DOI: 10.52131/pjhss.2024.v12i2.2291

Pakistan Journal of Humanities and Social Sciences

Volume 12, Number 02, 2024, Pages 1718–1726
Journal Homepage:
https://journals.internationalrasd.org/index.php/pjhss

Public Health Impacts on Economic Growth in Developing Countries: An Analytical Review of Research

Maria Iftikar[1], Hina Ali [2]

[1] Ph.D. Scholar, Department of Economics, The Women University Multan, Pakistan. Email: gmkhichi177@gmail.com
[2] Associate Professor, Department of Economics, The Women University Multan, Pakistan. Email: hinaali@wum.edu.pk

ARTICLE INFO

Article History:
Received: April 30, 2024
Revised: June 05, 2024
Accepted: June 06, 2024
Available Online: June 07, 2024

Keywords:
Public Health
Sustainable Economic Growth
Panel Data Analysis
Developing Countries of South Asia

Funding:
This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

This paper identifies an analytical review of the study on how public health impacts economic growth in developing countries of South Asia such as Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka by using the data from 2009 to 2023 by WDI. This research used the panel data framework for data analysis. Overall panel regression finding shows that the effect of public health such as capital stock and life expectancy on sustainable economic growth is positive. Furthermore, fertility rate and mortality rate negative impact on GDP or sustainable economic growth in South Asia region of developing countries. These findings suggest that sustainable economic growth can be improved by increasing public health facilities as a result, sustainable economic growth improves. The study also suggested recommendations for policy options and innovative solutions that lead to improved economic growth.

Corresponding Author's Email: hinaali@wum.edu.pk

1. Introduction

Health is an important factor for the growth of the human body and mind it is the total sum of three components physical, mental and social health of human well-being but not free of diseases. It is an important segment for the growth of the economy and development of the country. If health of the society's well-being is good, it indicates the production process of different economic techniques, if it is not good then the production of many economic techniques is not well considered. Different types of health that increase the physical, emotional and intellectual levels of society play a very important role in the growth of the economy. If health of the worker is good, he performs all duties in a good manner and that brings positive results all around the society improvement and growth of the social and economic sectors of the economy (Livingston, Jackson-Nevels, & Reddy, 2022; Ridhwan, Nijkamp, Ismail, & M. Irsyad, 2022; Wu, Wang, & Liu, 2023; Zhang, 2024). It has two types of effects on the production process of human well-being. Direct effect on health stimulates the growth of the economy indirectly. For example, direct spending on the growth of human resources increases the improvement level of education departments brings indirect positive effects on the production process of growth and increases the human skills activities in a good way. In other words, we say that the spending on education sectors not only improves the production process indirectly but also increases the social and economic status of families. The investment spending on education and health sectors for the development of human well-being not only increases the health of families but also increases the working conditions and learning abilities of workers. When the health of society is not well that indicates a lack of awareness of humans with lower intake of food calories, poor diets of families and different negative climate effects on human mind and body (H. Ali, Awan, I., Nosheen, F., Masood, J., & Nasir, N., 2021; Folland, Goodman, Stano, & Danagoulian, 2024; Hanson, Modi, & Allin, 2024; Vyas, Mehta, & Sharma, 2023).

The negative pollution effects of the environment not only increase the maternal mortality rate but also decrease the life span of humans and affects negatively the life expectancy level of economies. The spending on health sectors not only increases the action of

human activities but also decreases the ratio of maternal mortality and increases the life expectancy level of humans. It improves human behavior and has positive effects on health outcomes. If the health activities of human behavior, are good it increases the growth of the economy, and if health activities of human behavior are not good then it increases the risk failures ratio in terms of the production process of the growth of the economy (Bul & Moracha, 2020; He & Li, 2020; Owusu, Sarkodie, & Pedersen, 2021; Qehaja, Qehaja, Arber, & Marovci, 2023; Turan, 2020).

