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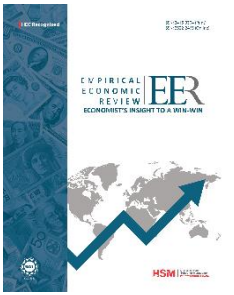

Title:	**The Impact of Globalization and its Components on Health Outcomes: A Global Panel Data Analysis**
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Impact of Globalization on Health Outcomes: A Global Panel Data Analysis

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Abstract

This study investigated the impact of globalization and its three dimensions (economic, political, and social) on health by using a global panel data of 193 countries for the period 1971-2018. Health indicators incorporated into this study were life expectancy and infant mortality rate, while KOF index was taken as the indicator for globalization. Empirical analyses were performed by using ordinary least squares (OLS) and fixed-effects and random-effects models. Moreover, sensitivity analysis was used to check the robustness of the results. The results indicated that globalization, together with its three dimensions, has a positive impact on health, even if the analysis is controlled for population growth, physicians' availability, and age dependency.

***Keywords*:** dimensions, globalisation, health, infant mortality, life expectancy

Introduction

The origin of globalization is traced back by scholars to ancient times when trade started between the Indus Valley Civilization and Mesopotamia. Thus, globalization is not a new phenomenon. Similarly, whether globalization has a positive or negative impact on health has been debated widely in recent years. According to the existing literature, it has both positive and negative impacts on health. Owen and Wu (2007) found that trade openness is associated with lower infant mortality and higher average life expectancy due to the mobility of doctors and increased foreign aids. Similarly, Bergh and Nilsson (2010) suggested that globalization has a positive and robust impact on health, which holds even for low-income countries. The channels through which it affects health positively are increase in GDP per capita, improvement in education, access to new technologies, movement of goods and services, and the import of pharmaceuticals.

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Contrarily, globalization leads to poor public health due to increased population, intensity of consumerism, smoking habits, obesity, spread of disease due to environmental degradation, overcrowding, and pollution (McMichael & Beaglehole, 2000; Huynen et al., 2005). In a very recent study by Farzanegan et al. (2021), the relationship between globalization and COVID-19 case fatality rate was examined. The results showed that countries with a high level of integration and globalization have a high coronavirus related fatality rate. Even after controlling for demographic differences and economic development, the relationship between globalization and fertility rate remains positive.

This study explores how globalization impacts health around the world. It contributes to the literature in the following ways. Firstly, it not only examines the overall impact of globalization but also accounts for its three dimensions. Secondly, it is not restricted to a few regions or countries and remains global in its orientation. Lastly, it also incorporates sensitivity analysis to check the robustness of globalization.

The study is organized in the following way. Section 2 provides the review of literature. Section 3 explicates the methodology. Data description and sources are presented in Section 4, while empirical results and their interpretations are provided in Section 5. Finally, Section 6 concludes the paper.

Literature Review

Mixed associations have been predicted between globalization and health in the literature. According to Cornia (2001), globalization affects health through income growth, availability of health services, and economic stability. The initial conditions of a country, such as the size of its economy, human capital, and infrastructure also determine its health status. There have been rapid gains in some countries due to globalization, while in other countries the health gains have slowed down due to poorly managed globalization/poor management. Similarly, Woodward et al. (2001) stated that the relationship between globalization and health is complex. They used a framework that incorporates both direct and indirect effects of globalization on health. Direct effects comprise individual risk factors for health and effects on the healthcare system, while indirect effects are seen through health-related sectors, such as water, education, sanitation, and hygiene. Godfrey and Julien (2005) commented on two-edged/the double-

edged effects of urbanization on health. On the one hand, urbanization provides access to healthcare, secure nutrition, and sanitation. On the other hand, urbanization can also bring overcrowding, crime, pollution, and stress. In developing countries, heart diseases, obesity, diabetes, hypertension, and asthma are the gifts of modernization brought about by globalization and urbanization. In industrialized countries, some of the health problems related to urbanization include loneliness, depression, pollution, passive smoking, accidents, criminal violence, and lifestyle hazards.

