

Exploring the association between the constitutional right to health and reproductive health outcomes in 157 countries

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Abstract: Panel data from 157 countries, between 1970 and 2007, were used to study the associations between introducing an explicit and enforceable right to health into national constitutions and subsequent reductions in neonatal, infant, and maternal mortality and the probability of dying for adult women. The introduction of a right to health in a national constitution was significantly associated with subsequent reductions in neonatal and infant mortality rates. However, it was not associated with reductions in maternal mortality ratios and the probability of dying for adult women. The reduction in neonatal and infant mortality rates was large in countries with high scores for democratic governance, but approximately half as great in countries with low scores for democratic governance. The results suggest that introducing a constitutional right to health is likely to be an effective mechanism for improving infant health in countries with a high level of democratic governance. This health benefit is not seen in maternal and women's health outcomes. There is an imminent need to translate the constitutional promise of a right to health into the improvement of maternal health for all in the era of the Sustainable Development Goals.

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Introduction

The 1994 International Conference on Population and Development (ICPD) recognised women's rights to sexual and reproductive health as a key area of focus.¹ The ICPD has helped shape the development of the Convention on the Elimination of Discrimination against Women and the application of other binding health-related human rights treaties globally.² At the level of national constitutions, the right to reproductive health is included in only six countries' constitutions. However, reproductive health is also an integral element of the human right to health, which is included in more than one-third of all countries' national constitutions.^{3,4}

In the last 20 years, courts around the world have started assuming more active roles in redressing the failures of government health policy.⁵ Reproductive health is not an exception to this trend.

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Reproductive health rights litigation has been successful in recognising state responsibility for rights violations in a number of cases, for example, in Latin America.⁶ Such successful cases were mainly linked to constitutional provisions of this right, which were supported by international treaties.⁵

From court cases around the world, it is now known that the constitutional right to health is a powerful tool which can be used to achieve reproductive health outcomes. However, less is known about the effect of such a right at the population level. Can the introduction of the right to health into national constitutions improve reproductive outcomes at population level and reduce health inequality? This paper examines the associations of introducing the right to health into national constitutions with reductions in neonatal, infant, and maternal mortality, and the probability of dying for women.

An exploration of the association between constitutional rights and health outcomes can contribute to a multidisciplinary discourse on social

justice, inequities and health policy in several ways. The first contribution is to the academic literature of empirical legal studies. Over the last 10 years, empirical examination of constitutional human rights laws has expanded into the field of economics and political science. Researchers have investigated the effects of the introduction of legal rights to education, health, the environment and welfare, on a wide variety of outcomes.^{7–13} This paper contributes by making links across constitutional rights, democratic governance, and reproductive health outcomes.

Second, matters of social justice and health inequality can be considered. The right to health is not only a legal instrument to bind governments to provide health care. It is also a political and social instrument to improve health and reduce health inequities. In today's world, civil society and actors other than governments help to monitor and implement a right to health and raise awareness about health inequality.

Third is the potential contribution to global health policy. Sexual and reproductive health is now clearly articulated within Goals 3 and 5 of the Sustainable Development Goals (SDGs). Yet, a critique exists that the SDGs have failed to deliver a coherent vision of how this right might be realised.¹⁴ The empirical literature on the constitutional right to health may provide meaningful lessons on whether the inclusion of rights language will ultimately lead to progress towards the realisation of global targets and aspirations.^{8,11,12,15}

Methods

The main variables of interest were the constitutional right to health, level of democracy (polity score) and cumulative numbers of health-related international treaties, with the outcome of mortality (maternal mortality ratio, neonatal mortality rate, infant mortality rate and probability of dying in women aged 15–60). The probability of dying in women aged 15–60 was used to capture women's health beyond reproductive years, especially with regard to the potential impact of the HIV/AIDS epidemic. Construction of the datasets for each of these variables are explained in turn.

Constitutional right to health

The dataset on constitutional right to health comes from Matsuura (2013).⁸ In numerous cases, interpretation of “a constitution” was a matter of judgment, as discussed further in Matsuura's

supplementary materials.⁸ The data were constructed to be consistent with Backman et al's work on the right to health in 194 countries in 2009.¹⁶ A dummy variable was defined as “1”, if constitutional health rights existed in country *i* at year *t*; otherwise, the value was set to 0. Table 1 lists all countries with constitutional rights to health and indicates the years when the right to health was first introduced into the respective national constitutions. A check on the robustness of the data classification is available in the supplementary material (Appendix 9A).

Democracy

Data pertaining to democracy are from the Polity IV data.¹⁷ The Polity score is the aggregate of six component democracy measures that record key governance indicators, including the presence of mechanisms for citizens to express their political preferences, constraints on the exercise of power by the executive branch, and the guarantee of civil liberty. The coding ranges from –10 (absolute autocracy), to 10 (consolidated democracy).