1.1. Statement of the Problem

In underdeveloped nations, the primary causes of health issues in people are not so much environmental degradation and air pollution as they are income inequality and a lack of resources to support a decent standard of living, as well as limited access to wholesome food to prevent nutritional deficiencies. The Agenda 2030 for Development Sustainability, thus, had seventeen goals and one hundred and ninety-nine targets to attain a good standard of living, eradicate poverty and economic disparity, and create a good environment and prosperity for future generations. Additionally, setting goals to address problems that the majority of people experience in the areas of politics, economics, and the environment (H. Ali, Awan, I., Nosheen, F., Masood, J., & Nasir, N., 2021; Bul & Moracha, 2020; He & Li, 2020; Owusu, Sarkodie, & Pedersen, 2021; Qehaja et al., 2023). So, a well-designed study is required to examine the public health impacts such as stock of capital life expectancy, fertility rate and mortality rate on economic growth in developing countries.

1.2. Research Question

The study will attempt to answer the following questions:

1. What are the various public health factors that influence economic growth in developing countries?
2. The study attempts to examine the public health impacts such as stock of capital life expectancy, fertility rate and mortality rate on economic growth in developing countries using world development indicators data (2023).

1.3. Objectives of the Study

This is the main objective of our study:

1. To identify the various public health factors that influence economic growth in developing countries.

1.4. Organization of the Study

This research is organized into the following contents; section two shows the literature review and sections three and four indicate a description of the data set, the methodology and result discussion and final section deals with conclusion and policy recommendation.

2. Literature Review

This section discusses the concepts of the public health impacts on sustainable economic growth in developing countries. Sharma (2018) re-analyzed the link between health growth for the years 1870–2013 using a panel generalized approach and an unbalanced panel of 17 advanced economies. This study used macroeconomic data on inflation, government spending, trade, and education in the sample nations, and addressed the bias caused by omitted variables in growth regression. It also used alternate model specifications, to show that life expectancy a proxy for population health, has a positive and significant effect on growth and real income per capita. The consequence of this study showed that future, another constituent of human resources, schooling is likewise emphatically connected with genuinely per capita income. This study suggests strategy suggestions that per capita income might benefit through a focused approach consideration on populace wellbeing for advanced and developing economies.

Bul and Moracha (2020) analyzed the impact of economic growth on health in Sub-Saharan Africa (SSA) using data from 1991- 2015 and pooled OLS and two-way fixed effect method. The outcome demonstrated the negative association between health outcomes and the growth of the economy. Additionally, it demonstrated how increased economic growth raises life expectancy and reduces fertility and infant mortality rates through the provision of

healthcare services. Furthermore, while per capita income reveals a greater influence on health in SSA, other factors such as population, agriculture, and services all have a substantial impact on health outcomes. Despite the uneven trend of economic growth and subpar health facilities that characterize SSA, this study suggests to policymakers that economic expansion should continue to be a key factor in improving health outcomes in these economies. Yang, Zheng, and Zhao (2021) examined the macroeconomic variables performance of different nations and the speed of acceleration in the aging and the health of population. To enhance analysis this study used Mankiw-Romer-Weil model (MRW) which takes into account the health and capital of humans from the period of 2000 to 2016 to check the impact of economic growth. That was carried out using the LSDV and TSLS techniques. The outcome indicated that investments in well-being have a positive impact on the growth of the economy and that relationship was found inversely U-shaped. And both impact investment on the growth of the economy and may counteract one another. Additionally, it was determined that the structure of investments in healthcare spending activities has a positive impact on economic growth. Bloom and Fink (2023) examined the world population health has improved significantly over the past half century. In any case, significant medical conditions endure, especially in tropical nations, which are as yet battling with irresistible illnesses while progressively managing noncommunicable sicknesses. Government efforts to improve health have been supported by a number of classic arguments for spending public money on health care. These endeavors have now been additionally prodded by new monetary contentions that better populace wellbeing might advance financial prosperity by means of gainful changes in labor efficiency, training, and speculation, and through segment change. The study showed that monetary outcomes of further developed wellbeing can be huge, however acknowledging them relies upon the strategies taken on in heap different fields.