Huynen et al. (2005) developed a framework and provided a concept map to organize the complexity of the impact of globalization on health. The framework identifies the main determinants of population health and serves as a think-model. Population health has many kinds of determinants, such as environmental determinants, economic determinants, and socio-cultural determinants. Environmental determinants are physical in nature and impact both food and water. Global environmental changes impact the ecosystem of goods and services, which then affects population health. Economic determinants show how global markets affect population health through economic development and trade. Global markets contribute to economic growth and provide financial security, which facilitates health services. Socio-cultural determinants of population health include the flow of relevant information, people, and ideas, as well as supporting a healthy lifestyle. Modern behavioural factors have an immense impact on health, such as excess energy intake, inactivity, smoking, and alcohol use.

Empirical literature also shows mixed results regarding the health impacts of globalization. Based on the panel data of 219 countries, Owen and Wu (2007) examined the relationship between international trade and health outcomes using the fixed-effect model. They found that trade openness is associated with lower infant mortality and higher average life expectancy. Similarly, Bergh and Nilsson (2010) studied the impact of the three dimensions of globalization, namely economic, political, and social on life expectancy. The result was positive and the channels through which health is affected are: increase in GDP per capita, improvement in education, access to new technologies, and the import of pharmaceuticals. According to Martens et al. (2010), globalization is more than just an economic phenomenon. It is characterized by the flow of goods and services, people, capital, ideas, and technology. The study analysed how

globalized countries are better than non-globalized countries in terms of child mortality rate and adult mortality rate by considering the MGI Index of Globalization as an indicator. They established a negative relation between globalization and mortality rate using the least square technique. According to the study, an increased income level due to globalization decreases the mortality rate. Other other factors causing a similar effect include health expenditures, secondary education, and clean water.

In contrast, Herzer and Nunnenkamp (2012) found a negative relation between globalization and health. They examined the effect of Foreign Direct Investment (FDI) on health in developed countries using panel cointegration technique. The indicator for health was life expectancy at birth, while the indicator for FDI was FDI inflows as the percentage of GDP. Regression analysis showed a significant and negative relationship between FDI and life expectancy at birth. According to the results, a one percent increase in the ration of FDI-to-GDP decreased life expectancy by 0.028 years.

Alam et al. (2015) performed both short-run and long-run analyses. The analyses were performed on time series data for the period 1972-2013. By applying cointegration test and unit root test, it was found that trade openness and FDI increase population health in the long-run with correlation coefficients of 0.1382 and 0.057, respectively. According to the authors, the positive correlation is due to the flow of health care services and technologies that come with trade liberalization.

On the contrary, Qadir and Majeed (2018) found the adverse results of the effect of trade on health in Pakistan. The measurement for trade was trade to GDP ratio and for health, life expectancy and infant mortality were taken as indicators. Through Ordinary Least Square (OLS) and to confirm long-run Error Correction Mechanism (ECM), it was found that one percent increase in the ratio of trade to GDP decreases life expectancy by 0.05 years and significantly increases infant mortality by 0.47 deaths. Farzanegan et al. (2021) calculated the relationship between globalization and COVID-19 case fatality rate for 150 countries. The indicator used for globalization was KOF index and the indicator for COVID-19 was fatality rate. The estimations obtained through OLS showed that countries with the highest level of integration and globalization have a high coronavirus related fatality rate. Countries with a 10-point higher KOF index were predicted to have 0.8% higher chances of COVID-19 fatality.

The survey of the literature shows that there are few studies available that explored extensively the relationship between globalization and health. Some studies only focused on the theoretical side of the research (Cornia, 2001; Woodward et al., 2001; Godfrey & Julien, 2005; Huynen et al., 2005). In other studies, specific channels that linked trade openness and health outcomes were not focused (Owen & Wu, 2007). Some studies (Alam et al., 2015; Qadir & Majeed, 2018) only focused on specific regions. This study contributes to the literature by exploring the impact of globalization on health, empirically. Using three dimensions of globalization (social, political, economic) and techniques such as OLS, fixed effect, random effect, and sensitivity analysis, it covers the period 1971-2018 for 198 countries.

