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Disability Incidence Rates for Men and Women in 23 Countries: Evidence on Health Effects of Gender Inequality

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Abstract

Background: Inequality in gender varies across social contexts, which may influence the health of both men and women. Based on theories of gender as a social system, we examine whether systematic gender inequality at the macro level influences health of men and women in 23 countries.

Methods: Using harmonized panel data from the Gateway to Global Aging Data in 23 high and middle income countries (N=168,873), we estimate disability incidence over a 16 year time period for men and women (2000–2016). We first investigate gender differences in age gradients of disability onset within each country or geographic region. We then pool data from all countries and test the hypothesis that gender inequality increases the risk of disability incidence for men and women.

Results: We found substantial cross-country variation in disability incidence rates, and this variation is greater for women than for men. Among ages 65-69, disability incidence rates ranged from 0.4 to 5.0 for men and from 0.5 to 9.4 for women. Our within-country analysis showed significant gender differences in age gradients of disability incidence in the U.S., Korea, Southern Europe, Mexico, and China, but not in Northern, Central, and Eastern Europe, England and Israel. Testing hypothesized effects of gender inequality, we find that gender inequality is significantly associated with disability incidence for women, but not for men.

Conclusions: Macro-level societal gender inequality is significantly associated with risk of disability onset for women. Reducing and eliminating gender inequality is crucial to achieving good health for women.

Introduction

Gender takes a prominent place in the health disparities literature. In contrast to a person's biological status of sex, gender refers to the culturally defined roles, responsibilities, attributes, and entitlements associated with being a woman or man in a social context (1). In explaining the observed difference between men and women, recent scholarship has called for "contextualizing" gender difference in health research (2–4). This approach refers to taking a step further from the primary emphasis on individual-level differences in biological, behavioral, and social factors to expand the analysis to examine the effects of macro-level structural differences.

Building on this literature, we examine the effects of macro-level gender inequality on the health of men and women. Gender inequality is a characteristic of most societies. Although reducing gender inequality has been an important goal globally in the past two decades, many countries are lagging behind, leaving gender parity as one of the core goals of the United Nations' 2030 Agenda for Sustainable Development (5). Recognizing the critical importance of this issue, recently the *Lancet* commissioned a series of papers on gender equality and health (1, 6-8), providing a conceptual framework for the link between gender inequalities and health based on the theories of gender as a social system. Briefly, individuals born biologically male or female develop into gendered beings, and sexism and patriarchy intersect with other forms of discrimination to structure pathways, such as differential exposures, health-related behaviors, and unequal access to care, leading to poor health. The feminist sociology (1, 2) and economics literatures (9, 10) found that gender inequalities in power and resources negatively shape the health of women, and as recent health disparities literature signifies in "biological embedding," gender inequalities affect an individual on a molecular and physiological level and these burdens accumulate over a lifetime (4, 11). Further, structural inequalities undermine the social fabric and make the entire society less productive and healthy (1, 3).

Based on this conceptual framework, we hypothesize adverse effects of macro-level gender inequality on the health of both men and women. We test this hypothesized health effect of gender inequality after controlling for other macro-level factors as well as individual-level characteristics, examining whether living in a society where gender inequality is more pronounced increases the health risk, for both men and women. This work builds on the growing body of the literature on structural sexism (3, 12). It is important to note that the hypothesized adverse effect on men is consistent with modern feminist studies of masculinities (13), but contrary to the conflict theory of classical gender stratification that views higher level of gender inequality provides benefits to the men (14). According to modern feminist studies of masculinities, patriarchal social systems foster a toxic culture that harms men through multiple pathways. Hegemonic gender norms linked to gender inequality emphasize beliefs and practices (e.g., strength and invulnerability) that lead to poor health-related beliefs and behaviors, limited social roles, restrictive and unattainable expectations, and reduced social support, all negatively impacting men's psychosocial and emotional experiences (14, 15).

For the health outcome, our analysis focuses on disability incidence rates. While women outlive men in almost every society, women may suffer from more physical limitations than men of same age in later life (16). Disability incidence rates from representative samples are excellent measures of risk, whereas disability prevalence rates may not reflect population risk, but rather provide good estimates of the disability burden (17). While cross-sectional studies typically find that women are more likely to report disabilities than men, a systematic review of gender differences in disability incidence has not yielded consistent findings (18). Further, the majority of relevant studies have been conducted in the United States and other high income countries, with a recent exception by Auais and colleagues (19), who studied disability incidence in Canada, Albania, Colombia, and Brazil (N=1,506). Building on this literature, we examine incidences of disability over a sixteen-year period, drawing on nationally representative samples of older adults in 23 high and middle income countries (N=168,873).