To investigate the heterogeneity of associations of the constitutional right to health in different governance systems (see Specification (2) under data analysis), the procedure described by Besley and Kudamatsu¹⁸ was used to construct a dummy variable for democratic governance, with 1 indicating that the Polity variable is greater than 0; otherwise, the value was set to 0. To investigate associations of the constitutional right to health under different levels of democratic governance (see Specification (3) under data analysis) two dummy variables were created, for different levels of democracy based on Polity score. The high democratic governance variable was set to 1 if the Polity variable was greater than 7; otherwise, it was set to 0. The low democratic governance variable was set to 1 if the Polity variable was greater than 0 but 7 or less; otherwise, it was set to 0. According to this classification, most OECD countries are classified as countries with high levels of democracy as of 2007.

Health-related international treaties

Data on the cumulative number of health-related international treaties are taken from Palmer et al.¹⁵ They selected six health-related human rights treaties in their paper, including the International Covenant on Economic Social and Cultural Rights (ICESCR), Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), Convention on the Rights of the Child

Table 1. Countries with constitutional rights to health and years of introduction							
Country	Year	Country	Year	Country	Year	Country	Year
Albania	1998	Ecuador	1998	Madagascar	1992	Serbia	2006
Algeria	1989	Estonia	1936	Mali	1992	Slovakia ^a	1960
Argentina	1994	Georgia	1936	Mexico	1983	Slovenia	1991
Armenia ^a	1936	Guatemala	1986	Moldova ^a	1936	South Africa	1997
Azerbaijan	1936	Guinea	1990	Mongolia	1960	Spain	1978
Belarus	1936	Guinea-Bissau	1991	Montenegro	2007	TFYR Macedonia	1991
Belgium	1994	Haiti	1989	Nicaragua	1987	Tajikistan	1936
Bolivia	1967	Honduras	1982	Niger	1992	Togo	1992
Brazil	1988	Hungary	1989	Paraguay	1967	Turkmenistan	1936
Burkina Faso	1991	Iraq	2005	Peru	1993	Ukraine ^a	1936
Burundi	1992	Italy	1948	Philippines	1987	Uzbekistan ^a	1936
Cameroon	1972	Kazakhstan	1936	Poland	1997	Venezuela	1999
Colombia	1991	Kyrgyzstan	1936	Portugal	1976	Viet Nam	1980
Croatia	1990	Latvia	1936	Romania	1991		
Cuba	1976	Libya ^a	1969	Russian Federation	1936		
Czech Republic ^a	1960 (1993)	Lithuania ^a	1936	Rwanda	2003		

^aThe right to health is no longer a constitutional right in Armenia, Lithuania, Republic of Moldova, Ukraine, and Uzbekistan after the breakup of the Soviet Union and in Slovakia after the breakup of Czechoslovakia. On the other hand, Czech Republic continued to be classified as a country with the constitutional right to health due to its referential statement to international treaties in its 1993 constitution. Libya was dropped from the sample because no income data were available for this country. Data source: Backman et.al. (2008) and Constitutional Finder, Polity IV Database, and Comparative Constitution Database.

(CRC), International Convention on the Elimination of All Forms of Racial Discrimination (ICERD), International Covenant on Civil and Political Rights (ICCPR), and Convention Against Torture and other Cruel Inhuman or Degrading Treatment or Punishment (CAT). The variable is equal to 6 if all six treaties are ratified in country i at time t . On the other hand, the variable is equal to 0 if none of the six treaties are ratified in country i at time t .

Mortality and socio-economic variables

Data on neonatal mortality rate, infant mortality rate, and maternal mortality ratio, the probability of dying for women aged 15–60 (per 1000

population), mean years of education for women of reproductive age (15–44 years old) and income, are from the IHME data.^{19–21} Maternal mortality data are available from the period 1980 to 2007, but all other data are available from the period 1970 to 2007. The selection of countries for analysis was guided by the availability of data for the dependent and independent variables used in the regressions. There were 157 countries with data for all dependent and independent variables. All dependent and independent variables are time-varying and available from 1970 to 2007 except the period of “interruption”, “interregnum”, and “transition” defined by the

Polity index. Appendices 1 and 2 in the supplementary files list the 157 countries included in the analysis and their levels of neonatal mortality rate, infant mortality rate, maternal mortality ratio, and the probability of dying for women aged 15–60 in 1970 (1980 for maternal mortality ratio) and 2007.

Data analysis

Trends across time in the introduction to constitutional rights and democracy were examined. A fixed effect model was used to estimate the association between introducing a right to health into national constitutions, and infant and maternal health outcomes. Using this model to derive the results has some advantages. Country and year fixed effects, as well as country-specific linear and quadratic trends in the model, capture unobserved variables that are fixed for each country over time. Global changes that concurrently affect all countries, and each country’s declining trends of infant and maternal mortality, are also captured. This helps to identify the effect of a constitutional right to health independently from general trends in mortality over time, in each country. The fixed effect model in this study identifies the effects of introducing a right to health into constitutions by comparing infant and maternal mortality before, and after, the introduction of the constitution in 45 different countries that experienced constitutional change between 1970 and 2007. This identification strategy makes our estimates more robust against potential misclassification of a constitutional right to health, because adding (or removing) 1 or 2 within-country variations is less likely to change the results derived from the average of health-improving effects of 45 different countries.