Methodology

Theoretical Framework

To determine the health status of a nation, information is drawn from the Health Production Function. The Grossman Model of Health Demand, presented by Grossman (1972), is helpful to understand the concept of the Health Production Function. According to the model, people are the producers of health which depends on their choices, behaviour, and constraints. The model can be written in the following way:

$$H = f(x)$$

where H is the health output, such as life expectancy and mortality rate, while x is the vector of inputs that determine health, such as education, health expenditures, income, environment, and lifestyle. This model explicates the Health Production Function at a micro level. To study the Health Production Function at macro level, the inputs to health (represented by x) are classified into three sub categories, namely social, environmental, and economic, as proposed by Fayissa and Gutema (2006),

$$H = f(V, S, Y)$$

where V is the vector of environmental/social factors, S is the vector of social/environmental factors, and Y is the vector of environmental/economic factors.

Previous studies showed that one of the important determinants of health is economic growth **(**Grosse and Perry, 1982; Banerjee et al., 2010), as it represents the level of development for a particular country. When GDP

increases, it affects the individuals positively, since it allows them to enjoy high quality goods, better housing, and medical services. To measure the effects of social factors on health, this study considers education as it plays an important role in the society. According to Cutler and Muney (2006), there is a persistent relation between health and education because the latter is related to occupational choices and income levels, which enable people to lead a healthy life. Finally, urbanization is incorporated as the environmental factor in this study. So, the functional form, after incorporating globalization, becomes

H = f(GLOB, GDP growth, EDU, URB)

Keeping in view the given functional form, the following econometric models are constructed.

$$LE_{it} = \alpha_{it} + \alpha_2 GLOB_{it} + \alpha_3 Y_{it} + \alpha_4 EDU_{it} + \alpha_5 URB_{it} + \varepsilon_{it}$$

$$IM_{it} = \alpha_{it} + \alpha_2 GLOB_{it} + \alpha_3 Y_{it} + \alpha_4 EDU_{it} + \alpha_5 URB_{it} + \varepsilon_{it}$$

where, t = time period, i = countries, LE is life expectancy, IM is infant mortality, GLOB is the globalization measure, Y is economic growth, EDU is education, URB is urbanization, Intercept is denoted by α_{it}, the impact of globalization on life expectancy and infant mortality is denoted by α_2, the impact of economic growth on health is denoted by α_3, the impact of education on health is denoted by α_4, and the impact of urbanization on health is denoted by α_5.

Data and Variable Description

In the current study, panel data set from 193 different countries over the time period 1971-2018 was used. The variables used in the study model were extracted from the data sources of WDI (World Development Indicators) and KOF index of globalization. Table 1 shows the summary of the variables used in the analysis as well as their sources.