We investigate gender differences in disability incidence in each country using panel data, and estimate the effects of gender inequality, while controlling for other potential influencing factors. Specifically, we control for macro-level economic development and public health insurance coverage as well as individual-level education and work history. Economic development is closely related to gender inequality. Gender inequality is often higher in poorer populations, both within and across countries (20). Such close association between economic development and gender inequality calls for an estimation strategy that controls for economic development in order to tease out the independent effect of gender inequality, which was lacking in prior cross-country analyses. For example, a cross-sectional study by Mechakra-Tahiri and colleagues (21) reports larger gender gaps in disability in regions with higher gender inequality. This is one of the first studies showing evidence of the relationship between gender inequality and the gender gap in disability, but whether this association would be held up after controlling for economic development calls for further study. In the U.S., Homan (3) recently estimated health effects of state-level gender inequality while controlling for state-level poverty and individual-level risk factors and reported its harmful effects on both men's and women's morbidity, self-reports of health, and physical functioning. This is a significant improvement over Kawachi and colleagues (22)'s work, which examined the bivariate association between state-level variations in gender inequality with mortality and functional health in the United

States. Expanding this growing literature, we investigate whether cross-country differences in gender inequality contribute to disparities in disability incidence between men and women across countries.

Methods

Data

We use the harmonized data files developed by the Gateway to Global Aging Data (g2aging.org), an NIH-funded data and information portal. These harmonized data files are designed for cross-country analysis using the international family of Health and Retirement Studies. The first of these studies was the Health and Retirement Study (HRS), which started in 1992 as a nationally-representative panel study of people over the age of 50 living in the United States and their spouses. The HRS has been conducted biennially since its start and has added additional cohorts every six years.

Since 2001, a growing number of sister studies have been started around the world, which are purposefully designed to be comparable to the HRS. These sister studies include the Mexican Health and Aging Study (MHAS), the English Longitudinal Study of Ageing (ELSA), the Survey of Health, Ageing and Retirement in Europe (SHARE), the Korean Longitudinal Study of Aging (KLoSA), and the China Health and Retirement Longitudinal Study (CHARLS). The HRS family studies are coordinated with the explicit goal of facilitating cross-country comparisons. Like the HRS, most or all of these studies have (1) biennial interviews with respondents and their spouses; (2) a multidisciplinary questionnaire design that elicits a wealth of information about health, demographics, and other topics; and (3) regular refreshment samples to keep the sample representative of the older population. The details about each survey, their biennial interview sample size, sample characteristics, and numbers of observations are summarized in Table 1.

There are some notable exceptions to the interview frequency, respondent age, and spouse inclusion for these studies. While the majority of studies conduct interviews biennially, MHAS respondents experienced a nine-year survey interval between 2003 and 2012 and SHARE respondents experienced a four-year survey interval between 2007 and 2011. While HRS, MHAS, ELSA, and SHARE interview respondents age 50 and older, KLoSA and CHARLS interview respondents age 45 and older. The exception to the inclusion of spouses regardless of age is KLoSA, which interviews only age-eligible spouses. It is also important to note that the number of countries included in SHARE varies across survey waves (subject to funding of individual countries). We included all SHARE countries that conducted at least one set of two consecutive biennial interviews in our analysis. As a result, from SHARE we included Austria, Belgium, Croatia, Czechia, Denmark, Estonia, France, Germany, Greece, Israel, Italy, Luxembourg, Netherlands, Poland, Slovenia, Spain, Sweden, and Switzerland.

Despite the high degree of coordination, there are numerous small differences between the studies ranging from question text and response categories to blocks of questions about country-specific health care systems or pension systems. The Gateway to Global Aging Data has developed harmonized versions of these data sources, which use consistent variable names and definitions, in user-friendly longitudinal files. These are the files we use in this study. The analysis data are from the RAND HRS Longitudinal File 2016 Version 1 (23) and Harmonized HRS Version B (USA) (24), Harmonized MHAS Version B beta (Mexico) (25), Harmonized ELSA Version F (England) (26), Harmonized SHARE Version E (Continental Europe and

Israel) (27), Harmonized KLoSA Version C (South Korea) (28), and Harmonized CHARLS Version C (China) (29).

We use data from the waves conducted in the 2000–2016 period. All surveys ask respondents whether they have difficulty with (or that they cannot or do not do) any of the following basic activities of daily living (ADL): bathing, dressing, feeding, toileting, and getting in or out of bed. Disability is a binary variable, indicating any difficulty in at least one of these five ADLs. For the purpose of estimating incidence rates, we define *developing a disability* at the individual level as reporting a difficulty with any of these ADLs in the current wave while reporting not having a difficulty with any of these ADLs in the previous wave, and not developing a disability as reporting no difficulties in both waves. If the respondent already reported an ADL difficulty in the previous wave, or was not interviewed in the previous wave, developing a disability is missing. More information about how this ADL summary operates in this sample of countries can be found in Lee et al. (30).

