



Assessing the sustainability of public health in the era of globalization

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Abstract

In recent times, globalization has emerged as more than purely an economic phenomenon manifesting itself on a global scale. The elements of globalization include international movement of goods and people, financial capital, and information along with technological developments, political dynamics, tourism, and ecological consequences. This study used the Globalization Convergence Index (GCI) as a measure of multi-dimension globalization and linked it with health indicators to analyze if high-ranking countries were doing better in terms of mortality rates. Different statistical tests were performed to measure the impact of the globalization process on mortality indicators of public health. Findings suggest that highly globalized countries have better health measured in the form of low mortality rates. On domain level, technology was found to be the major driving force for reducing mortality rates followed by social-cultural and ecological domains. In globalization debate, the top-ranked countries were usually lauded as “achievers”, while low-ranked ones were regarded as “losers”. In our opinion, care should be taken while interpreting the observed positive association as simple evidence that globalization is mostly good for our health.

Keywords Globalization · Health indicator · Mortality rate · Sustainable development · Political economy

Introduction

The globalization has played a significant role in transforming the health system across the world in the latter half of the 20th century and still advancing. The globalization process has impacted the health system through multiple pathways which yielded mixed results varying from region to region. The

recent form of globalization has provided both opportunities and challenges over the health care system in a number of countries (Deaton 2004). Increased penetration of technology in the health sector, fast access to health information, and free movement of the health staff across regions are some of the examples of health opportunities which resulted from the globalization process. The outbreak of COVID-19 pandemic in 2019, Ebola in 2014, spread of infectious diseases such as malaria and HIV/AIDS, deprived health in war-torn areas, and malnutrition are some of the health challenges which have impacted through globalization either in a direct or indirect manner in recent times.

Public health and globalization phenomena

Public health and development have become an essential obligation globally, and we can claim that there have been immense improvements in life expectancy over the past centuries. In the past, globalization was usually seen as more or less of an economic process, but now, it is considered as a more widespread phenomenon which is affecting the public health of our population depending on a multitude of factors.

Globalization is impacting on the epidemiology of contagious diseases and on the scope to effectually prevent, control,

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and treat diseases. This may amend the range and frequency of many infections, causing higher ambient air temperatures, along with the changes in precipitation and humidity which will alter the biology and ecology of disease, hosts, pathogens that they diffuse, and the risk of transmission. Infectious diseases such as vector-borne infections are either not increased, rare, or entirely absent in most high income-based countries over the twentieth century (WHO 2004). Globalization can affect both directly, at the level affecting the entire population, individuals, and healthcare delivery systems, and indirectly, on the economy and other factors, such as on the educational system, sanitation system, and water supply (Woodward et al. 2001).

It was also found out that an inadequate approach to education and professional advancement are escorting factors that professional development are leading contributing factors that destabilize the execution and obligation of healthcare workers (WHO 2018). Some positive aspects of globalization include the potential scope to detect and report disease outbreaks, which are quickened due to the advent of global information and communication systems.

Globalization and mortality rates among different age groups

The concept of globalization has emerged as a widespread and multifaceted phenomenon throughout the world and has shown great significance during the last few decades. Globalization has created worldwide discussion on its possible benefits and costs, particularly for the most vulnerable populations. The differences in aftereffects of globalization are in fact partly related to the complex and multidimensional nature of this phenomenon.

Infant mortality is in fact among the most heated issue challenging us today. It was discovered that countries with comparatively stronger positions in the world system and higher levels of secondary education experience lower levels of infant mortality rates. Moreover, countries with lower levels of per capita ecology experience higher levels of infant mortality rates. A worldwide study was functioned with data collected from various sources from the 2013 World Bank data catalog region using the record linkage theory. Adults, who are between 15 and 60 years, are the pillars of economic growth and national development. The twentieth century has perceived an impulsive increase in the adult mortality rate, hence influencing the mortality and morbidity in infants, children, and mothers and also the health and education of the children in a family (Beltrán-Sánchez et al. 2015). There is an enormous inequality in the mortality rates among different age groups; for example, it was recorded that global adult mortality rate is about 123 times higher than maternal mortality rate, 8 times higher than infant, and

approximately about 6 times higher than the children under 5 years (WorldBank 2015). Various factors contribute to adult mortality rates, including increased number of travelling, having jobs that involve high risks, communal conflicts, and unsustainable living style. Previous research highlighted the risk factors and pathological conditions that affect adult mortality (Ranabhat et al. 2017). Widespread researches have been done on age-based mortality rates specifically by diseases like cancer, TB, HIV, reproductive health problems, injuries, and behaviors.