Difference-in-difference method was used to estimate the relationship of the various mortality outcomes with constitutional rights and democracy, with the following equation:

$$\begin{aligned} \log(Y_{i,t}) = & \alpha_i + \sigma_t + \sum_{i=1}^{157} \varphi_i * \text{Trend}_t \\ & + \sum_{i=1}^{157} \theta_i * \text{Trend}_t^2 + \gamma_1 * \text{Conright}_{i,t} \\ & + \gamma_2 * \text{Democracy}_{i,t} + \beta X_{i,t} + \epsilon_{i,t} \end{aligned} \tag{1}$$

where the dependent variables *Y* included a log of neonatal mortality rates, infant mortality rates,

maternal mortality ratios, and the probability of dying for women aged 15–60 in country *i* at year *t*. The main explanatory variables of interest were the presence of a constitutional right to health ($\text{Conright}_{i,t}$) and the presence of democratic governance ($\text{Democracy}_{i,t}$). As control variables, *X*, the cumulative number of health-related treaties, the level of real income per capita, and the education levels of women of reproductive age are included. All of these variables may affect infant and maternal health. All dependent and independent variables vary in country *i* at year *t*. The panel data model also included country and year fixed effects, as well as country-specific linear and quadratic trends. These capture unobserved omitted variables that are fixed for each country over time, as well as global changes that concurrently affect all countries and each country’s declining trends of infant and maternal mortality. Standard errors of the estimates were clustered at the country level to control for autocorrelations in infant and maternal outcomes over time.²² The 95% confidence interval (CI) estimates are calculated based on these standard errors.

To investigate the heterogeneity of associations of the constitutional right to health in different governance systems, interactions between the presence of a constitutional right to health and the presence of democratic governance were added in the second specification.

$$\begin{aligned} \log(Y_{i,t}) = & \alpha_i + \sigma_t + \sum_{i=1}^{157} \varphi_i * \text{Trend}_t \\ & + \sum_{i=1}^{157} \theta_i * \text{Trend}_t^2 + \gamma_1 * \text{Conright}_{i,t} \\ & + \gamma_2 * \text{Democracy}_{i,t} + \gamma_3 * \text{Conright}_{i,t} \\ & * \text{Democracy}_{i,t} + \beta X_{i,t} + \epsilon_{i,t} \end{aligned} \tag{2}$$

The model thus separately estimates the association of introducing a right to health into national constitutions, and neonatal, infant, and maternal mortality, and the probability of dying for women aged 15–60 in autocratic and democratic countries.

To investigate the associations of the constitutional right to health under different levels of democratic governance, the model splits the democracy variable into two categories based on the Polity score in a third specification, high and

low, as explained earlier.

$$\begin{aligned} \log(Y_{i,t}) = & \alpha_i + \sigma_t + \sum_{i=1}^{157} \varphi_i * \text{Trend}_t \\ & + \sum_{i=1}^{157} \theta_i * \text{Trend}_t^2 + \gamma_1 * \text{Conright}_{i,t} \\ & + \gamma_4 * \text{HiDemoc}_{i,t} * \text{Conright}_{i,t} + \gamma_5 \\ & * \text{LowDemoc}_{i,t} * \text{Conright}_{i,t} \\ & + \gamma_6 * \text{HiDemoc}_{i,t} + \gamma_7 * \text{LowDemoc}_{i,t} \\ & + \beta X_{i,t} + \epsilon_{i,t} \end{aligned} \quad (3)$$

By doing so, the model separately estimates the health-improving effect of introducing a right to health into national constitutions in autocratic countries, low-scoring democratic countries, and high-scoring democratic countries.

The analysis was conducted using STATA SE, Version 14 in December 2018. As all data are publicly available and do not contain any identifiable personal information, ethical approval was not necessary.

Results

The blue and red lines in Figure 1 show that substantial progress has been made in democratisation and introduction of the right to health into national constitutions between 1970 and 2007.

Increase in the number of countries with democratic governance was most rapid immediately after the fall of the Berlin Wall in Germany in 1989 and the dissolution of the Soviet Union in 1991. The green line shows an increase in the number of countries with high democratic governance illustrating that progress was not only in numbers of countries, but also in degree of democracy. The blue line in Figure 2 shows the year-to-year correlation between democratic governance and the constitutional health right over time from 1970 to 2007. Before 1990, countries with a constitutional right to health were likely to be classified as not having democratic governance (the correlation is negative). After 1990, countries with a constitutional right to health were more likely to be classified as having democratic governance. The red line in Figure 2 shows that the year-to-year correlation between high democratic governance and constitutional health right became positive only after 1998 as many former Soviet countries became countries with low democratic governance after the breakup of the Soviet Union. While the cumulative number of health-related treaties is not the main interest of the analysis, substantial progress was also observed over the same time period in ratification of health-related international treaties (see supplementary materials, Appendix 3).