We also use survey data on the following two individual characteristics: educational attainment and lifetime working status. Educational attainment is categorized into three levels, less than upper secondary education, upper secondary & vocational training, and tertiary education, based on the 1997 International Standard Classification of Education (ISCED) codes (31). Individual lifetime working status is derived using survey questions which ask respondents whether they have ever worked, though there is study variation as to whether this work was for pay and the duration of work which counts as ever having worked.

As an indicator of gender inequality, we use the United Nations Development Programme (UNDP)'s Gender Inequality Index (GII) (32). In 2010, UNDP introduced the GII and calculated it for 137 countries (33). GII is a composite measure that quantifies the inequalities women face in reproductive health, empowerment, and the labor market (34). The GII ranges from 0 to 1; higher GII values indicate greater gender inequality. Appendix Table 1 shows the country-level GII together with each component for the countries we have micro data on. The ranges of GII for the countries we study in this are 0.05 in Sweden to 0.40 in Mexico.

We account for two macroeconomic characteristics of countries, the level of economic development and public health insurance coverage, in our analysis of health effects of gender inequality. For the level of economic development, we use the log of purchasing power parity (PPP) adjusted Gross National Income (GNI) per capita, as provided by the World Bank (35). For public health insurance coverage, we use public health care coverage from the Organization for Economic Cooperation and Development (OECD) (36), which refers to the share of the population that is eligible for health care goods and services under public programs.

Statistical Analysis

All analyses were done using Stata Version 15 (37). Unless otherwise stated, all our analyses use the sampling weights provided by the surveys to ensure representativeness for the sampled population in each wave in each country. We first estimated disability incidence rates for each country by gender and compared the cross-country variations in disability incidence rates with the variations in death rates drawn from the Human Mortality Database (38). Specifically, the year we focus on is 2014, and the incidence rate is the fraction developing a disability, as defined above, that is, among those who did not have any disabilities in the previous wave. We estimated two-year incidence rates and converted these to annual incidence rates by dividing by two for comparability with annual death rates.

Second, we estimated incidence rates of disability at each age by pooling data from multiple waves. The years we focus on are 2000-2016. Because of smaller sample sizes in the SHARE countries, we pooled data from multiple waves and combined the European countries in four groups for most of these analyses: Northern (Denmark, Sweden), Central (Austria, Belgium, France, Germany, Luxembourg, Netherlands, Switzerland), Southern (Croatia, Greece, Italy, Spain), and Eastern (Czechia, Estonia, Poland, Slovenia). We scaled the weights such that they added up to the sample size by country-wave before we pooled the data. Standard errors accounted for clustering at the individual level when data from multiple waves were combined.

We then examined gender differences in the age gradients of disability incidence, as the risk for developing a disability when one gets older might vary by gender. Specifically, we estimated incidence rates for both men and women separately for five-year age groups. We computed the difference between male and female rates by subtracting men's incidence from women's incidence, so that a zero value would indicate there is no gender difference in incidence rates and positive values indicate women have higher incidence rates than men. We also tested for gender differences within each country group using a standard Wald test for the joint significance of the coefficients of the female dummy and its interaction with age.

Finally, we conducted a cross-country analysis of disability incidence, investigating the effects of economic development and gender inequality on disability incidence by pooling data from all 23 countries. We hypothesized that economic development is inversely associated with the age-specific disability incidence rate for both men and women, and that gender inequality is positively associated with the age-specific disability incidence rate for both men and women. We estimated the probability of developing a disability using a logistic regression model with five-year age group dummies and (10-year) birth cohort dummies, using four different specifications.

In the first model we estimated the effect of being female, in the second model we added the GII value and the interaction between GII value and being female, and in the third model we added controls for GNI and public health insurance coverage. To distinguish between the effects of individual schooling and labor force participation and the effects of gender inequality in society as a whole, partly reflected in the gender disparities in these same variables, we then estimated additional models that included individual-level educational attainment and a dummy for ever having worked as controls.

Results

Disability Incidence: Cross-Country Variation and Comparisons with Death Rates

We first compare cross-country variation in disability incidence rates with the variation in death rates drawn from the Human Mortality Database for 2014 (38). Table 2 shows disability incidence rates and death rates in 23 countries for ages 65–69; disability incidence and death rates for all other age groups can be found in Appendix Table 2. Across all age groups, cross-country variation in disability incidence rates is much larger than the variation in death rates for both men and women, both relatively (ratio of the highest and the lowest disability/death rates) and in absolute terms (range of the lowest to highest disability/death rates). In relative terms, the cross-country variation in disability incidence rates is greater among relatively younger age groups than older age groups. For example, cross-country variation in disability incidence rates is about six times the variation in death rates for ages 65-69 and about twice for ages 80-84. In absolute terms, the difference between cross-country variation in disability incidence rates and the variation in death rates is about 3 percentage points for men and 8 percentage points for women for ages 65-69.