Defining globalization

In past times, globalization was considered as a process primarily driven by economic activity in the form of capital movement, trade liberalization, and migration. However, in recent times, globalization has emerged as a comprehensive phenomenon that incorporate a multitude of dimensions from political movements to social-cultural changes, from technology diffusion to economic integration and international tourism to environmental drive. All these driving factors of globalization are rapidly reshaping the world and its people in an unprecedented manner.

Globalization is such a complex and multidimensional phenomenon that researchers attempt to define it from their area of expertise. Some interpreted the process as global market integration, while others consider it as a tool for diminishing boundaries. Some perceive it as increased technology diffusion, and for some it is causing a threat to national sovereignty by international actors. Some believe it is promoting cultural diversity, while others view it as invading indigenous communities.

In this study, we used the pluralistic approach, as proposed previously by Rennen and Martens (2003), which offers a concept to capture the complex nature of different dimensions, processes, scale levels, and linkages and pathways in order to characterize the relationship between globalization and health. Hence, contemporary globalization is defined as the intensification of cross-national interactions that promote the establishment of transnational structures and the global integration of cultural, economic, ecological, political, technological, and social processes on global, supranational, national, regional, and local levels (Rennen and Martens 2003).

The aim of this paper is to further explore the studies on the possible linkages of globalization with the health of populations and investigating the role of globalization in the improvement (or deterioration) of health care system.

Methodology

To find answers of possible linkages between globalization and health, an indicator-based approach is employed. The Globalization Convergence Index (GCI) has been used as a

quantitative measure of globalization to analyze its impact on health indicators as measured by mortality rates with the correction for possible confounding factors. In the following section, construction steps of the globalization index are explained. Next, health indicators will be discussed along with the list of confounding factors used in the analysis. In the last section, statistical methods used in the study are mentioned.

Globalization Convergence Index (GCI)

The GCI measures the countries' level of globalization in multiple domains, from politics to economy, sociocultural to technology and environmental degradation. The definition of GCI and its construction step are briefly explained below.

The GCI is constructed in a four-stage process following the steps mentioned as follows:

Construction steps of GCI

The GCI used in the current study was modified from the Maastricht Globalization Index (MGI) developed by Martens and Zywiec (2006) and Martens and Raza (2009). The GCI measures multiple dimensions of globalization including economy, politics, social, technology, and ecology. The index was constructed in a four-stage process as described by OECD (2008) and Martens and Raza (2009). In the first stage, choices were made about the most relevant variables to be included in the index. After selections of variables, quantitative measures were adopted that fit more closely to the definition of globalization. Proxy measures have been used when desired data were not available. A list of quantitative measures and proxy variables used in the index development are listed in Table 1. In the third phase, data in each variable were normalized on scale from zero to a hundred using $((V_i - V_{\min}) / (V_{\max} - V_{\min}) \times 100)$ formula. This normalization procedure was employed by Dreher (2006) in the construction of KOF index of globalization. The normalized data are then transformed—on the domain level—according to the percentiles of the base year (2008) distribution. Every variable was assigned an equal weight within each set of criteria or domain. Finally, a weighted sum of the measures was calculated by the simple addition of all domain scores to produce the final score, which used to rank and compare the countries. A higher value denoted a high degree of globalization and vice versa. The country with highest score was categorized as the “most globalized”. The GCI was calculated for two years, 2008 and 2012. The GCI map is depicted in Fig. 1. The list of variables along with definitions is provided in Table 1.

Health indicators

To understand the strength of relationship between the nation's level of globalization and the status of health care

system of people in a country, selected health indicators have been used based on the World Health Statistics (WHO 2020).

