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# Role Of Human Health On Labour Productivity: Empirical Evidence From South Asia

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***Abstract:*** *Health is an essential element that allows people to live their lives with great potential. Healthy living helps you live with confidence and self-esteem. At the macro level, the fundamental foundation of economic development is health. At the micro level, health can efficiently ensure a productive and rewarding life for people. Health affects economic growth in many ways, for example poor worker health causes reduced productivity; On the other hand, thanks to a healthy diet, productivity increases. The main objective of this study is to investigate the impact of human health on worker productivity. The health indicator used in this study is life expectancy. The education indicator is school enrollment at secondary level; Labor force and gross capital formation are also used as independent variables. The study used a panel of South Asian countries from 1991 to 2019, applying panel OLS, fixed-effects model, random-effects model, and generalized method of moments (GMM). The results demonstrate that health and education significantly and positively influence productivity. This study recommends that the government of all South Asian countries should take essential measures and formulate policies regarding the improvement of health status and advancement of the education system.*

**Keywords:** Health, Productivity, South Asia, GMM

## INTRODUCTION

Worker productivity plays an important role in promoting businesses and increasing economic growth. It is defined as the number of goods and services produced by the worker in a given period. It depends on mental competence, physical capabilities, technological advances, and investments in human capital (Jack 1999). It can be improved by investing in human capital and using advanced techniques in the production process. Human capital is the most important determinant of productivity, which means the accumulation of health, knowledge and skills (Afzal et al., 2012). Productivity increases efficiency, which helps reduce production costs. It is related to the change in new technologies, human capital and physical capital (Gong et al., 2012). Human capital refers to the knowledge and skills necessary to increase productivity. When performance increases with static working hours, it shows that workers are more creative, efficient, and productive (Arabi and Abdalla 2013). A higher level of education leads to a higher level of human capital which ultimately increases productivity

Health is one of the indicators to increase productivity (Siddique et al, 2020). A healthy worker has physical and mental abilities to work efficiently and these abilities improve productivity. Investing in health keeps workers healthy and helps them fight chronic diseases. Countries with poor health conditions have difficulty achieving sustainable development (Soriano and Garrido 2016). There is a positive association between health and productivity (Bloom et al. 2001). Worker productivity is a key driver of economic growth. Productive companies are more profitable and generate more employment. Skilled workers are more productive and have higher incomes and standards of living than unskilled workers (Arabi and Abdalla, 2013). In an economy, health is the engine of growth and health is considered a creative capital (Barro, 1996). When people in a country invest in education and healthcare, they ultimately benefit (Mushkin, 1962). According to Bloom and Canning (2000) and Grossman (1972), healthy people are more productive than unhealthy people because they efficiently acquire knowledge and knowledge skills and, consequently, increases the level of productivity. According to Sorkin (1976) health decreases the mortality rate and during the 20th century the impact of health has a significant impact on growth, but for developing countries the scenario may be different in terms of the link between state of health and economic growth. Jack (1999) identifies the impact of health strategies on economic growth in developing countries. Labor productivity depends on several factors such as; mental competence, physical skills, investment in human capital, efficiency in work management and improved health. Progress in health means increasing the life expectancy of workers. The shape of economic growth and socioeconomic transformation can be enhanced or slowed by health reforms in a specific region (Bryant, 1969). According to Arabi and Abdalla (2013), workers in developed countries are more productive than in developing countries due to their skills and abilities.

Health strategies can help change the lifestyle of poor citizens (Malenbaum, 1970). According to Cole and Neumayer (2005), individuals are severely affected by poor health and disease. Quantifying a person's loss of well-being due to poor health is also very difficult. Especially in developing countries where safety and healthcare are limited. Sick people do not provide a healthy lifestyle

for their families and dependents. The disease burden negatively affects productivity and ultimately the growth rate and therefore economic development. Due to deadly diseases, the number of manpower is less.

In developing countries, extremely common diseases, such as malaria, waterborne diseases and malnutrition, affect workers. Siddique et al. (2020) examined that capital accumulation is necessary to achieve growth. To achieve growth, physical capital and human capital are considered the most influential. Health is a form of human capital and is an important indicator for stimulating the development process. According to Choudhry (2009), physical capital includes the plants, equipment and machinery used by a company. Physical capital also includes transportation and infrastructure because they contribute to economic development. Umoru and Yaqub (1987) found that investments in healthcare increase worker productivity. The Nigerian economy is labor intensive. To maximize productivity, healthy employees play a vital role. Health capital not only increases people's well-being, but also contributes to increasing productivity levels and improving growth. When life expectancy is reduced, this negatively affects the workforce. When the number of the workforce decreases, productivity also decreases and this has a negative impact on Nigeria's economic growth. The education

It plays a vital role for individuals and entire societies. At primary level, 22 million children are out of school in South Asia. South Asia faces healthcare challenges on both geographic and demographic scales. Pakistan, India, Bangladesh, Sri Lanka and Nepal are home to about a fifth of the world's population. South Asian countries suffer from malnutrition, low life expectancy, infant mortality, tuberculosis, HIV and AIDS. These countries also have health problems such as poor sanitation, lack of health services, poor maternal health, and malaria (Goode et al., 2014; Cole and Neumayer 2006; Ali, 2011). The objective of this study is to examine the impact of human health on worker productivity in South Asia from 1990 to 2019. This study is planned as Section 2 presents a selective literature overview. A theoretical framework is presented in Section 3. A brief explanation of the variables and data is presented in Section 4. Discussion and debate on the results are reported in Section 5. Conclusions and appropriate policy implications are suggested in Section 6