It is noteworthy that the cross-country variation in disability incidence rates is larger for women than for men. For example, among ages 65 to 69, the disability incidence rate for men ranges from 0.4% in Greece to 5.0% in China, while it ranges from 0.5% in Korea to 9.4% in China for women. As age advances, the cross-country variation in disability rates decreases in relative terms but increases in absolute terms. Among ages 80 to 84, the lowest disability incidence rate is 2.7% for men in Greece and 2.9% for women in Sweden, and China has the highest disability incidence rate for both men (10.4%) and women (16.7%).

Age Gradients of Disability Incidence by Country (Group): Within-Country Analysis

We now investigate cross-country variation in age gradients of disability incidence by pooling all available data from 2000 to 2016. As noted earlier, we combined the European countries in four groups due to the smaller sample sizes in SHARE countries. Figure 1 shows the age gradients of disability incidence in the U.S., England, Korea, Mexico, China, and the four groups of European countries. Compared to the all country average, China has much higher levels of disability incidence rates across the age span we studied, whereas the disability incidence rates in Korea are lower across the age span. For Northern Europe, the disability incidence rates are noticeably lower after age 70 compared to the all country average. The 95% confidence intervals for Mexico are relatively large due to smaller number of consecutive waves that allow to measure two-year disability incidence.

We further examined gender differences in age-specific disability incidence. We find no statistically significant gender difference in the age gradients of disability incidence in Northern, Central, Eastern Europe, England, and Israel, whereas we find statistically significant gender differences in the age gradients of disability incidence in the U.S., Korea, Southern Europe, Mexico, and China (Appendix Table 3 presents the test statistics for these differences).

Among the countries where significant gender differences exist, we observe further variation in the age of onset. As shown in Figure 2, gender differences in disability incidence occur at different ages. For example, in the U.S. and Southern Europe, we find gender differences at relatively older ages, while gender differences in disability incidence are observed at younger ages in developing countries like China and Mexico.

Effects of Gender Inequality: Cross-Country Analysis

The results of the logistic regressions are presented in Table 3. In addition to the common controls (age dummies and birth cohort dummies), Model 1 only includes a female dummy. This shows a highly significant gender discrepancy in disability incidence, with women more likely to develop a disability than men (conditional on age and birth cohort). Model 2 adds the GII and its interaction with the female dummy. Compared to Model 1, the main effect of gender disappears and instead, both GII and its interaction with gender are statistically significant. The former implies that in countries with very little gender inequality, women and men are about equally likely to develop a disability. The main effect of GII reflects the effect of gender inequality at the country level on *men's* likelihood of developing a disability. It shows that men in countries with higher gender inequality are more likely to develop a disability than men in more equal countries. The interaction of GII with the female dummy indicates to what extent this effect is stronger for women than for men. It is indeed substantially stronger for women, so women in unequal countries are more likely to develop a disability than men in unequal countries, and than women in more equal countries.

As discussed above, GII tends to be correlated with economic development, and thus we want to assess whether the effects found in Model 2 are due to gender inequality or whether they can be attributed to economic development in different countries. Model 3 addresses this issue by adding per capita income in the country as a measure of economic development. Moreover, another potential confounder related to gender inequality and economic development is the amount of coverage of the public or social health system, which is also likely to affect disability onset. Therefore, we have also added the population share that is covered by public or social health insurance as a control variable. The table shows that economic development and health insurance coverage are indeed highly significantly related to disability onset, in the hypothesized directions. The main effect of GII drops considerably and is not statistically significant anymore, confirming the importance of distinguishing between gender inequality and economic development. Interestingly, however, the same does not hold for the interaction between GII and the female dummy. The coefficient even slightly increases in magnitude. Hence, we do not have evidence that gender inequality hurts men, but strong evidence that it is associated with higher rates of disability development among women.

As discussed above, country-level education levels and labor force participation, which are important components of the GII, are correlated with individual-level education and labor force history, so one may be worried that the GII coefficient reflects the effects of the individual-level characteristics instead of the effect of gender inequality. To address this, Model 4 adds individual level education (two dummies for a three-category education variable) and work history (a dummy for having ever worked) to the equation. This shows that higher individual-level education is indeed strongly significantly associated with lower disability incidence. Somewhat surprisingly, the coefficient of the work dummy is small and not significant. Most importantly for the purpose of this paper, the coefficient of the interaction between GII and the female dummy further increases a bit in magnitude compared to Model 3 and remains highly statistically significant. This result indicates that the results from Models 2 and 3 were not due to a spurious effect of individual education and labor force history.

Discussion

In this study, we used harmonized data from the Gateway to Global Aging Data to analyze disability incidence from 23 countries across different levels of economic development and gender inequality. We found substantial cross-country variation in disability incidence rates, which was larger than the variation in death rates in all age groups from age 55 to 89, and much larger cross-country variations in age-specific disability rates for women than for men. Our within-country analysis showed significant gender differences in age gradients of disability incidence in the U.S., Korea, Southern Europe, Mexico, and China, but not in Northern, Central, and Eastern Europe, England and Israel. Furthermore, our cross-country analysis indicated that the gender difference in disability incidence was significantly associated with gender inequality, independent of stage of economic development across these countries or individual socioeconomic characteristics.