- Infant mortality rate (per 1000 live births, both sexes): “[...] the probability of a child born in a specific year or period dying before reaching the age of one year, if subject to age-specific mortality rates of that period”
- Under-five mortality rate (probability of dying by age 5 per 1000 live births, both sexes): “the probability of a child (born in a specific year or period) dying before reaching the age of five, if subject to age-specific mortality rates of that period”
- Adult mortality rate (probability of dying between 15–60 years per 1000 population, both sexes): “probability that a 15-year-old person will die before reaching his/her 60th birthday”

The selected health indicators for mortality rates are the true representation of the overall population according to the World Health Organization. For the assessment of child health and overall health in a country, two major indicators have been used, namely *infant mortality rates* and *under-five mortality rates*. These two indicators are also part of the Sustainable Development Goals, SDG 3, i.e., Good Health and Well-Being, a project of the United Nations. The nations' declining levels of life expectancy is inherently associated with increased level of child mortality. The overall mortality pattern in a population of a country is assessed using the *adult mortality rate*. The increased burden of disease from non-communicable diseases among adults by ageing trends and health transition has largely signified the importance of this indicator. The health indicators of mortality have data available for all 117 countries used in the globalization index, GCI.

Confounding factors

The assessment of the relationship between the development of globalization and health indicators cannot be performed without having an overview of possibly related development. For that purpose, some confounding factors in the GCI–health relationship have been selected based on the literature survey. Table 2 has a list of selected confounding factors with definition, source, and coverage of years mentioned.

From the list of available confounding factors, not all variables were considered for the analysis due to different reasons. Many of the variables were not included because of non-availability of data for all countries. Other confounding factors did not meet the selection criteria so could not be part of the analysis.

Statistical analysis

First, Spearman's correlation test was performed between the index of globalization and health mortality indicators. Second,

Table 1 List of domains and indicators used for constructing Globalization Convergence Index (GCI)

Domains	Indicators	Indicator definition
Politics	Embassies	Absolute number of in-country embassies and high commissions
	Global Political Consensus (UN voting response)	Response of countries on resolutions presented in General Assembly meetings
	Military	Military expenditure as a share of GDP
Economy	Trade	Imports + exports of goods and services as a share of GDP
	FDI	Gross Foreign Direct Stocks as a share of GDP
	GDP growth	Annual percentage growth rate
	Remittances	Personal remittances as a share of GDP
Social & cultural	Tourism	International arrivals + departures per 100 inhabitants
	Migrants	Those who change their country of usual residence per 100 inhabitants
	International students	International students studying abroad as a share of population
Technology	Cellular	Number of cellular as a share of population
	Internet	Internet users as a share of population
Ecology	Ecological footprint	Ecological deficit in global hectares

simple linear regression analyses were conducted to predict the value of dependent variables (health mortality rates) by the independent variable (index of globalization). And, finally, multiple regression models were analyzed to predict the dependent variable (health mortality rates) by employing independent variables of the index of globalization and list of selected confounding factors.

Health mortality indicators used in the study were of different age groups (i.e., infant mortality rates, under-five mortality rates, and adult mortality rates). The index of globalization (Globalization Convergence Index or GCI) comprised of five domains (politics, trade, economy, social & cultural, and environment). GCI is calculated for 117 countries. The list of selected confounding factors was given in Table 2.

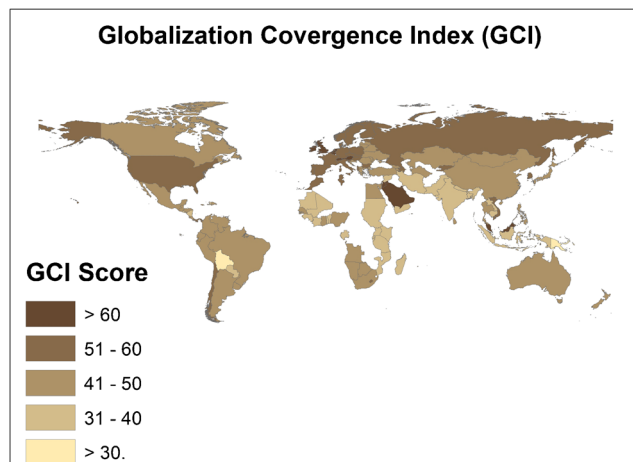


Fig. 1 Map of GCI with different colors representing levels of globalization from top to bottom. This figure was produced using software ArcGIS 10.1

Results

Data were examined for demonstrating the relationship between index of globalization and health indicators. Correlation analysis and regression tests were performed for study variables.