Qehaja et al. (2023) examined the impact of government use on wellbeing and other applicable elements like health care coverage, life span, age rate on normal and demise monetary development in the countries of western. For this analysis, this study gathered data from Eurostat, National Statistical Offices, and the World Bank from 2000 to 2020. The study employed a fixed and random model of the panel to measure the impact of individual factors, including government health expenditure, insurance of health and the age of the population, expenditure on health and mortality rate. The findings of this study demonstrated that government spending on the services of health care affects the growth of the economy in these nations (H. Ali, Shafiq, Ali, Iftikar, & Naseer, 2023).

2.1. Research Gap and Conclusion

Many scenarios Hanson, Modi, and Allin (2024); Livingston, Jackson-Nevels, and Reddy (2022); Vyas, Mehta, and Sharma (2023); Wu, Wang, and Liu (2023) pointed out that sustainable economic activity not only improves the human capital, quality of environment air and it also promotes good health and well-being of the poor developing economies. So, improvement in public health is an important component that increases the economic growth process to achieve the development to create a good future (H. Ali, Naseer, Ali, & Iftikar, 2022; Folland et al., 2024; Ridhwan et al., 2022; Zhang, 2024). The summary of this section provides a review of the literature about public health impacts on sustainable economic growth in developing countries. Therefore, a study designed to investigate the positive effects of public health such as stock of capital life expectancy, fertility rate and mortality rate in detail to identify sustainable economic growth in developing countries of South Asia.

3. Research Methodology

The panel data of different developing countries in South Asia such as Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka from the time 2009 to 2023 are used in this study. World Development Indicators (WDI) is the online source for preparation of data. We used sustainable economic growth as an outcome variable which is estimated in GDP form of per capita (% of GDP) and stock of capital (% of GDP), life Expectancy (years), Fertility rate (per woman total births) and mortality rate (modeled estimates per hundred thousand births live) are the independent variable.

3.1. Methodological Framework

The following equation was used to create the panel of seven developing countries in this study.

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3t_{it} + \beta_4 X4_{it} + \varepsilon_{it} .....(a)$$

Where Y=Sustainable economic growth, X1**=** stock of capital, X2= life expectancy, X3= Fertility rate, X4=mortality rate, and ε = Error Term

3.2. Description of the Variables

This portion explains the description of variables.

Table 1: Description of Variables Used in Model Analysis

Dependent Variable	
Per capita (% of GDP)	Gross domestic product per capita is GDP partitioned by midyear populace. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.
Independent Variable	
Stock of capital (% of GDP)	It is a proportion of the total value of all public stocks in a market divided by that economy's GDP.
Life Expectancy (years)	life expectancy is a statistical estimate of the typical number of years that a person is expected to live.
Fertility rate (per woman total births)	the average number of children that a hypothetical cohort of women would have at the end of their reproductive cycle if they were immortal and subject to the fertility rates of a particular era for their entire lifetimes. It is stated as one child for each woman.
Mortality rate	The ratio of maternal mortality rate indicates the number of women per one lac (100,000) live births who die from pregnancy-related causes while pregnant or within 42 days of giving birth.

3.3. Econometric Model

To estimate data, this study applied the panel model (H. Ali et al., 2023; Qehaja et al., 2023; Zhang, 2024). Using the fixed (FE) or random effect (RE) model, we examined the public health impacts on the Asian growth of economies.

4. Empirical Results

The empirical findings of the data from developing countries of South Asia will be explained in this section.

4.1. Descriptive Statistics

It provides information on central tendency (mean), dispersion (standard deviation) and normality (skew and kurtosis) of the series. Table 1 indicates the descriptive statistics about the variables evaluated in the study.