Table 2 summarises the proportion of countries with a constitutional right to health and

Figure 1. Proportion of countries with constitutional right to health and democratic governance over time

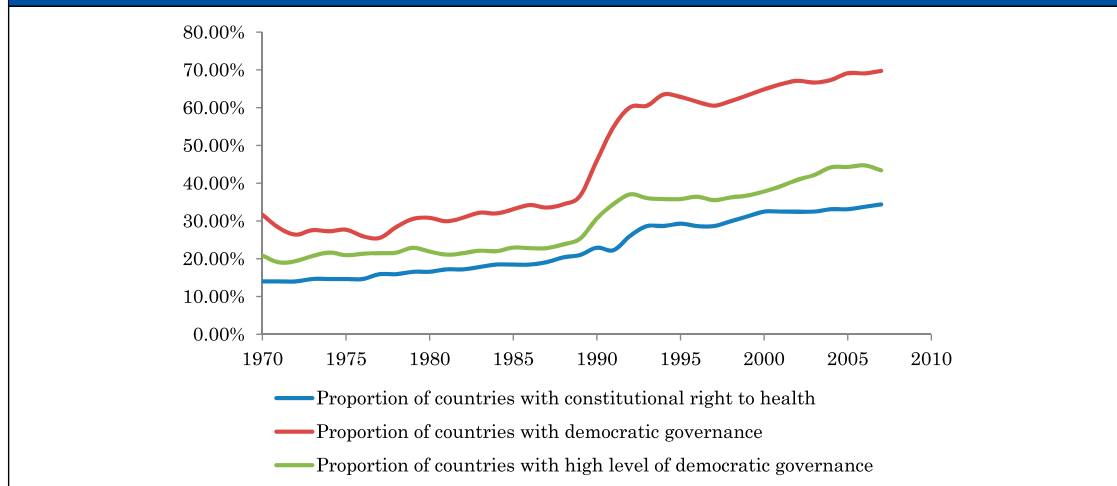
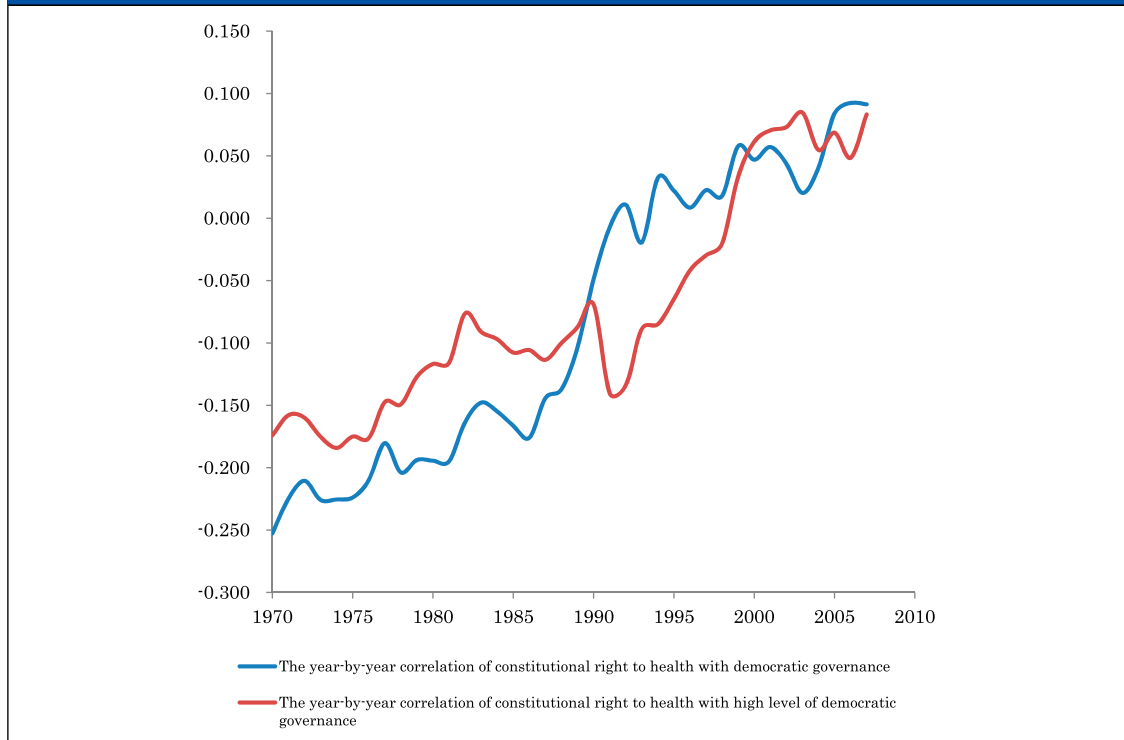


Figure 2. The year-by-year correlations of constitutional right to health with democratic governance

democratic governance, as of 2007, based on five different legal origins taken from La Porta and others.²³ Only French commercial law- and Soviet socialist law-origin countries give citizens a constitutional right to health (one exception is the case of South Africa). Countries of British, German and Scandinavian legal origin were highly unlikely to have recognised a constitutional right to health. A full list of countries by this classification is available in the supplementary materials (Appendix 4).