Spearman's correlation

Results of Spearman's correlation have been presented in Table 3, which shows an association between GCI and health mortality indicators based on infant mortality rates, under-five mortality rates, and adult mortality rates.

The results provide evidence that countries which have witnessed the rise in their level of globalization have also experienced a fall in the mortality indicators of all three age groups.

These findings are supported by convincing, robust, and significantly negative correlation between GCI and all the three health mortality indicators. Meanwhile, scatterplots in Fig. 2 also validate the negative relationship of globalization index with health indicators.

The three domains are worth mentioning with respect to the existing domains of globalization, which results in reduction in the health mortality indicators. These are the "social and cultural", technology, and ecology domains. In contrast to it, the other two domains of "politics" and "economy" have not shown any substantial change in the mortality rates.

Simple linear regression models

Tables 4 and 5 show regression results of modelling the health indicators on globalization and its domains. The findings

Table 2 Overview of selected confounders

Indicator	Definition	Sample size	Year	Indicator source	Data source
Prevalence of undernourishment (% of population)	Population below minimum level of dietary energy consumption (also referred to as prevalence of undernourishment) shows the percentage of the population whose food intake is insufficient to meet dietary energy requirements continuously. Data showing as 2.5 signifies a prevalence of undernourishment below 2.5%.	116	2011	Food and Agriculture Organization	World Data Bank, World Development Indicators
Health expenditure, total (% of GDP)	Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.	117	2011	World Health Organization National Health Account database	World Data Bank, World Development Indicators
Health expenditure, public (% of GDP)	Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings, and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.	117	2011	World Health Organization National Health Account database	World Data Bank, World Development Indicators
Literacy rate, adult total (% of people ages 15 and above)	Adult (15+) literacy rate (%). Total is the percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life. Generally, "literacy" also encompasses "numeracy", the ability to make simple arithmetic calculations. This indicator is calculated by dividing the number of literates aged 15 years and over by the corresponding age group population and multiplying the result by 100.	96	2001–2010	UNESCO Institute for Statistics	World Data Bank, World Development Indicators
School enrollment, primary (% net)	Net enrollment rate. Primary. Total is the ratio of children of the official primary school age who are enrolled in primary school to the total population of the official primary school age.	103	2002–2011	UNESCO Institute for Statistics	World Data Bank, World Development Indicators
School enrollment, secondary (% net)	Net enrolment rate. Secondary. All programs. Total is the ratio of children of the official secondary school age who are enrolled in secondary school to the population of the official secondary school age.	89	2002–2011	UNESCO Institute for Statistics	World Data Bank, World Development Indicators
Fertility rate, total (births per woman)	Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.	117	2011	(1) United Nations Population Division. World Population Prospects, (2) United Nations Statistical Division. Population and Vital Statistics Report (various years), (3) country data from various statistical offices	World Data Bank, World Development Indicators
Immunization, DPT (% of children ages 12–23 months)	Child immunization measures the percentage of children ages 12–23 months who received vaccinations before 12 months or at any time before the survey. A child is considered adequately immunized against diphtheria, pertussis (or whooping cough), and tetanus (DPT) after receiving three doses of vaccine.	117	2011	WHO and UNICEF	World Data Bank, World Development Indicators
Immunization, measles (% of children ages 12–23 months)	Child immunization measures the percentage of children ages 12–23 months who received vaccinations before 12 months or at any time before the survey. A child is considered adequately immunized against measles after receiving one dose of vaccine.	117	2011	WHO and UNICEF	World Data Bank, World Development Indicators
Improved sanitation facilities (% of population)	Access to improved sanitation facilities refers to the percentage of the population using improved sanitation facilities. The improved	109	2011	WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation	World Data Bank, World

Table 2 (continued)