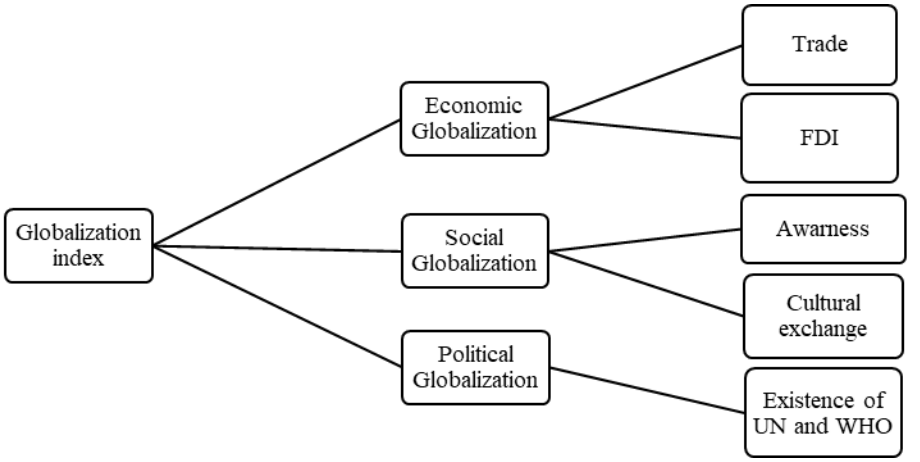
Measures of Globalization

Globalization is one of the independent variables in this study. It is a broad and complex concept. In the current study, KOF index by Dreher (2006) was used to capture its complexity. The data for KOF was taken for the period spanning 1971-2018. It included the three dimensions of globalization, namely economic, social, and political dimensions. KOF

index has values from 1 to 100. The lower value indicates a low level of globalization, while the higher value indicates a high level of globalization.

Figure 1

Components of KOF Globalization Index



Measures of Health

Life Expectancy

The average number of years that a newborn baby is expected to live is called life expectancy at birth. Annual data for life expectancy at birth was taken from WDI for the period 1971-2018.

Infant Mortality Rate

The number of newborn babies that die under the age of one year per 1000 live births is called infant mortality rate. The data for infant mortality rate was taken from WDI for the period 1971-2018.

Table 1

Summary of Variables

Variables	Denoted by	Measured in	Sources
Dependent Variables			
Life Expectancy At Birth	LE	Years	WDI (2021)
Infant Mortality Rate	IMR	Per 1000 live births	WDI (2021)
Focused Variables			
KOF Index	KOF	1-100	KOF (2021)
Control variables			
GDP Per Capita	GDPPC	US dollars	WDI (2021)
Secondary School Enrolment	SS	% Gross	WDI (2021)

Variables	Denoted by	Measured in	Sources
Urbanization	URB	Percentage of Total Population	WDI (2021)
Variables for Sensitivity Analysis			
Age Dependency	AD	Percentage	WDI (2021)
Physicians Availability	PHYA	Per 1000 people	WDI (2021)
Population Growth	POPG	Percentage (annual)	WDI (2021)

The study also includes summary statistics of the variables, providing the values of mean, median, standard deviation, minimum values, maximum values, and the total number of observations. Table 2 shows the descriptive statistics for all the variables.

Table 2

Summary Statistics of Dependent and Independent Variables

Variables	Obs.	Mean	Median	*SD*	Minimum	Maximum
Dependent Variable						
Life Expectancy	2525	70.784	72.95	8.6691	35.921	83.60
Infant Mortality Rate	2525	27.101	13.900	30.829	1.6000	177.50
Independent Variables						
KOF Index	2525	60.836	61.964	17.392	15.656	90.983
GDP Per Capita	2525	8.7434	8.776	1.564	5.129	11.610
Education	2525	33.378	27.454	25.507	0.0134	136.60
Urbanization	2525	59.280	64.202	22.360	3.525	100.00
Variables for Sensitivity Analysis						
Age Dependency	2525	59.921	53.042	53.042	15.743	113.04
Physicians Availability	2525	1.956	1.949	1.4193	0.000	8.421
Population Growth	2525	1.1726	1.0389	1.395	-3.847	16.700

The mean values of life expectancy and infant mortality rate are 65.95 and 68.99, while the median values are 45.142 and 30.4, respectively. The values of standard deviation for life expectancy and infant mortality rate are 10.685 and 41.052, respectively. The minimum and maximum values for life expectancy are 18.907 and 85.417. For infant mortality rate, the minimum and maximum values are 1.6 and 211.1. The mean values for independent variables, namely KOF, GDP per capita, education, and urbanization are 50.022, 12,985, 24507, and 53.209, respectively. While,

the values of standard deviation for independent variables are 16.7699, 20,408, 23.787, and 25.063, respectively. The minimum values for independent variables are 14.47, 164.33, 0, and 2.97, respectively. While, the maximum values for independent variables are 90.98, 19,606, 142.85, and 100, respectively.

