0.00	−0.00	0.00	0.01	−0.01	0.01	−0.06**	−0.03*
(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
−0.04	0.02	0.04*	0.06**	−0.03	−0.01	0.01	0.01	−0.08**	−0.06***
(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
−0.06	0.00	0.00	0.03	−0.04	−0.04**	−0.01	−0.02*	−0.08**	−0.07***
(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
−0.06	0.00	0.01	0.03	−0.04	−0.04*	−0.01	0.00	−0.07**	−0.06***
(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
−0.06	−0.03	0.02	−0.01	−0.02	0.03	−0.03*	−0.02**	−0.14***	−0.07***
(0.04)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
−0.04	−0.02	0.02	−0.01	−0.03	0.01	−0.04**	−0.03***	−0.14***	−0.05***
(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
−0.05	−0.02	0.02	−0.01	−0.03	0.01	−0.04**	−0.02**	−0.14***	-0.05**
(0.04)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)
1,910	2,873	6,310	4,481	2,942	5,475	5,535	17,174	2,946	12,398

cases where the association is significant, yet lower risk of depression in multiple countries and higher risk of depression in one country.

Discussion

To the best of our knowledge, this is the first study to explore associations between childlessness and health across a range of health outcomes and countries. Specifically, our analysis extends existing research by examining patterns of associations in 20 countries, spanning four global regions, and a range of physical and mental health measures (i.e., self-rated health, ADL, IADL, chronic conditions, and depression) using harmonized, cross-national data. Although our study is exploratory, we expected to find cross-national differences in the direction and magnitude of the association between childlessness and health due to unobserved factors such as country composition, sample selection, and socio-cultural-economic contextual differences.

No Consistent Association Between Childlessness and Health Across Countries

Our first finding is the lack of any clear pattern of association between childlessness and health, net of demographic,

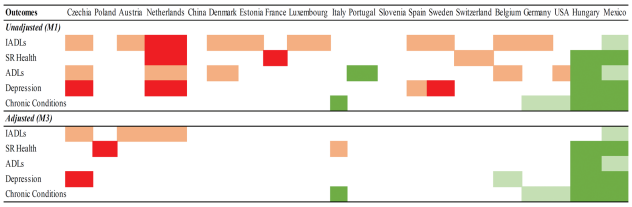

Figure 2. Visual comparison of unadjusted (M1) and adjusted (M3) associations between childlessness and health. Note: M1 (unadjusted) controls for age and gender. M3 (adjusted) adds controls for marital status, living arrangement, availability of siblings, rural/urban location, education, and income quartile. All outcomes are dichotomous with 1 indicating poor health and 0 good health. Highlighted in red are positive statistically significant marginal effects (childless older adults have worse health than parents). Highlighted in green are negative statistically significant marginal effects (childless older adults have better health than older parents). Lighter colors indicate average marginal effects smaller than 5 percentage points. See online version for color figures. Full color version is available within the online issue.

family support, and socioeconomic covariates. When significant associations with health are observed, they exist in a minority of countries and vary in terms of direction, magnitude, and by type of health outcome examined. In other words, childless older adults are not overall less healthy in this sample of 20 countries and in some cases, childless older adults are healthier.

Among the countries considered, Hungary and Mexico emerge as interesting cases—with childlessness being associated with better health on nearly every health indicator for Hungary, and all health indicators for Mexico. These patterns are unexpected given the lower levels of socioeconomic development and the normative emphasis of children for support or to fulfill socially expected life course pathways (Aguila et al., 2011; Szalma & Takacs, 2015). It is possible that parenthood contributes to economic and social strains, particularly in countries with fewer economic resources (Díaz-Venegas et al., 2017), which may be linked to poorer health in these contexts. However, we do not observe health boosts among childless older adults in most of the countries with stronger economic and institutional support for families (Hansen et al., 2009). More cross-national work is needed to explore the potential link between parenthood, strain, and health in multiple contexts.

Diversity of Findings Within Regions

Second, our cross-national findings underscore marked regional variation. Although Eastern and Southern European regions are characterized by stronger emphasis on family support (Daatland, Herlofson, & Lima, 2011), our results reveal distinct differences within these regions. Italy emerged as the only Southern European country where childless older adults were more likely to report a poor rating of their overall health but less likely to report chronic conditions, net of controls. In Eastern Europe, Hungary is the only country where childlessness was associated with better health whereas the opposite was found in Poland and Czechia. These patterns may reflect the strength of norms regarding family ties in Italy and Poland where the mere absence of children presents an overall health disadvantage, whereas in Czechia childlessness may be especially salient for mental *and* functional health. More research is needed to investigate the specific national characteristics that may contextualize the association between childlessness and health to untangle the many layers related to family decision-making, economic security, and health among aging populations.