Indicator	Definition	Sample size	Year	Indicator source	Data source
population with access)	sanitation facilities include flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet.				Development Indicators
Improved water source (% of population with access)	Access to an improved water source refers to the percentage of the population using an improved drinking water source. The improved drinking water source includes piped water on premises (piped household water connection located inside the user's dwelling, plot, or yard), and other improved drinking water sources (public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater collection).	112	2011	WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation	World Data Bank, World Development Indicators
Smoking prevalence, females (% of adults)	Prevalence of smoking in females is the percentage of women ages 15 and over who smoke any form of tobacco, including cigarettes, cigars, and pipes and excluding smokeless tobacco. Data include daily and non-daily smoking.	97	2009	WHO Report on the Global Tobacco Epidemic	World Data Bank, World Development Indicators

suggest that globalization has moderately explained the mortality indicators of infant mortality, under-five mortality, and adult mortality. On the domain level, findings demonstrate that the “technology” component has a positive effect in improving population health when measured in terms of mortality rates. However, other components of globalization could not capture any effect on health indicators as indicated by non-significant values.

Multiple regression models

Results of multiple regressions for health indicators are reported in Table 6. From the model, it was ascertained that

globalization has prominently explained the health indicators considering the influence of several controls. Confounding factors, which were chosen in the regression model by pretesting under multicollinearity analysis has left a positive impact on the regression equation. This is because there is always a chance of development and advancement in explanatory authority for all three health indicators in the model. With regards to the controls, the occurrence of malnutrition contributes to the rise in mortality rates, while health expenditure contributes to the decline in the rates among all three age groups. Moreover, better fertility rate also indicates low death rate of populations as well as immunization. Smoking prevalence has surprisingly shown its role in declining

Table 3 Spearman's correlation between the Globalization Convergence Index (GCI); the GCI domains; and the health indicators

	Infant mortality rate	Under-five mortality rate	Adult mortality rate
GCI 2012	- 0.733*	- 0.740*	- 0.682*
GCI domains			
Politics	0.133	0.133	- 0.049
Economy	0.120	0.115	0.145
Social & cultural	- 0.682*	- 0.687*	- 0.559*
Technology	- 0.900*	- 0.902*	- 0.788*
Ecology	- 0.436*	- 0.437*	- 0.445*

* Correlation is significant at the 0.01 level (2-tailed)