The means and standard deviations of each dependent and independent variable in natural units are shown in the supplementary material (Appendix 5).

Table 3 presents the results of the main regression analysis for 157 countries, from 1970 to 2007. In the first three columns, the dependent variable is the log of neonatal mortality rate. In column 1 of Table 3, explanatory variables included the presence of a constitutional right to health, a dummy for democratic governance (Polity score > 0), cumulative number of health-related treaties, the mean years of education of women aged

15–44, and the log of the real GDP per capita (Specification (1)). The coefficient of -0.0526 on the constitutional right to health indicates that the introduction of a constitutional right to health is associated with a reduction in the neonatal mortality rate by 5.3% of its initial level. The confidence intervals are given in parentheses under the estimate. The stars next to the estimated coefficients indicate that the result is statistically significant at 1%. For democracy, the coefficient is not significant. This indicates that the provision of a right to health, rather than democratic governance, appears to affect neonatal mortality. Further analysis of the long-term effect of introducing a right to health into national constitutions (see supplementary materials, Appendices 6 and 7) demonstrates that the health-improving effect is observed immediately after the introduction of a right to health and remains almost constant after the first year.

Column 2 in Table 3 allows for an interaction effect between a constitutional right to health and democratic governance (Specification (2)).

Table 2. Countries with constitutional rights to health and democratic governance in 2007

Legal origin	Countries with constitutional health rights		Countries with democracy		Countries with high level of democracy	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
British Common Law	1	2.27%	30	68.18%	16	36.36%
French Commercial	31	44.29%	44	62.86%	24	34.29%
Socialist Law	23 (29)	67.65%	23	67.65%	17	50.00%
German Commercial Law	0	0.00%	5	100.00%	5	100.00%
Scandinavian Commercial Law	0	0.00%	4	100.00%	4	100.00%

Note: Please refer to Appendix 4 for the full list of countries by different legal origins. Spain, Portugal and former Spanish/Portuguese colonies are mostly French civil law origin countries.

The right to health on its own remains statistically significant with this specification. This result indicates that the right to health confers health benefits across countries, even without democratic governance. The interaction coefficient was not significant, suggesting that this effect does not significantly differ between democratic and autocratic countries. The last four rows calculate the health-improving effects of a constitutional right to health in each political regime from the estimated coefficients of the model. In non-democratic (autocratic) countries, the introduction of a right to health into national constitutions is associated with a 4.5% reduction in neonatal mortality rate, whereas in democratic countries, it is associated with a 5.9% reduction in neonatal mortality rate.

In column 3 of Table 3, an interactive effect between a constitutional right to health and a high (Polity score > 7) or low ($7 \geq$ Polity score > 0) level of democratic governance is examined (Specification (3)). A statistically significant association of the constitutional right to health in countries with high levels of democratic governance was found. The last four rows calculate the health-improving effects of a constitutional right to health in each political regime from the estimated coefficients of the model. In countries with a high level of democratic governance, it is estimated that a right to health reduces the neonatal mortality rate by 8.1%. The introduction of a right to health in countries with autocratic or low levels of

democratic governance was associated with a reduction in the neonatal mortality rate by 4.1% and 4.4%, respectively; this provides approximately half the beneficial effect of that seen in highly democratic countries.

The second three columns of Table 3 replicate the results of the first three columns based on the log of infant mortality rate as the dependent variable. The estimates in these columns are similar to those found for the neonatal mortality rate.

The next three columns of Table 3 are based on the maternal mortality ratio as the dependent variable. In column 1, the introduction of a constitutional right to health is not associated with a reduction in maternal mortality ratio. In column 3, the interaction coefficient was significant, suggesting that the effect of the constitutional right to health significantly differs between democratic and non-democratic countries. However, looking at the combined effect, the introduction of a constitutional right to health is not associated with a reduction in maternal mortality ratio, regardless of whether a country has democratic governance. Column 4 confirms that the introduction of a constitutional right to health is not associated with a reduction in the maternal mortality ratio, regardless of whether a country has a high level of democratic governance.

To examine the effects of the constitutional right on women's health beyond the definition of maternal mortality, the final three columns of