Table 2: Descriptive Statistics

Variables	**Mean**	**Std. Dev.**	**Min**	**Max**	**Skew.**	**Kurt.**
Y	1783.69	1110.82	164.56	4495.71	0.90	2.871
X1	3.34	0.41	2.44	4.24	-0.16	2.32
X2	4.23	0.05	4.1	4.34	-0.11	2.43
X3	0.95	0.38	.32	1.83	0.82	2.61
X4	4.99	0.96	3.04	6.81	-0.02	2.35

The mean value shows the average value of the series. So, the average value of the y, x1, x2, x3, and x4 are 1783.7, 3.35 4.23, 0.96 and 4.99 with deviations of 1110, 0.41, 0.05, 0.38 and 038 respectively. The min values of the y, x1, x2, x3, and x4 are 164.56, 2.44, 4.1, 0.32, 3.05 while the max value 4495.71, 4.24, 4.34, 1.83 and 6.81 respectively. The value of y, x1, x2, x3, and x4 has normal skewness means it has a zero skew, positive long right tail and negative means long left tail and platykurtic means peaked curve because their value is less than 3.

4.2. Pairwise Correlations

Pairwise correlation analysis is done between response and explanatory variables to check the relationship.

Table 3: Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) Y	1.00				
(2) X1	0.49*	1.00			
(3) X2	0.79*	0.65*	1.00		
(4) X3	-0.59*	-0.82*	-0.85*	1.00	
(5) X4	-0.91*	-0.56*	-0.88*	0.75*	1.00

*** (p<0.1), ** (p<0.05), * (p<0.01)*

The above table shows that a positive relationship is present in both variables X1, and X2 with Y at a level of 1%. Furthermore, the finding shows that negative associations X3, X4 with Y and all are statistically significant at level 1%.

Figure 1: Matrix Plot of all the Variables

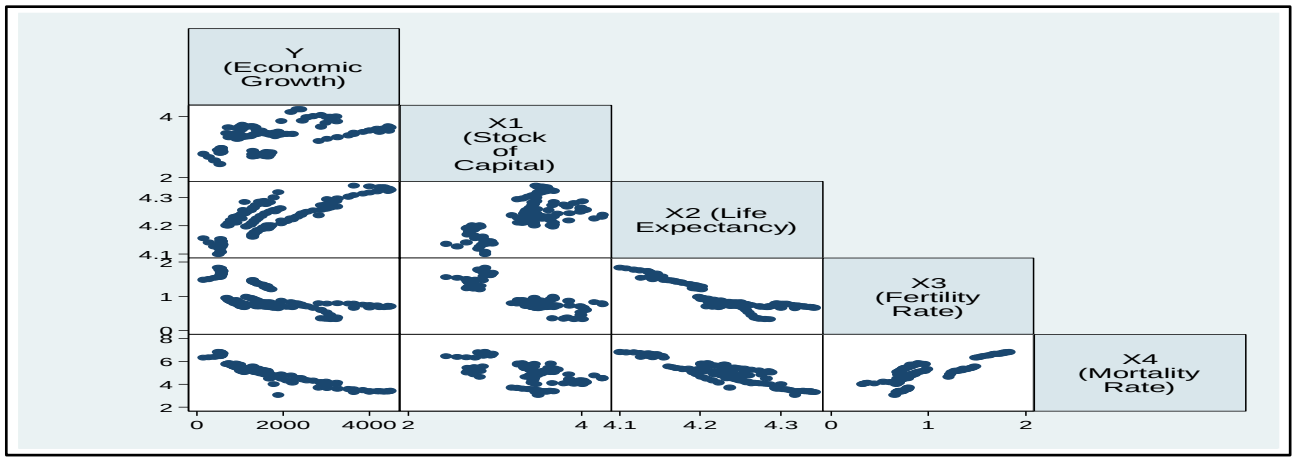


Figure 1. shows the relationships of all variables. It shows that X1, X2 are associated with Y positive while other variables X3 and X4 with Y negative and linear.