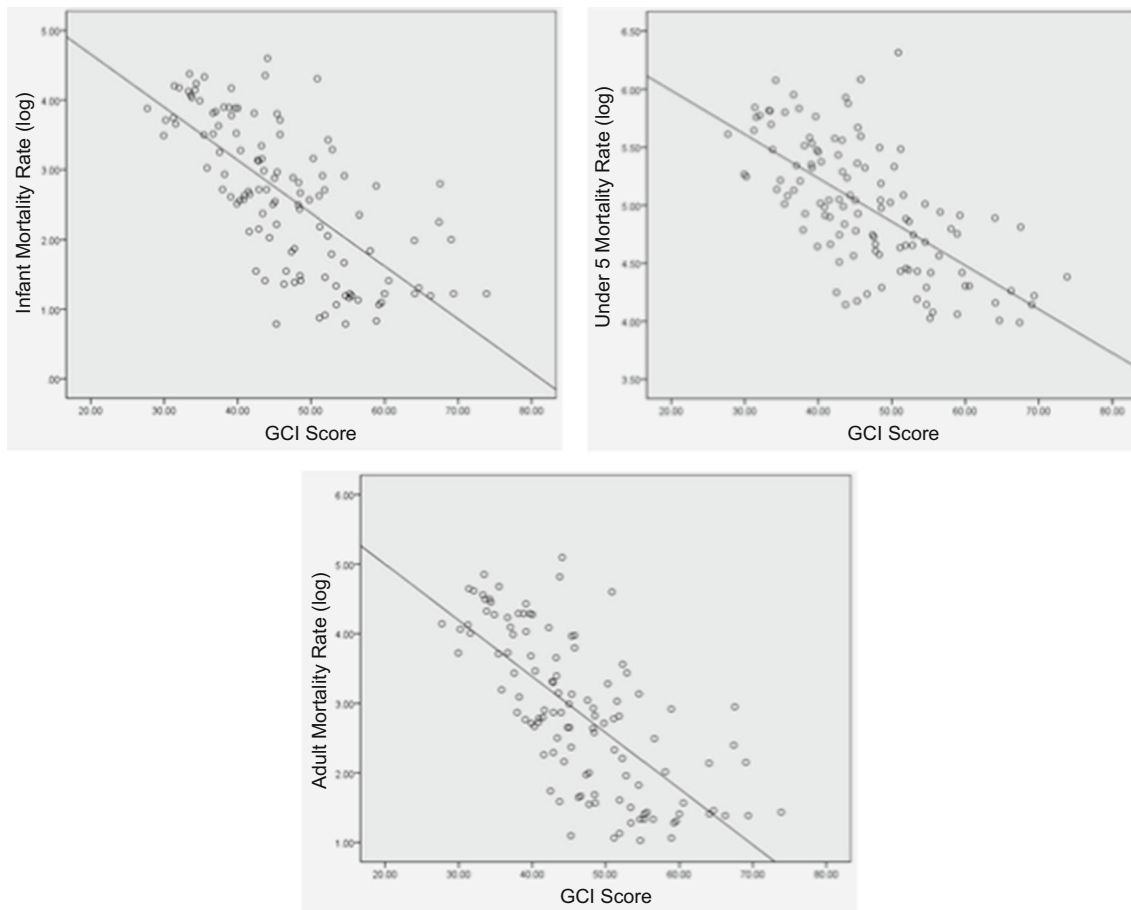


Fig. 2 Scatterplots and linear regression between the Globalisation Convergence Index (GCI) and selected mortality indicators

mortality rates. Table 6 also shows significantly negative values of GCI with all three health indicators.

Discussion

The current study highlights crucial components of globalization identified in the analyses performed that brought vast changes in public health when measured using mortality rates among different age groups. Correlation tests (Spearman’s correlation, and simple and multiple linear regression analyses) associate globalization index, as measured by the Globalization Convergence Index, with mortality indicators and concluded that countries which show increase in their globalization level maintained a decrease in mortality rates

in the three age groups taken into consideration. The technological component of globalization appears to be the one that exhibits the strongest negative correlation with the selected health indicators out of the other globalization domains. The other two components, i.e., sociocultural and ecological globalization, also exhibit significant roles in promoting better health.

The emergence of Information and Communication Technology (ICT) in the health sector brings innovative changes which increased the effectiveness of healthcare services. Those include patients’ health monitoring technologies like wearables devices (Ghamari et al. 2016), use of robotics, tele-medicine, online consultation, and health management applications (Latifi et al. 2014; Khosravi and Ghapanchi 2016). On the one hand, technology diffusion in health sector

Table 4 Linear regression coefficients (β) for the Globalization Convergence Index (GCI) and health indicators

$n = 117$	Ln infant mortality rate	Ln under-five mortality rate	Ln adult mortality rate
Constant (β_0)	6.177*	6.611*	6.743*
GCI (β_1)	- 0.076*	- 0.081*	- 0.038*
R-squared	0.488	0.495	0.437

* Correlation is significant at the 0.01 level (2-tailed)

Table 5 Linear regression coefficients (β) for the Globalization Convergence Index (GCI) domains and health indicators

$n = 117$	Ln infant mortality rate	Ln under-five mortality rate	Ln adult mortality rate
Constant (β_0)	2.341*	2.557*	5.106*
Politics (β_1)	0.031	0.031	- 0.012
R-squared	0.012	0.011	0.006
Constant (β_0)	2.338*	2.576*	4.794*
Economy (β_1)	0.033	0.030	0.021
R-squared	0.014	0.011	0.021
Constant (β_0)	3.265*	3.508*	5.262*
Social & Cultural (β_1)	- 0.182*	- 0.190*	- 0.080*
R-squared	0.417	0.409	0.293
Constant (β_0)	4.330*	4.636*	5.756*
Technology (β_1)	- 0.185*	- 0.195*	- 0.084*
R-squared	0.826	0.825	0.619
Constant (β_0)	4.190*	4.510*	5.902*
Ecology (β_1)	- 0.104	- 0.110	- 0.061*
R-squared	0.049	0.050	0.062

*Correlation is significant at the 0.01 level (2-tailed)

brings positive changes worldwide, while on the other hand, widespread use of technology in everyday life brings detrimental effects on a global scale especially among the youth. Many studies report excessive use of smartphone and video games among youngsters lead to depression, anxiety, poor academic performance, and lack of attention (Craparo 2011; Brunborg et al. 2014; Cutino and Nees 2017; Rozgonjuk et al. 2018).