Table 3. Regression results

Dependent variables	Logged neonatal mortality rate			Logged infant mortality rate			Logged maternal mortality ratio			Logged probability of dying for women between the ages of 15 and 60 years		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constitutional Rights to Health	−0.0526*** [−0.091 −0.0143]	−0.0451** [−0.0843 −0.0060]	−0.0406** [−0.0760 −0.0051]	−0.0533*** [−0.0903 −0.0163]	−0.0446** [−0.0820 −0.0071]	−0.0396** [−0.0739 −0.0054]	0.0016 [−0.0419 0.0451]	0.0324 [−0.0161 0.0808]	0.0300 [−0.0197 0.0796]	−0.0075 [−0.0425 0.0275]	−0.0100 [−0.0504 0.0304]	−0.0069 [−0.046 0.0321]
Democracy	0.0042 [−0.0081 0.0166]	0.0072 [−0.0063 0.0207]		0.0038 [−0.0093 0.0170]	0.0073 [−0.0072 0.0217]		0.0123 [−0.0115 0.0361]	0.0276* [−0.0001 0.0553]		0.0091 [−0.0105 0.0287]	0.0081 [−0.0145 0.0307]	
Constitutional Rights to Health * Democracy		−0.0138 [−0.0382 0.0106]			−0.0161 [−0.0432 0.0110]			−0.0531** [−0.0979 −0.0083]			0.0046 [−0.0325 0.0416]	
Constitutional Rights to Health * High Level of Democracy			−0.0401** [−0.0733 −0.0068]			−0.0445** [−0.0797 −0.0094]			−0.0343 [−0.1180 0.0497]			−0.0126 [−0.0684 0.0432]
Constitutional Rights to Health * Low Level of Democracy			−0.0032 [−0.0305 0.0241]			−0.0049 [−0.0353 0.0255]			−0.0583** [−0.1080 −0.0088]			0.0120 [−0.0256 0.0496]
High Level of Democracy			0.0198 [−0.0049 0.0446]			0.0194 [−0.0056 0.0443]			0.0298 [−0.0191 0.0786]			0.0200 [−0.0097 0.0497]
Low Level of Democracy			0.0018 [−0.0115 0.0152]			0.0021 [−0.0131 0.0173]			0.0271 [−0.0064 0.0606]			0.0032 [−0.022 0.0283]
Cumulative Number of Health-related Treaties	0.0012 [−0.0040 0.0064]	0.0011 [−0.0040 0.0063]	0.0011 [−0.0040 0.0062]	0.0007 [−0.0047 0.0062]	0.0006 [−0.0048 0.0061]	0.0006 [−0.0048 0.0060]	0.0033 [−0.0112 0.0178]	0.0030 [−0.0114 0.0174]	0.0032 [−0.0111 0.0174]	0.0055 [−0.0031 0.0141]	0.0055 [−0.0031 0.0142]	0.0056 [−0.0030 0.0142]
Logged Gross Domestic Product per capita	−0.0345 [−0.0791 0.0100]	−0.0359 [−0.0808 0.0089]	−0.0357 [−0.0798 0.0084]	−0.0436* [−0.0925 0.0053]	−0.0452* [−0.0945 0.0040]	−0.0450* [−0.0935 0.0034]	−0.103* [−0.2120 0.0066]	−0.107** [−0.2110 −0.0032]	−0.106** [−0.21 −0.0027]	−0.0369* [−0.0789 0.0051]	−0.0364* [−0.0787 0.0058]	−0.0361* [−0.0780 0.0058]
Mean Years of Education in Women ages 15–44	−0.0267 [−0.0847 0.0314]	−0.0287 [−0.0866 0.0293]	−0.0264 [−0.0819 0.0291]	−0.0218 [−0.0868 0.0432]	−0.0241 [−0.0888 0.0405]	−0.0220 [−0.0844 0.0404]	0.0450 [−0.0585 0.1480]	0.0357 [−0.0655 0.1370]	0.0351 [−0.0641 0.1340]	0.0346 [−0.0553 0.1250]	0.0353 [−0.0553 0.1260]	0.0375 [−0.0524 0.1270]
Observations	4,690	4,690	4,690	4,690	4,690	4,690	4,690	4,690	4,690	3,576	3,576	3,576
No. of Countries	157	157	157	157	157	157	157	157	157	157	157	157

R-squared	0.998	0.998	0.998	0.998	0.998	0.998	0.993	0.993	0.993	0.998	0.998	0.998	
The Health-Improving Effect of a Right to Health into National Constitutions by a Different Level of Democracy (Calculated from the estimated equations)													
The Effect of Introducing Constitutional Rights to Health in Autocratic Countries		-0.0451** [-0.0843 -0.00601]	-0.0406** [-0.076 -0.00509]			-0.0446** [-0.082 -0.00713]	-0.0396** [-0.0739 -0.0054]		0.0324 [-0.0504 0.0304]	0.0300 [-0.046 0.0321]		-0.0100 [-0.0161 0.0808]	-0.0069 [-0.0197 0.0796]
The Effect of Introducing Constitutional Rights to Health in Democratic Countries		-0.0589*** [-0.0994 -0.0185]				-0.0607*** [-0.101 -0.021]			-0.0207 [-0.0712 0.0297]			-0.0054 [-0.0443 0.0334]	
The Effect of Introducing Constitutional Rights to Health in Low-Level Democratic Countries			-0.0438** [-0.0799 -0.0077]				-0.0445** [-0.083 -0.006]			-0.0283 [-0.0791 0.0705]			0.0050 [-0.0319 0.0420]
The Effect of Introducing Constitutional Rights to Health in High-Level Democratic Countries			-0.0807*** [-0.1288 -0.0325]				-0.0842*** [-0.130 -0.038]			-0.0043 [-0.0875 0.0309]			-0.0196 [-0.0747 0.0356]
<p>Note: 95% confidence intervals are in brackets. In each dependent variable, the Specifications (1), (2), and (3) described in the method section are estimated. In Specification (1), the main explanatory variables of interest were the presence of a constitutional right to health and the presence of democratic governance. In Specification (2), the interaction term between the presence of a constitutional right to health and the presence of democratic governance were added. In Specification (3), the presence of a constitutional right to health, the high democratic governance variable, the low democratic governance variable, the interaction term of constitutional right to health with the high democratic governance, and the interaction term of constitutional right to health with the low democratic governance are included. All regression equation includes the cumulative number of health-related treaties, the level of real income per capita, and the education levels of women of reproductive age, country and year fixed effects, as well as country-specific linear and quadratic trends. Standard errors are clustered at country level. The last four rows calculate the health-improving effects of a constitutional right to health in each political regime from the estimated coefficients of the model.</p> <p>*Significant at 10%. **Significant at 5%. ***Significant at 1%.</p>													