The gender gap in disability has been reported in many developed countries. For example, Serrano-Alarcón and Perelman (39) found that women 65-79 years old in Spain, Portugal, and Italy were 3.3% more likely than men to have severe function limitations; increasing the age bracket to those age 80 or older increased this likelihood to 15.5%. A recent study spanning 16 European countries found that gender disparities in activity limitations that disfavored women were larger in southern Europe and generally increased with age; however, these trends were not universally present in every country studied (40). Moreover, a systemic review of 21 longitudinal studies conducted mostly in high income countries failed to show a consistent gender difference in the incidence of functional disability (18). Our study adds to the literature by demonstrating cross-country variations in gender difference of disability incidence. Significant gender difference was present in the U.S., Korea, Southern Europe, Mexico, and China, but not in many other European countries.

Previous research has attempted to explore the potential underlying reasons for gender differences in health. Studies focusing more on biological mechanisms have indicated that gender differences in body composition and comorbid medical conditions, such as cardiovascular diseases, arthritis, osteoporosis, and cognitive decline, may contribute but do not fully explain this gender gap (41). Others noted how gender inequalities in power, access to social and economic resources, and unequal division of domestic responsibilities may have led to worse health among women (1-2). Pooling harmonized longitudinal data from the 23 countries at different stages of economic development, we demonstrated evidence that the societal level of gender inequality matters for women's (but not men's) risk of developing disability. The association between gender inequality and women's disability incidence remained significant after controlling for macrosocial variables of economic development and public health care coverage, and individual-level educational attainment and work history. This result extends findings from the U.S. by Homan (3) Mechakra-Tahiri and colleagues (21), which reported a greater gender gap in disability prevalence in regions with greater gender inequality. It also supports structural sexism literature (3-4), which shows that gender inequalities in health outcomes may be explained by inequalities between men and women in not only important socioeconomic determinants of health at individual level but also macrosocial determinants of health, such as political power, the welfare state, social protection policies, and economic and labor market policies.

The wide cross-country variation in age-specific disability incidence rates and the significant association between gender inequality and increased women's risk of developing disability call for attention from both academics and policy makers. Limited studies have shown that government political representation, employment, and family policies that intended to explicitly support women and families were associated with diminished gender inequalities and improved health outcomes for women (42). It has been suggested that Nordic social democratic welfare regimes and dual-earner family models could promote women's health, which is consistent with our finding of no significant gender difference in disability incidence in most European countries, except those in southern Europe.

This study has many strengths: It is based on rich and longitudinal data, which has allowed us to examine disability incidence, independent of the survivor effect. The data used are from nationally representative samples and several have sample sizes large enough for adequate statistical power in their country. Another strength is that the data used have been collected with the aim of comparability across countries, and we have used harmonized measures of disability, making the data directly comparable. Some limitations should also be noted. We have focused on basic activities of daily living as the measure of disability. However, disability is complex. We may not be able to extrapolate our findings to other domains of disability, such as instrumental activities of daily living or mobility impairments. We have relatively small sample sizes for some European countries, and therefore, we have grouped countries into geographic regions for the analysis of the incidence data. There may be important differences in population characteristics and government policies across these countries that are averaged out with this grouping.

Despite these limitations, our study is one of the first that provides empirical evidence on disability incidence of both developed and developing countries around the world. Using internationally comparable longitudinal data from 23 countries across different levels of economic development, we have examined gender gap of disability incidence and its association with gender inequality across countries. Future studies are needed to identify what further contributes to such cross-country differences beyond economic development, public health insurance, and individual socioeconomic status.

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Conflict of Interests

None

Author Contribution

Lee, Meijer, and Hu conceptualized the paper together. Phillips conducted data analysis under the supervision of Lee and Meijer. All authors contributed to the writing of the manuscript.

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Table 1. Consecutive biennial interview sample characteristics for studies within the family of Health and Retirement Study (HRS), unweighted