Sociocultural domain has some influence in reducing mortality rates as nations develop. People who leave their country of residence in search of good future often ended up in Western regions where health facilities are of moderate quality than their hometowns. Migrants spend their lives with better health in developed regions. Another aspect where cross-cultural interaction exists can be found in international tourism where a traveler comes in contact with indigenous people of visiting region and becomes a carrier of infectious diseases.

Free movement of people enables patients to get treatment in other countries where treatment facility is available.

Investing in social element is crucial in societal development in a global village. If a child has access to good education, have a clean environment and a safe house, it is more likely that the child's health will be improved. Adequate institutional capacity is key to effective healthcare services, lacking of which results in a decline in health quality (Filmer et al. 2000).

In ecological globalization, which reflects that country is more depending on products from the outside world because of limited space left to produce food. Imported food which usually comes as processed food and not fresh causes health issues like obesity (Lin et al. 2018).

The selected confounders used in the study cast light on their role as causal factors in the relationship between globalization and health indicators. Occurrence of malnutrition has

Table 6 Multiple linear regression model for the Globalization Convergence Index (GCI) and health indicators with selected confounding factors

$n = 117$	Ln infant mortality rate	Ln under-five mortality rate	Ln adult mortality rate
Constant (β_0)	6.359*	6.879*	7.032*
GCI (β_1)	- 0.028*	- 0.029*	- 0.017*
Prevalence of undernourishment (β_3)	0.025*	0.028*	0.013*
Health expenditure, total (β_4)	- 0.057	- 0.055	- 0.021
Fertility rate, total (β_5)	- 0.023	- 0.016	- 0.001
Immunization, DPT (β_6)	- 0.021*	- 0.024*	- 0.013*
Smoking prevalence (β_7)	- 0.034*	- 0.035*	- 0.008
R-squared	0.876	0.780	0.633

*Correlation is significant at the 0.01 level (2-tailed)

significant positive impact on mortality rates of infants and under-five children. Adequate share of health expenditure in the country's budget is a detrimental factor of good health quality of a nation which could lead to a decline in mortality rates. In addition, better fertility rates result in the lowering of death rates among the population.

Globalization has the potential to provide health benefits to all countries especially poverty-hit countries (Deaton 2004); however, in the existing setup, it is serving rich countries bombarded with high-tech health solutions, latest equipment, highly qualified paramedics, and trained staff.

In the current form of globalization, health is not considered as its integral part, rather it is seen as the outcome of the process of globalization through which health benefits can be achieved. Since poverty is a major determinant of poor health, economic gains of globalization can deal with poor health in a better way through suitable public health measures (Deaton 2004).

Many public health factors were not discussed in the study such as vaccination of childhood diseases, death of trained medical care, spread of infectious diseases via movement of goods and people, and health inequality, among other factors.

Conclusion

The aim of this article has been to investigate the relationship of globalization and its domains with health indicators measured by mortality rates in different age groups. An index was developed, named as Globalization Convergence Index, to capture the level of globalization in over 100 countries. The index comprised of five domains: politics, economy, social & cultural, technology, and ecology. Different statistical analyses were performed to examine the impact of the globalization process on mortality indicators. Results indicate a decline in mortality rates as nations advance their globalization level. Technology appeared to be a major driving force in bringing the mortality rates down in highly globalized countries.

The results point to the fact that the globalization process can alter the health and well-being of populations in both directions, health-positive as well as health-negative. Economically stabilized nations could achieve better health in the form of high life expectancy, improved health services and access to health-related information. In addition, globalization has also paved way for a faster mode of travelling which increased the risk of spread of disease. Thus, a careful approach is needed before interpreting the positive association of health indicators with the process of globalization in countries.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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