Table 3 replicate the results based on the probability of dying for women between the ages of 15 and 60 years. The estimates in these columns support the results seen for maternal mortality ratio. The introduction of a constitutional right to health is not associated with a reduction in the probability of dying for women aged 15–60 years, regardless of whether a country has a high level of democratic governance.

The cumulative number of health-related treaties is not significantly associated with reductions in all four dependent variables. The level of real income per capita is not significantly associated with neonatal mortality. However, it is associated with reductions in infant mortality rate and maternal mortality ratio as well as the probability of dying for women aged 15–60. The mean years of education in women aged 15–44 is not significantly associated with all the four dependent variables across different specifications.

Robustness checks are available in the supplementary materials, using alternative classifications of the constitutional right to health and democratic governance variable (Appendix 9A, 9B), alternative specifications for the regression (Appendix 9C), evaluations of short-term and long-term effects (Appendices 6 and 7), and an alternative level of clustering (Appendix 9D).

Discussion

The results of this paper suggest a robust association between the introduction of the right to health and a subsequent reduction in neonatal and infant mortality rates for all levels of democratic governance. A high level of democracy doubled the effect. Introduction of constitutional rights to health seems most effective in countries with an effective means of translating this constitution into health policy, possibly through such means as the presence of mechanisms for citizens to express their political preferences, constraints on the exercise of power by the executive branch, and the guarantee of civil liberty. Additional analysis (not shown, see supplementary materials, Appendix 8) shows that the health-improving effect of a right to health in the high/upper-middle income group of countries is larger than in the low/lower-middle income group of countries, based on the World Bank's country classifications by income level in 2007. This may imply variations in the quality of governance which are not explained by the level of democracy but is still

associated with income level of the country. The results suggest influences of the quality of governance in translating a constitutional right to health into health outcomes.

No association was found between introducing the constitutional right to health and reduction in maternal mortality ratio and the probability of dying for women aged 15–60, regardless of whether a country has a high level of democratic governance. This is illustrated by examples of specific countries in the dataset. By 2007, the neonatal and infant mortality in countries with a constitutional right to health like Ecuador, Mexico, Vietnam, Russia and Argentina are at levels which were only attained by Scandinavian countries in 1970. However, reductions in maternal mortality lag far behind.

One interpretation of this situation is that maternal mortality reduction was not fully recognised as a priority until the 1980s. Little or no attention was paid to women dying in childbirth and from pregnancy-related causes until the first international Safe Motherhood Conference in 1987.²⁴ Before the conference, maternal health was subsumed under child survival efforts. In 1994, the ICPD marked a significant paradigm shift in women's health – a conceptual shift to a human rights-based approach, which has had the potential to influence priorities in maternal mortality reduction and maternal health for only 13 years to 2007.¹ Another interpretation is that in the area of child health, a vertical (disease-specific) approach has been successful in reducing infant and child mortality.²⁴ Interventions for children such as universal immunisation, nutritional supplementation, and oral rehydration therapy have reduced the major causes of death for infants, even in resource-poor settings. Improvements in maternal mortality and maternal health, however, require a horizontal approach that invests in strengthening the overall structure and functions of health systems. This is consistent with a prevailing concern that priority-setting in the health system is not suited to recognising the needs and priorities of sexual and reproductive health services.²⁵ It remains to be seen whether the adoption of the SDGs in 2015 can change the situation, as there is increasing focus on strengthening health systems, and achieving universal access to sexual and reproductive health care services.