4.3. Multicollinearity

It shows that when the variance inflation factor (VIF) is < 10 there are no issues of multicollinearity. Our finding shows that there is no issue of multicollinearity in this model.

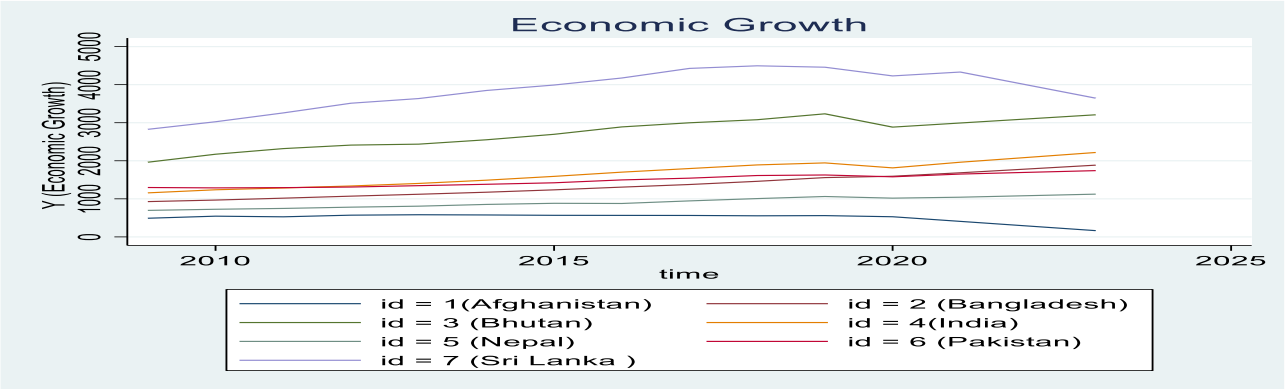
Table 4: Variance Inflation Factor

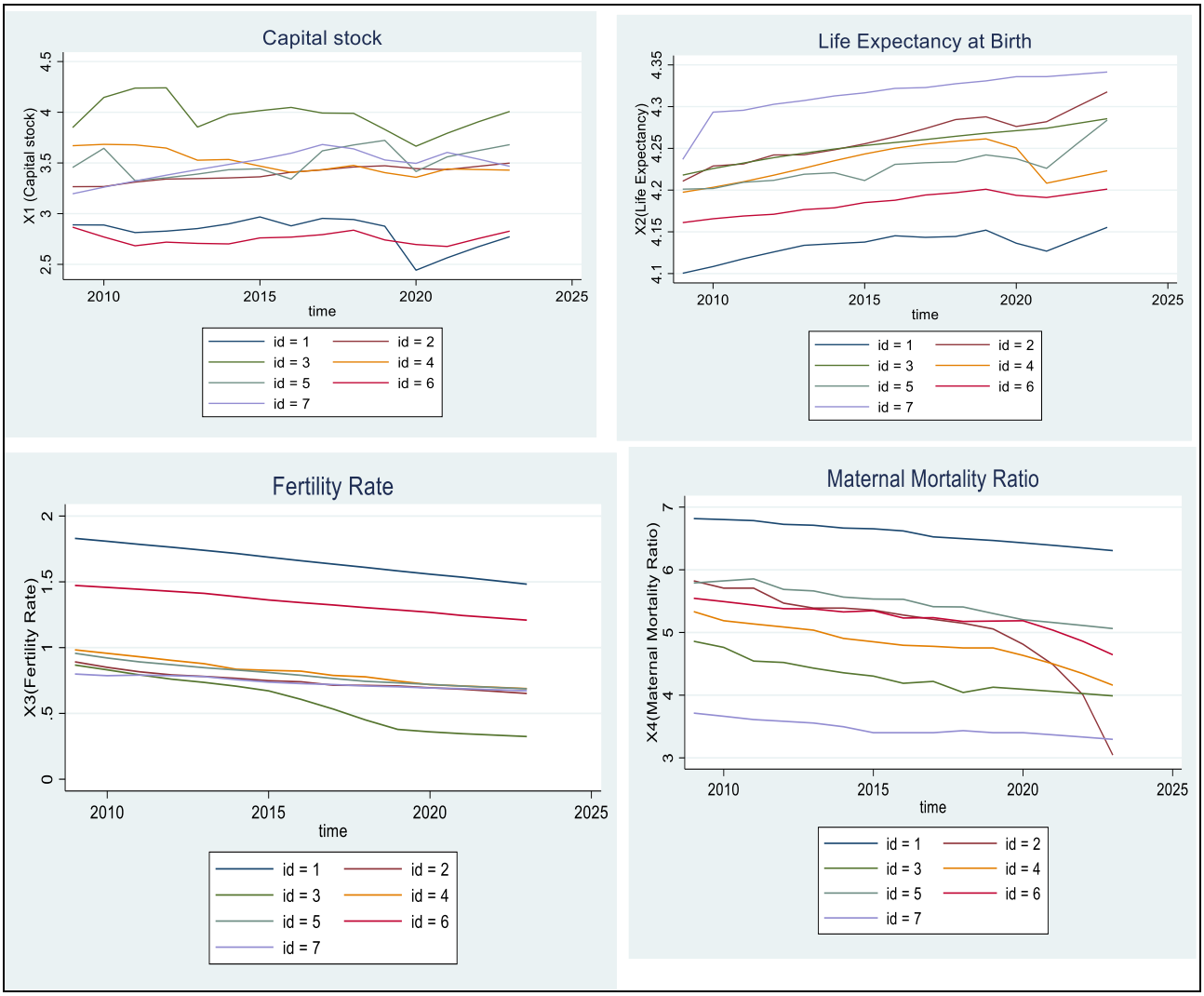
	VIF	1/VIF
X2	7.87	0.12
X3	7.14	0.14
X4	4.73	0.21
X1	3.30	0.30
Mean VIF	5.76	.

4.4. Panel Plot of all the Variables

This section explains the panel data plot of all variables used in model estimation shown in Figure 2.

Figure 2: Panel Plot of all the Variables





4.5. Panel Unit Root Test

The panel unit test is used to check whether the stationary of the variable exists or not.

Table 5: Panel Test of Unit Root

(Variables)	(CADF)	
	Level I (0)	1st difference I (1)
Y	-1.19	-2.25**
X1	-1.41	-2.53**
X2	-0.16	-2.13**
X3	-2.41**	…
X4	-1.44	-2.94***

The above table shows that the variables y, x1, x2, x4 are stationary at 1st difference while x3 variable is stationary at level.

4.6. Dependence Test of Cross-Sectional (CD)

The CD test was applied to see whether the relationship of residual dependency was present or not.

Table 6: Cross-Section Dependence Results

Model Y (Economic growth)	
(Tests)	(Prob values)
Pesaran's	0.61 (0.54)
Friedman's	9.97 (0.12)
Frees'	2.0 0.22)

The above table results indicate no cross-section dependency relationship.

4.7. Panel Regression Models Estimation

In determining sustainable economic growth various health factors are important in developing countries. The panel results are shown in the below table.