Survey	Country	Individuals	Female (%)	Birth cohort (%)[a]					Number of set of consecutive biennial interviews completed	
				1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	Maximum	Mean
HRS	USA	28,641	57.4	16.4	25.8	24.0	29.4	4.4	8	4.8
MHAS	Mexico	19,044	57.2	9.9	20.4	33.3	26.0	10.5	2	1.4
ELSA	England	14,955	55.1	12.4	22.6	31.6	27.1	6.3	7	4.0
SHARE	Austria	4,958	57.6	8.0	20.5	34.9	30.0	6.6	4	2.2
	Belgium	7,155	55.0	9.0	18.2	27.4	33.0	12.4	4	2.2
	Croatia	2,009	56.4	1.9	11.7	28.9	40.1	17.4	1	1.0
	Czechia	5,483	59.0	4.1	18.7	38.3	33.1	5.9	3	2.3
	Denmark	4,378	54.4	6.5	15.5	29.4	33.0	15.6	4	2.2
	Estonia	6,506	59.9	5.9	23.5	29.4	29.9	11.3	3	2.3
	France	5,636	57.0	10.7	20.3	28.0	32.5	8.5	4	2.2
	Germany	5,423	53.1	6.2	19.4	30.8	30.8	12.9	4	2.0
	Greece	3,989	57.8	8.8	22.1	29.7	31.1	8.3	2	1.3
	Israel	2,632	56.9	9.0	24.2	32.0	30.4	4.5	3	1.9
	Italy	5,634	55.0	6.4	20.8	33.4	28.8	10.7	4	2.2
	Luxembourg	1,398	54.2	2.8	12.2	29.1	42.0	13.9	2	1.6
	Netherlands	3,074	55.4	8.9	21.7	37.3	29.4	2.7	2	1.3
	Poland	1,466	57.6	3.6	14.7	30.6	39.5	11.6	1	1.0
	Slovenia	4,170	57.4	5.0	18.8	30.3	36.5	9.4	3	1.9
	Spain	6,441	55.1	11.0	23.5	29.2	29.8	6.6	4	2.2
	Sweden	4,808	53.4	9.4	22.9	39.5	24.1	4.1	4	2.1
	Switzerland	3,422	54.8	7.0	20.1	32.6	34.0	6.3	4	2.5
KLOSA	Korea	9,768	56.3	8.1	22.6	26.4	28.9	14.1	5	3.9
CHARLS	China	17,883	52.4	1.8	9.7	22.8	35.9	29.8	2	1.8

Note. MHAS = the Mexican Health and Aging Study, ELSA = the English Longitudinal Study of Ageing, SHARE = the Survey of Health, Ageing and Retirement in Europe, KLoSA = the Korean Longitudinal Study of Aging, CHARLS = the China Health and Retirement Longitudinal Study.

[a]Respondents born prior to 1920 or after 1969 are not included in the denominator of the Birth cohort %.

Table 2. Disability incidence and death rates (%) for ages 65-69 by country; 2014

	Men				Women			
	N	Disability incidence (%)	SE	Death rate (%)	N	Disability incidence (%)	SE	Death rate (%)
USA	8,333	2.7	0.2	1.8	10,630	3.4	0.2	1.2
Mexico	1,927	3.5	0.5	2.1	1,998	5.7	0.8	1.6
England	3,772	3.8	0.2	1.5	4,508	4.1	0.2	1.0
Austria	801	1.6	0.3	1.8	1,047	1.8	0.4	0.9
Belgium	1,083	2.6	0.3	1.7	1,200	3.0	0.4	0.9
Croatia	175	2.5	0.8	2.5	176	4.0	1.2	1.1
Czechia	993	3.4	0.5	2.5	1,441	3.1	0.4	1.1
Denmark	747	2.9	0.5	1.7	823	1.9	0.3	1.1
Estonia	857	4.0	0.5	3.1	1,214	3.4	0.4	1.1
France	836	2.0	0.4	1.5	1,037	2.5	0.4	0.7
Germany	910	2.8	0.4	1.7	898	2.5	0.4	0.9
Greece	437	0.4	0.2	1.7	446	0.9	0.4	0.8
Israel	340	0.9	0.4	1.3	493	1.5	0.4	0.8
Italy	1,020	1.9	0.3	1.3	1,162	2.5	0.4	0.7
Luxembourg	188	0.9	0.4	1.6	174	3.5	1.1	0.8
Netherlands	342	1.5	0.5	1.4	386	2.6	0.7	1.0
Poland	120	2.8	1.1	2.8	158	4.5	1.3	1.2
Slovenia	544	2.5	0.5	1.8	693	2.3	0.4	0.8
Spain	946	1.7	0.4	1.5	1,079	2.9	0.4	0.6
Sweden	911	1.8	0.3	1.3	1,054	2.1	0.3	0.9
Switzerland	696	1.6	0.3	1.3	776	1.4	0.3	0.7
Korea	2,514	0.9	0.2	1.3	3,059	0.5	0.1	0.5
China	1,762	5.0	0.4	2.1	1,567	9.4	0.6	1.3
Mean		2.3		1.8		3.0		0.9
Range		4.6		1.8		8.9		1.1
Ratio		13.0		2.4		19.5		3.3

Note. 1. SE = standard error of the disability incidence rate.

2. All numbers except Ratio in percent.

3. Range is difference between highest and lowest in the column, Ratio = ratio of highest to lowest in the column.

4. Estimated two-year incidence rates and standard errors were converted to annual incidence rates by dividing by two for comparability with the annual death rates.

5. The death rate for Greece is for 2013, and the one for China is for 2009/2010. The death rate for England is for the United Kingdom.