Several points must be considered in interpreting the findings presented. Without a truly exogenous variation in a constitutional right to health, a

concern regarding the bias due to omitted variables remains. It is difficult to claim that the estimated effects in this paper are causal effects. Another consideration is that most countries with constitutional health rights share either French or Soviet Socialist legal origins (Table 2), so it is difficult to generalise the findings of this paper to British and other legal origin countries. The limited evidence in British legal origin countries does not necessarily mean that the introduction of a right to health into national constitutions does not work to improve infant mortality in these countries. Further studies could elicit the necessary evidence to evaluate the health-improving effects of a constitutional right to health in these countries. There is also an important consideration regarding data quality, especially on maternal mortality ratios. Unlike neonatal and infant mortality rates, which are estimated from a statistical model based on a sufficient number of vital statistics and surveys of each country, maternal mortality ratios in IHME were estimated by a cross-country regression model, as there are a large number of missing observations.²¹ Nevertheless, IHME data is a comprehensive database which is a standard global source of data on maternal mortality. The results obtained in the study remained consistent, even using the variable of the probability of dying for women aged 15–60. Finally, these analyses relied on an explicit right to health or health care stated in constitutions. However, courts may find an implicit right to health derived from other constitutional rights. For instance, the Indian Supreme Court expanded the scope of Article 21 of the Constitution of India (e.g., the right to life) and ruled that the “right to health” is integral to the right to life.²⁶ The fixed effect model employed in this paper makes our estimates robust against potential misclassifications of a constitutional right to health, so one or two within-country variations are not likely to change the

main results. Future research could usefully explore how to assess judicial interpretations of constitutions and emergence of constitutional rights through case law. Our analysis ended in 2007 due to the availability of data. However, with the exception of Iraq, no introduction of a right to health into national constitutions has been made since then.

The results presented contribute to a growing body of academic literature that associates the right to health with child and maternal health outcomes.^{7–13} The findings underscore the role of a high level of democratic governance for effectively translating a right to health, into infant health outcomes. Democratic governance was a proxy variable for a system of checks and balances that constrain what an elected government can do, as well as a process of public reasoning to inject more information, perspectives, and voices into debates on child and maternal health.^{27–29} These functions of democracy are potentially an effective means of translating the right to health into improving infant mortality. The study finds that the right to health in national constitutions is not related to a reduction in maternal mortality, although it cannot ascertain the reasons behind this situation, and raises the need for more exploration of explanatory factors. Nevertheless, there is an imminent need for policy and political action to translate the constitutional right to health into the improvement of maternal mortality and women’s health in the era of the SDGs.

Disclosure statement

No potential conflict of interest was reported by the author.

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Résumé

Des données de panel de 157 pays, entre 1970 et 2007, ont été utilisées pour étudier les associations entre l'introduction d'un droit à la santé explicite et opposable dans les constitutions nationales et les réductions ultérieures dans la mortalité néonatale, infantile et maternelle et la probabilité de décès des femmes adultes. L'introduction d'un droit à la santé dans une constitution nationale a été associée de manière significative avec des

Resumen

Entre 1970 y 2007, se utilizaron datos de panel de 157 países para estudiar las asociaciones entre incorporar el explícito y ejecutable derecho a la salud en las constituciones nacionales y las subsiguientes disminuciones de las tasas de mortalidad neonatal, infantil y materna y de la probabilidad de muerte de mujeres adultas. La incorporación del derecho a la salud en la constitución nacional se asoció de manera significativa con subsiguientes

réductions ultérieures des taux de mortalité néonatale et infantile. Néanmoins, elle n'a pas été associée à des réductions des taux de mortalité maternelle et de la probabilité de décès des femmes adultes. La réduction des taux de mortalité néonatale et infantile a été marquée dans les pays affichant des scores élevés de gouvernance démocratique. Dans les pays où ces scores de gouvernance démocratique étaient faibles, seulement près de la moitié de la valeur de l'introduction d'un droit constitutionnel à la santé était présente. Les résultats semblent indiquer que l'introduction d'un droit constitutionnel à la santé est probablement un mécanisme efficace pour améliorer la santé infantile dans les pays avec un niveau élevé de gouvernance démocratique. Ce bénéfice pour la santé n'est pas observé dans les résultats pour la santé de la mère et de la femme. À l'ère des objectifs de développement durable, il est nécessaire de traduire sans délai la promesse constitutionnelle d'un droit à la santé en améliorations de la santé maternelle pour toutes.

disminuciones de las tasas de mortalidad neonatal e infantil. Sin embargo, no se asoció con disminuciones de las razones de mortalidad materna ni de la probabilidad de muerte de mujeres adultas. En los países con altos puntajes por gobernanza democrática, hubo una marcada disminución de las tasas de mortalidad neonatal e infantil. Sin embargo, en los países con bajos puntajes por gobernanza democrática, se manifestó aproximadamente la mitad de la magnitud de incorporar el derecho constitucional a la salud. Los resultados indican que la incorporación del derecho constitucional a la salud probablemente es un mecanismo eficaz para mejorar la salud infantil en los países con alto nivel de gobernanza democrática. Este beneficio de salud no se ha visto en los resultados relacionados con la salud materna y la salud de las mujeres. Hay una necesidad inminente de traducir la promesa constitucional del derecho a la salud en mejoramiento de la salud materna para todas las personas en la era de los Objetivos de Desarrollo Sostenible.