The summary statistics values for sensitivity analysis show that the mean value is 8611 for age dependency, 3963 for physicians' availability, and 9184 for population growth. Their standard deviation values are 20.348, 1.3884, and 1.582, respectively. The minimum values are 15.743, 0.0008, and -6.766, respectively. While, the maximum values are 117.88, 8.4218 and 17.633, respectively.

Furthermore, another statistical approach known as correlation matrix was incorporated in the analysis. Correlation matrix determines the direction and degree of the linear relationship between two variables. Table 3 presents the correlation matrix results for all the variables.

Table 3
Correlation Matrix

Variables	LE	IMR	KOF	GDPPC	EDU	URB	PHY	AGE	POP
Life Expectancy	1.00								
Infant Mortality Rate	-0.92	1.00							
KOF Index	0.80	-0.79	1.00						
GDP Per Capita	0.80	-0.65	0.82	1.00					
Education	0.68	-0.64	0.74	0.60	1.00				
Urbanization	0.73	-0.71	0.72	0.80	0.60	1.00			
Physicians Availability	0.66	-0.63	0.62	0.57	0.71	0.61	1.00		
Age Dependency	-0.80	0.82	-0.68	-0.65	-0.60	-0.62	-0.63	1.00	
Population Growth	-0.43	0.49	-0.41	-0.30	-0.48	-0.29	-0.51	0.534	1.00

The table shows that life expectancy is positively correlated with KOF, GDP per capita, education, urbanization, and physicians' availability, while it is negatively correlated with age dependency and population growth. On the other hand, infant mortality rate is negatively correlated with KOF, GDP

per capita, education, urbanization, and physicians' availability, while it is positively correlated with age dependency and population growth.

Results

OLS, fixed-effects, random-effects, and sensitivity analysis were carried out in this study. In Table 4, columns 1-4 show the overall impact of social, economic, and political globalization on infant mortality rate, while columns 5-8 show the results of the overall impact of social, economic, and political globalization on life expectancy. It is evident from columns 1-4 that globalization and its three dimensions have a negative impact on infant mortality rate. The coefficients range from -0.079 to -1.24. Columns 5-8 show that globalization and its dimensions have a positive impact on life expectancy. The coefficients range from 0.101 to 0.248. The coefficient of economic globalization shows that if it increases by one percent, there is a 0.10% increase in life expectancy and 0.5% decrease in infant mortality rate. This is because of increased trade and FDI which increases economic growth, creates job opportunities, enhances education, and improves productivity. Economic growth allows more people to afford health facilities, which leads to better health conditions in the country (Bernard et al., 2007; Cornia, 2001). Social globalization also shows a positive impact on health, that is, if social globalization increases by one percent, life expectancy increases by 0.24% and infant mortality rate decreases by 1.24%. This result suggest to increase tourism and social integretion to enhance health and quality of life (Sapkota, 2011). Political globalization seemingly also enhances health but to a lesser extent than economic and social globalization. Column 4 shows that if political globalization increases by one percent, then infant mortality rate decreases by 0.07%, while life expectancy increases by 0.01%, as shown by column 8. Political globalization enhances health through policies related to the control of epidemics, human rights, and environmental degredation.