Table 7: Regression results for Panel Models I

	(Model 1)	(Model 2)	(Model 3)	(Model 4)
Variables	**POLS**	**FM**	**RM**	**FGLS**
X1	631.3***	593.4***	230.7	201.8***
	(163.1)	(189.9)	(166.5)	(41.50)
X2	4,513.5**	3,889**	5,667***	2,402***
	(1,803)	(1,593)	(1,906)	(445.4)
X3	1,599.3***	-1,142***	452.4*	-541.1***
	(262.0)	(321.0)	(273.5)	(75.27)
X4	-1,135.1***	-164.5*	-671.9***	-720.5***
	(83.91)	(86.62)	(99.82)	(44.01)
Constant	-15,282.3*	-14,741**	-20,036**	-6,155***
	(8,154)	(6,827)	(8,414)	(1,970)
Observations	105	105	105	105
R-squared	0.888	0.625	0.508	

Table 8: Standard errors in parentheses

Model-variable	Breusch-PaganLM chibar^2 (1)	Hausman Chi^2- value	Breusch-Pagan chi^2 (1)	Autocorrelation F Statistics
Y	36.97	278.94	58.00	19.89
	(0.00)	(0.00)	(0.01)	(0.04)

P-value in parentheses *** *p<0.01, ** p<0.05, * p<0.1*

The outcomes show there is issue of heteroskedasticity and autocorrelation of first-order is present in the paper. So, we apply FGLS (Feasible generalized least squares) model because time > cross-section. To check whether both models which model is present such as RE or OLS model. The LM test of Breusch-pagan applies in that model to check which model is selected. So, RE model is selected. And the Hausman test to select the panel data models, i.e., FE and RE models. The final result of Hausman test selects FE. The results of FGLS (feasible generalized least squares model) show that 1 percent increase in X1(stock of capital) will bring the 201.8/100 = 2.018 percent decrease in Y (economic growth) which is a significant level of 1%. A similar finding is found in Somayeh et al., 2014. X2 (Life expectancy) has a direct effect on outcome variables that indicate that 1 % increase in X2 will bring a 24.02 increase in Y which is significant at 1 % level. The result is in line with Tserenkhuu (2022). X3 (Fertility rate) and X4 (mortality rate) have a negative impact on Y (economic growth) showing that 1 %increase in X3, X4 will bring 5.41, a 7.2 percent decrease in Y in developing countries. Despotović, Kostić, Kostić, and Nedić (2022) reported the same results. The outcome shows that R-squared value of the model is significant overall.

5. Conclusion and Policy Recommendations

This study concluded that both variable capital stock and life expectancy have a positive and significant impact on economic growth. Fertility rate and mortality rate have negative impact on economic growth in developing countries of South Asia such as Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Our findings offer strong proof that growth is positively correlated with health. In other words, the output or economic growth positively correlated with good health. This study focuses on policy implication that has a positive effect on sustainable economic growth. Policymakers must allocate more resources to health care to improve population health and vitality to advance the growth objectives of developing countries in South Asia. The healthcare system needs to be strengthened to meet the population's health demands while promoting exports, education, capital accumulation, and maintaining stable economic pricing. Therefore, improving health conditions should be a priority of development policy, among other things. The conclusions apply to the study period based on the information and variables employed in developing countries of South Asia. Again, there are many different indicators of health status or progress, and each health indicator may have a different impact on growth.

References

Ali, H., Awan, I., Nosheen, F., Masood, J., & Nasir, N. . (2021). Narratives of Human Capital for Sustainable Economic Growth: Empirical Evidence from Pakistan. *PSYCHOLOGY AND EDUCATION, 58*(1), 6681-6692.

Ali, H., Naseer, S., Ali, M. M., & Iftikar, M. (2022). The Household Characteristics and Higher Education Role in Creating Sustainable Development, In the Future. *Review of Applied Management and Social Sciences, 5*(4), 619-629. doi:https://doi.org/10.47067/ramss.v5i4.273

Ali, H., Shafiq, H., Ali, M. M., Iftikar, N., & Naseer, S. (2023). Exploring the Factors that affect Household Higher Food Intake Cost and Economic Instability in Pakistan. *International Journal of Social Science & Entrepreneurship, 3*(1), 546-565. doi:https://doi.org/10.58661/ijsse.v3i1.125

Bloom, D. E., & Fink, G. (2023). The Economic Case for Devoting Public Resources to Health1, 2. *Manson's Tropical Infectious Diseases*, 49.