6. The incidence estimates for Korea and the Netherlands are for 2012, and those for China and Mexico are for 2015. For Poland and Greece, disability incidence estimates are not available in 2014 because there are no consecutive waves of data for these countries in 2014 or another close year.

7. Sources for the death rates: China: National Bureau of Statistics of China, http://www.stats.gov.cn/english/Statisticaldata/CensusData/rkpc2010/html/A0604a.htm (accessed on 10/11/2017); Korea: Statistics Korea, Deaths and Death Rates by Sex, Age Group - 2014, http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1B80A13&language=en&conn_path=I3 (accessed on 11/7/2017); Mexico: World Health Organization Global Health Observatory data repository, http://apps.who.int/gho/data/view.main.61060 (accessed on 10/11/2017); All other countries: Human Mortality Database, http://www.mortality.org/ (accessed on 11/7/2017).

Table 3. Cross-country multivariate analysis of the relationship between gender inequality and disability incidence in ages 55-89 for people born 1920 – 1969; 2000 - 2016

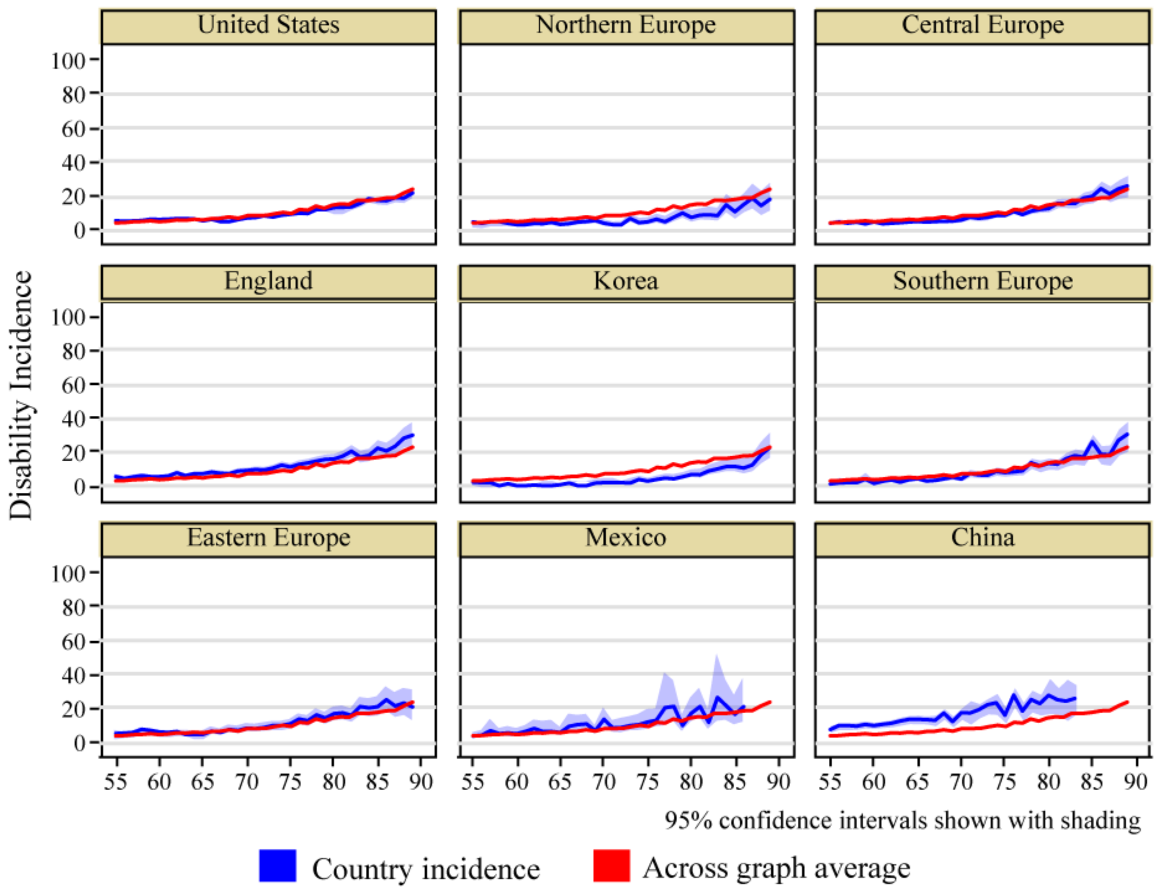
Covariates	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Female	0.164***	0.029	0.021	-0.048
	(0.019)	(0.045)	(0.044)	(0.045)
GII (2010)		1.656***	-0.049	-0.390
		(0.179)	(0.239)	(0.237)
Female × GII		0.702**	0.756**	0.897***
		(0.233)	(0.231)	(0.230)
2010 Log PPP-Adjusted GNI Per Capita			-0.600***	-0.465***
			(0.030)	(0.031)
2010 Public Health Care Coverage			-0.450***	-0.649***
			(0.0601	(0.061)
Education Level Two (upper secondary & vocational training)				-0.317***
				(0.023)
Education Level Three (tertiary education)				-0.742***
				(0.031)
Ever Worked				-0.027
				(0.040)
Constant	-2.911***	-3.547***	3.468***	-0.009
	(0.053)	(0.072)	(0.386)	(0.043)
N	320,745	320,745	317,440	317,440