Table 4
Impact of Globalization on Life Expectancy and Infant Mortality Rate

Variables	IMR (1)	IMR (2)	IMR (3)	IMR (4)	Life Exp (5)	Life Exp (6)	Life Exp (7)	Life Exp (8)
Constant	153.9*** (65.88)	115.8*** (48.97)	158.8*** (65.80)	160.6*** (63.90)	35.12*** (64.35)	43.31*** (75.80)	34.60*** (61.87)	34.16*** (59.16)
Overall Glob	-0.969*** (-24.63)	---	---	--	0.170*** (19.31)	--	--	--
GDPPC	-4.701*** (-10.28)	-0.989* (-2.18)	-7.747*** (-17.59)	-10.33*** (-24.57)	1.953*** (18.80)	0.631*** (5.77)	2.433*** (24.01)	2.895*** (30.50)
EDU	-0.097*** (-4.44)	-0.0211 (-1.11)	-0.276*** (-13.57)	-0.359*** (-16.95)	0.0671*** (13.08)	0.0471*** (10.36)	0.101*** (21.40)	0.112*** (23.41)
Urbanization	-0.356*** (-13.82)	-0.371*** (-15.83)	-0.337*** (-12.55)	-0.377*** (-13.74)	0.0923*** (15.60)	0.0919*** (16.63)	0.0841*** (13.75)	0.0947*** (15.40)
Social Glob	---	-1.247*** (-40.81)	---	--	--	0.248*** (33.37)	--	--
Political Glob	---	---	-0.550*** (-18.07)	--	--	--	0.101*** (14.34)	--
Economic Glob	---	---	---	-0.079*** (-3.85)	--	--	--	0.0178*** (4.18)
R-Square	0.6838	0.7388	0.6670	0.6424	0.7406	0.7746	0.7337	0.7206
F-Stat	2414.91	3152.09	2205.63	2002.15	3252.59	3917.01	3097.64	2939.85
F-Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
No. of Obs	4471	4462	4409	4463	4561	4464	4503	4464

Table 5 (a)

Impact of Globalization on Life Expectancy: Fixed and Random Effects

Variables	Life Expectancy (1)	Life Expectancy (2)	Life Expectancy (3)	Life Expectancy (4)	Life Expectancy (5)	Life Expectancy (6)	Life Expectancy (7)	Life Expectancy (8)
	Fixed Effect				Random Effect			
Constant	38.12*** (31.94)	40.49*** (32.08)	28.89*** (23.02)	33.56*** (27.90)	37.92*** (33.95)	41.93*** (37.19)	31.87*** (27.26)	33.37*** (29.44)
Overall Globalization	0.265*** (33.63	---	---	---	0.264*** (34.95)	---	---	---
GDPPC	0.568*** (3.48)	0.507** (2.97)	1.841*** (10.75)	1.495*** (9.28)	0.733*** (4.96)	0.403** (2.65)	1.633*** (10.41)	1.741*** (11.86)
Education	0.00119 (0.32)	0.00666 (1.78)	0.0249*** (6.02)	0.0331*** (9.55)	0.00189 (0.52)	0.00735* (2.00)	0.0302*** (7.41)	0.0357*** (10.36)
Urbanization	0.187*** (21.54)	0.196*** (22.01)	0.289*** (33.83)	0.196*** (21.66)	0.176*** (21.66)	0.174*** (21.39)	0.262*** (32.06)	0.190*** (22.58)
Social Globalization	---	0.233*** (30.45)	---	---	---	0.244*** (33.42)	---	---
Economic Globalization	---	---	0.131*** (18.78)	---	---	---	0.136*** (19.85)	---
Political Globalization	---	---	---	0.167*** (29.18)	---	---	---	0.155*** (29.00)
R-Square	0.7203	0.7576	0.6941	0.6475	0.7232	0.7627	0.6989	0.6595
Number of Obs.	4561	4564	4503	4564	4561	4564	4503	4564

Table 5(b)