Risk and Lack of Risk Across Health Outcomes

Third, across outcomes, self-rated health, and depression have mixed patterns of association whereas childlessness is associated with a lower risk of ADLs, and higher risk of IADLs, in a few countries. Functional decline is one dimension of health for which the absence of children is acutely experienced in later life as such limitations often involve frequent familial support (National Alliance for Caregiving and AARP, 2015). Children may be particularly crucial for instrumental help, as it can be difficult to obtain sustained instrumental assistance from nonkin informal support and paying for formal support is extremely costly (Ivanova & Dykstra, 2015).

Lower risk of chronic conditions is observed among childless older adults in Mexico, Hungary, Italy, Germany, and the United States. It is possible that because our measure reflects diagnosed chronic conditions, the presence of children promotes and/or facilitates diagnoses through transportation, social control, and so forth. On the other hand, it is also possible that childless older adults in these countries experience lower stress, more leisure or exercise opportunities, and/or more financial resources (unaccounted for in this analysis), and therefore better health.

This study is the first to investigate the association between childlessness and health across multiple countries and multiple health indicators, thereby addressing crucial gaps in previous literature including studies of a single global region, a small number of nations, one or two indicators of well-being, and various operationalizations of "childlessness." Our findings underscore the importance of examining the complexity of the childlessness–health relationship from a comparative perspective that accounts for mental and physical health. Consistent with previous research that shows older adults without children generally do not have poorer health compared to older parents across different dimensions of well-being (Hank and Wagner, 2013), we find evidence that childlessness is not universally harmful for different dimensions of health and this pattern emerges in a wider set of countries than previously examined. Observed gaps in the health of childless older adults versus older parents in prior studies may be attributable to other (often unobserved) factors, including disparities in family support and economic resources, which select certain individuals into childlessness. These selection

biases may also reflect psychosocial, economic, and social characteristics of childless individuals, which enhance their capacity to age in good health (Ivanova & Dykstra, 2015). As such, childlessness does not seem to clearly shape health in our cross-sectional, cross-national study.

Policy Implications

This study has several practical and policy-related implications. Overall, lack of associations between childlessness and health suggests that older adults without children may not generally be an "at risk" population cross-nationally and it may be important to continue to direct social policies to parents as well, particularly in certain contexts (e.g., Hungary and Mexico). Furthermore, vast variation observed across health outcomes suggests that existing and future policies aimed at supporting childless older adults should take into account the multidimensionality of health and contextual variation in health risks. It is possible that interventions should focus on mental and instrumental health in some countries (Czechia), and overall health in others (Italy and Poland). Wide variation across countries and regions suggests that adopting a policy from one country or region and applying it to another is likely an incorrect approach. Further research is needed to understand the underlying causes of the variation observed to identify best practices for health interventions by family structure. Finally, stronger state-based supports including healthcare, pensions, and long-term care can benefit individuals regardless of parental status and age, and are, therefore, an important investment in population well-being.

Limitations and Future Directions

This study includes several limitations to be addressed by future research. First, it is cross-sectional and can only speculate on causal mechanisms. Second, we do not include empirical data on macro- or country-level indicators in our analysis and, therefore, cannot suggest contextual contributors. Third, although we include 20 countries, a majority are European and/or developed economies and are also limited by the harmonized indicators available. More work is needed that incorporates data from a range of countries with additional variation in family systems, and public policy arrangements for older adults. Fourth, we cannot examine children's circumstances that may contribute to poorer health outcomes (e.g., proximity, quality of relationship; Antman, 2014; Rook, 2015). Fifth, our study includes a wide age range (50 and older) and important health differences exist between childless individuals in their 50s compared to 80s, for example. Sixth, natural attrition of the sample over time in each survey can cause deviation from the representativeness of those surveys. Seventh, we cannot account for the pathways into childlessness and personal attitudes toward childlessness (e.g., child death, voluntary, or involuntary). Reasons for childlessness likely impact health trajectories and outcomes (Dykstra, 2009; Feng, 2017; Koropeckyj-Cox, 2002), perhaps differently by country. Finally, we are unable to examine institutionalized older adults, who may be more likely to have poor health relative to community-dwelling older adults, may lack familial support (Gu, Dupre, & Liu, 2007), or alternatively, may have better health depending on the context and resources (Liu, Gu, Mair, & Chen, 2012).

Despite these limitations, our study suggests no consistent association between childlessness and poorer mental or physical health cross-nationally. This pattern raises new conceptual questions that challenge common assumptions that childlessness is linked to poorer well-being among older adults, and underscores a need to continue to contextualize social policies aimed at supporting older adults from a variety of family forms and countries.

Supplementary Material

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

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Authors' Contributions

N. T. Quashie planned the study, supervised the data analysis, and wrote the Introduction. B. Arpino performed all statistical analyses, and wrote the Methods. R. Antczak wrote the Results section, and C. A. Mair wrote the Discussion. All authors contributed to editing and revising the manuscript, and approved the final version.

Conflict of Interest

None reported.

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