Note.1. Controls for five year age groups and 10 year birth cohorts are included in all models and regressions are weighted

2. Public health care coverage is not available for Croatia or Luxemburg so these countries are dropped from Model 3 and 4

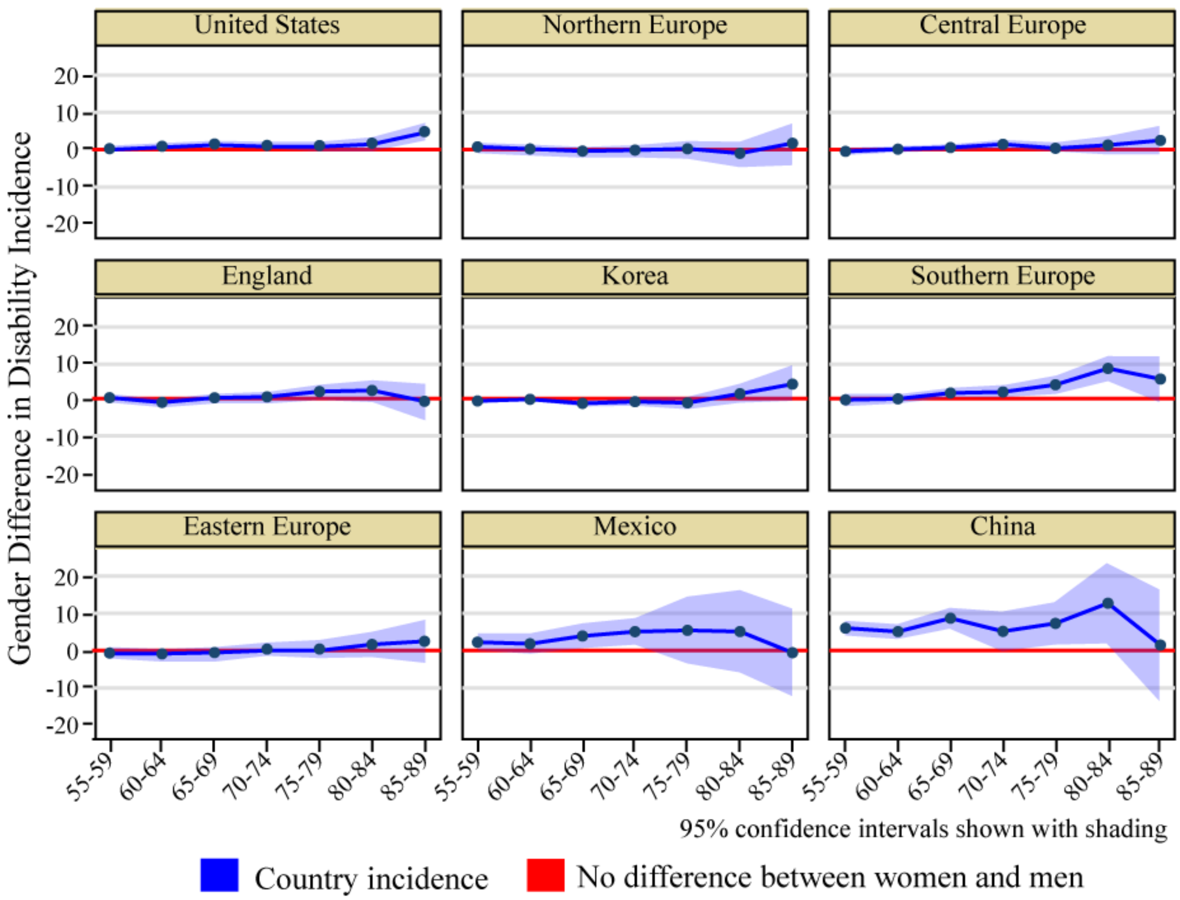
* $p < .05$, ** $p < .01$, *** $p < .001$; standard errors in parentheses

Figure 1. Age gradients of disability incidence in ages 55-89 by country (group) for people born 1920 – 1969; 2000 - 2016



Note. Incidence is calculated for the United States, England, Korea, Mexico, China, and four divisions of Europe; it is not plotted for ages based on less than 100 observations

Figure 2. Gender difference in age-specific disability incidence in ages 55-89 by country (group) for people born 1920 – 1969; 2000 - 2016



Note. The age gradients of gender difference in disability incidence are depicted for the United States, England, Korea, Mexico, China, and four divisions of Europe. Gender difference is calculated as women's incidence minus men's incidence, so higher numbers indicate that women have higher levels of incidence than men