Impact of Globalization on Infant Mortality Rate: Fixed and Random Effects

Variables	IMR (1)	IMR (2)	IMR (3)	IMR (4)	IMR (5)	IMR (6)	IMR (7)	IMR (8)
	Fixed-Effects				Random-Effects			
Constant	163.5*** (30.38)	160.8*** (27.01)	222.6*** (37.09)	187.9*** (35.57)	152.8*** (31.02)	133.6*** (26.40)	189.4*** (34.96)	177.9*** (35.94)
Overall Globalization	-1.564*** (-43.97)	--	--	--	-1.597*** (-46.72)	--	--	--
GDPPC	-1.665* (-2.24)	0.210 (0.26)	-6.743*** (-8.16)	-3.234*** (-4.53)	-2.071** -(3.09)	2.740*** (3.87)	-4.116*** (-5.48)	-3.497*** (-5.30)
Education	0.258*** (16.10)	0.350*** (19.75)	0.278*** (13.91)	0.242*** (15.87)	-0.400*** -(23.94)	0.327*** (18.66)	0.222*** (11.13)	0.214*** (13.81)
Urbanization	-1.167*** (-29.49)	1.273*** (-29.93)	-1.790*** (-43.35)	-1.132*** (-28.27)	-1.050*** (-28.42)	-1.046*** (-27.17)	-1.534*** (-38.72)	-1.060*** (-27.96)
Social Globalization	--	-1.238*** (-34.31)	--	--	--	-1.351*** (-39.46)	--	--
Economic Globalization	--	--	-0.720*** (-21.55)	--	--	--	-0.775*** (-23.22)	--
Political Globalization	--	--	--	-1.093*** (-43.67)	--	--	--	-1.040*** (-43.50)
R-Square	0.6351	0.6838	0.5929	0.5187	0.6381	0.7007	0.5983	7969.96
No. of Observations	4471	4463	4409	4463	4471	4463	4409	4463

Table 5(a) shows the results for fixed and random effects. Columns 1-4 show the results obtained for fixed-effects, while columns 5-8 report the results for random-effects. All columns of Table 5 report that globalization has a positive impact on life expectancy. The results are consistent with the studies of Bergh and Nilsson (2010), and Martens et al. (2010).

Table 5(b) also reports the results for fixed and random effects, while investigating the impact of globalization on infant mortality rate. Again, columns 1-4 show the results for fixed-effects, while columns 5-8 report the results for random-effects. All the columns of the table show that as globalization increases, infant mortality rate decreases.

The findings assert that increasing health facilities, food safety, health policies, and health knowledge leads to high life expectancy and low infant mortality rate. To conclude, the results indicate that integration helps to allevate life expectancy and lowers infant mortality rate. Even after the decomposition of globalization into its three components, the results remain positive for life expectancy and negative for infant mortality rate. The main contributer towards increasing life expectancy and lowering infant mortality rate is social globalization, followed by political globalization.

Difference between Fixed-Effects Model and Random-Effects Model

Choice between Fixed and Random Effects

To find out which technique is more appropriate, Hausman test was used to test the following null hypothesis:

H_0 = Random-effects model is appropriate

H_1 = Random-effects model is not appropriate

Table 5 (c)
Results for Hausman Test

Hausman Test		
Variables	Chi (4)	Prob>chi(2)
Overall Globalization		
Life expectancy	249.85	0.0000
Infant Mortality Rate	84.72	0.0000
De Facto Globalization		
Life Expectancy	228.94	0.0000
Infant Mortality Rate	351.10	0.0000

De Jure Globalization		
Life Expectancy	112.61	0.0000
Infant Mortality Rate	149.60	0.0000
Social Globalization		
Life Expectancy	157.82	0.0000
Infant Mortality Rate	-226.01	---
Economic Globalization		
Life Expectancy	146.28	0.0000
Infant Mortality Rate	103.04	0.0000
Political Globalization		
Life Expectancy	179.71	0.0000
Infant Mortality Rate	67.37	0.0000

The *p*-value is less than 0.1 (which is the significance level). Therefore, the null hypothesis was rejected and the fixed-effects model was determined as the appropriate model.

Sensitivity Analysis

The robustness of the results was checked through sensitivity analysis. Additional variables, such as physicians' availability, population growth, and age dependency were also included in the analysis. This is done by applying regression on independent variables that we took initially, then we add each additional variable one by one. Table 6 reports the results for the sensitivity analysis of globalization. The results reveal that irrespective of the additional variables employed, the impact of globalization on life expectancy and infant mortality rate does not change. Column 2 shows that life expectancy increases by 0.14% when globalization increases by one percent, when physicians' availability is employed. Columns 3 and 4 show that life expectancy increases by 0.14% and 0.10% respectively when population growth and age dependency are employed.