Bul, A. M., & Moracha, O. R. (2020). Effects of economic growth on health outcomes: A panel data study of sub-saharan Africa. *International Journal of Science and Business, 4*(4), 35-60.

Despotović, D., Kostić, V., Kostić, A., & Nedić, V. (2022). Fertility and economic growth of selected transition countries. *BizInfo (Blace) Journal of Economics, Management and Informatics, 13*(2), 29-40. doi:https://doi.org/10.5937/bizinfo2202029D

Folland, S., Goodman, A. C., Stano, M., & Danagoulian, S. (2024). *The economics of health and health care*: Routledge.

Hanson, M., Modi, N., & Allin, P. (2024). Revising economic measures of economic activity to reflect human and environmental health. *Bulletin of the World Health Organization, 102*(5), 357. doi:https://doi.org/10.2471/BLT.23.290662

He, L., & Li, N. (2020). The linkages between life expectancy and economic growth: some new evidence. *Empirical Economics, 58*(5), 2381-2402. doi:https://doi.org/10.1007/s00181-018-1612-7

Livingston, V., Jackson-Nevels, B., & Reddy, V. V. (2022). Social, Cultural, and Economic Determinants of well-being. *Encyclopedia, 2*(3), 1183-1199. doi:https://doi.org/10.3390/encyclopedia2030079

Owusu, P. A., Sarkodie, S. A., & Pedersen, P. A. (2021). Relationship between mortality and health care expenditure: Sustainable assessment of health care system. *Plos one, 16*(2), e0247413. doi:https://doi.org/10.1371/journal.pone.0247413

Qehaja, S. S., Qehaja, D., Arber, H., & Marovci, E. (2023). The relationship between government health expenditure and economic growth: Evidence from western Balkan countries. *International Journal of Applied Economics, Finance and Accounting, 15*(1), 10-20. doi:https://doi.org/10.33094/ijaefa.v15i1.724

Ridhwan, M. M., Nijkamp, P., Ismail, A., & M. Irsyad, L. (2022). The effect of health on economic growth: A meta-regression analysis. *Empirical Economics, 63*(6), 3211-3251. doi:https://doi.org/10.1007/s00181-022-02226-4

Sharma, R. (2018). Health and economic growth: Evidence from dynamic panel data of 143 years. *Plos one, 13*(10), e0204940. doi:https://doi.org/10.1371/journal.pone.0204940

Tserenkhuu, T. (2022). *Life expectancy and economic outcomes in a small open economy.* University of Guelph,

Turan, B. (2020). Life expectancy and economic development: Evidence from microdata. *Review of Development Economics, 24*(3), 949-972. doi:https://doi.org/10.1111/rode.12665

Vyas, V., Mehta, K., & Sharma, R. (2023). The nexus between toxic-air pollution, health expenditure, and economic growth: An empirical study using ARDL. *International Review of Economics & Finance, 84*, 154-166. doi:https://doi.org/10.1016/j.iref.2022.11.017

Wu, F., Wang, X., & Liu, T. (2023). Sustainable development goals, natural resources and economic growth: Evidence from China. *Resources Policy, 83*, 103520. doi:https://doi.org/10.1016/j.resourpol.2023.103520

Yang, Y., Zheng, R., & Zhao, L. (2021). Population aging, health investment and economic growth: Based on a cross-country panel data analysis. *International Journal of Environmental Research and Public Health, 18*(4), 1801. doi:https://doi.org/10.3390/ijerph18041801

Zhang, H. (2024). Public Health Development and Economic Growth: Evidence From Chinese Cities. *International Regional Science Review, 47*(1), 100-125. doi:https://doi.org/10.1177/01600176231160494