Column 1 shows the impact of globalization on infant mortality rate. It shows that when overall globalization increases by one percent, infant mortality rate decreases by 0.96%. Columns 2-4 show the results of the impact of globalization on infant mortality rate when physicians' availability, population growth, and age dependency are employed. The coefficients decrease from 0.96 to 0.71, 0.83, and 0.64, respectively. Hence, the findings of this study are robust even if alternative estimation techniques are considered.

Table 6

Sensitivity Analysis of the Impact of Globalization on Life Expectancy and Infant Mortality Rate

Variables	LE (1)	LE (2)	LE (3)	LE (4)	IMR (1)	IMR (2)	IMR (3)	IMR (4)
Globalization	0.170*** (19.31)	0.148*** (13.87)	0.148*** (16.81)	0.105*** (12.97)	-0.969*** (-24.63)	-0.71*** (-17.30)	-0.84*** (-21.74)	-0.64*** (-17.37)
GDPPC	1.953*** (18.80)	1.810*** (15.16)	1.969*** (19.34)	1.326*** (14.17)	-4.701*** (-10.28)	-3.57*** (-7.71)	-4.92*** (-11.19)	-2.86*** (-6.96)
Education	0.0671*** (13.08)	0.0224*** (3.78)	0.0487*** (9.36)	0.0333*** (7.27)	-0.097*** (-4.44)	-0.00948 (-0.41)	-0.0116 (-0.53)	0.0193 (0.97)
Urbanization	0.0923*** (15.60)	0.0373*** (5.34)	0.0973*** (16.74)	0.0662*** (12.58)	-0.356*** (-13.82)	-0.23*** (-8.57)	-0.38*** (-15.37)	-0.25*** (-11.04)
Physicians Availability	---	1.178*** (12.70)	---	---	---	-3.79*** (-10.52)	---	---
Population Growth	---	---	-0.912*** (-13.81)	---	---	---	5.324*** (19.50)	---
Age Dependency	---	---	---	-0.203*** (-37.07)	---	---	---	0.808*** (34.02)
R-Square	0.7406	0.7398	0.7510	0.8006	0.6838	0.6895	0.7086	0.7502
F-statistics	3252.59	1437.09	2747.00	3644.89	2414.91	2170.40	2170.40	2671.10
F-prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
No. of Observations	4,561	2,533	4,559	4,544	4,471	2,533	4,469	4,452

Conclusion

To examine the impact of globalization and its various dimensions on health, a global data of 193 countries for the years 1971-2018 was analysed in this study. The indicator used for globalization was KOF index, whereas the indicators of health were life expectancy and infant mortality rate. Empirical results were obtained through OLS, fixed-effects, random-effects, and sensitivity analysis.

It is evident from the results that globalization improves health by increasing life expectancy and decreasing infant mortality. There is a significant and positive impact of globalization on health. Even if the analysis is disintegrated, it is evident that social, economic, and political globalization contributes to enhance population health. The results suggest that life expectancy increases by 0.131 years and infant mortality rate decreases by 0.72 deaths, when economic globalization increases by one percent. It is due to the effects of economic growth and the trade of medicine and surgical instruments which saves lives. It was also found that an increase in social globalization increases life expectancy by 0.23 years and decreases infant mortality rate by 1.23 deaths. This is because of the flow of health education, awareness, and knowledge which helps to set healthy trends in the society. Furthermore, it is evident from the results that one percent increase in political globalization increases life expectancy by 0.167 years and decreases infant mortality rate by 1.09 deaths. This happens when health related policies are introduced, such as tobacco prohibition. Even after employing additional control variables, such as physicians' availability, population growth, and age dependency, the results remain significant and positive.

Recommendations

Keeping in view the findings, it is suggested that countries should embrace globalization for better health. There should be greater trade of quality medicine and surgical instruments, supplemented by the movement of doctors, to enable people to get health benefits. Countries should opt for social globalization more than economic and political globalization, as its impact is greater than the other two. For example, the knowledge of how preservatives are harmful should be made available. Moreover, the study can be extended to find the channels through which globalization and its various dimensions affect life expectancy and infant mortality rate.

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