## LITERATURE REVIEW

. This section analyzes the review of previous literature on the relationship between human health and worker productivity. Siddique et al. (2018) explored the existence of a positive relationship between life expectancy and economic growth, while negative relationships exist between infant mortality and economic growth for 76 middle-income countries between 1991 and 2016. The results show that economic growth increases due to the education contribution. . The study also found that the impact of infant mortality, life expectancy and education is stronger in upper-middle-income countries than in lower-middle-income countries. Biyase and Maleka (2019) also studied that life expectancy has a positive impact on economic growth in 10 South African countries between 1985 and 2017. Ullah et al. (2019) studied the impact of health on labor productivity in Pakistan over the period from 1980 to 2010. The results show that improving health increases productivity. The results also show that education was positively and significantly associated with worker productivity. Chaabouni et al. (2016) also studied bidirectional causality between health spending and economic growth for a sample of 51 countries during the period 1995–2013, using dynamic simultaneous equation models. Zortuk and Ceken (2015) also found that healthcare spending is higher in the European Union between 1995 and 2011.The study used panel data and cross-sectional data from 30 provinces of China between 2002 and 2014. The study shows that due to China's fastest economic growth, the problem of environmental contamination has converted into a serious problem that causes deterioration of the greetings Arabi and Abdalla (2013) also examined the impact of capital

The study found that Amiri and Linden (2016) shows that the link between GDP per capita growth and change in infant mortality rate has bidirectional relationships for 175 countries between 1990 and 2014. The study by Shahbaz et al. (2019) reveals that in sub-Saharan African countries, productivity and economic growth can be increased through improved health. The literature shows that life expectancy increases per capita income and economic growth (Mahumud et al., 2013; Ngangue and Manfred (2015). Lu et al. (2017) studied the dynamic relationship between human on economic growth in Sudan from 1982-2009 and found that quality education and healthcare have a positive effect on growth. Goca (2014) studied the long-term relationship between human capital and economic growth in Mozambique over the period 1975-2006.

Lenkei et al. (2018) studied that investment in education plays a crucial role in economic development and growth in 14 Asian countries, including eight East Asian countries (Indonesia, Philippines, South Korea, Hong Kong, Malaysia, Taiwan, Thailand and China) and five East Asian countries. South Asian countries (Sri Lanka, Nepal,Bangladesh, India and Pakistan) for the period 1960-2013. The study by Bloom et al (2014) suggested that improved higher education drives economic growth in Africa between 1975 and 2010. The findings of Ogundari and Awokuse (2018) show that primary and secondary education has a significant effect on growth in 35 sub-Saharan African countries between 1980 and 2008 using dynamic panel data analysis. Awel 2013 recommended

that investment in education drove long-term economic growth in Sweden between 1870 and 2000. This study also shows that there is a bi directional causality between education and output per worker.

## THEORETICAL FRAMEWORK AND METHODOLOGY

The connection between human health and worker productivity is not simple. Support for the causal association between health and productivity has been obtained from previous studies. According to Schultz (1963) and Becker (1962), there is a correlation between salary and education, when the level of education increases the salary also increases. A healthy person actively carries out his activities and enjoys life much better than a sick person. A healthy person does not depend on others. The health function is to display data on the health of an economy.Here Y is total production, A represents knowledge, L is used for labor and K is used for capital. The wage $\omega$ and the individual productivity of a labor unit are,

Productivity is used as the dependent variable and health as the independent variable. The study uses a proxy variable for health used in the literature, namely life expectancy (Cole and Neumayer, 2006; Siddique et al., 2020). Secondary school enrollment is used for education, which is also used in the literature (Shahid et al., 2019). The term i is used for countries and t is used for the period 1991-2019. The expression pro is the productivity of the worker, the term l is used for labor, k is used for capital, le is for life expectancy, and ed indicates education.This study used panel OLS, fixed effects model, random effects model, and generalized method of moments (GMM).

### DATA

Several variables are used to demonstrate the link between health and productivity in South Asia; data from 1991 to 2019 was used. South Asian countries are Pakistan, Bangladesh, Nepal, India, Sri Lanka, Maldives, Afghanistan, and Bhutan. World Development Indicators (WDI) are the data source for all variables. The dependent variable is worker productivity and several independent variables have been taken. The health indicators used in this study are life expectancy (LE at birth indicates how many years a newborn would live). Gross capital formation is the symbol of economic growth also used in this study.

The education indicator is school enrollment at secondary level. Workforce (the population that carries out work over the age of 15 is included in the workforce). Life expectancy is the average age of people in a specific population at the time of death. It refers to a person's expected age. Life expectancy decreases due to poor health and disease. It can be improved by other factors such as increased living standards, improved education, improved lifestyle and access to health services. Shahbaz et al. (2019) demonstrated that productivity and economic growth can be increased through improved health in sub-Saharan African countries.

Table 2 shows the descriptive statistics of the data. The maximum worker productivity (PRO) is 33287.24 and the minimum is 3001.706, measured as per capita income. The maximum life expectancy is 76.7120 years and the minimum LE is 54.4141 years in South Asian countries. The details of other variables are mentioned in Table 2

**Table 1: Descriptive Statistics**

| Variables | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| PRO | 141 | 10924.44 | 6823.242 | 3001.706 | 33287.24 |
| L | 145 | 60.3713 | 11.6658 | 49.1100 | 86.17500 |
| K | 134 | 1.23E+22 | 2.25E+22 | 2155786958.73 | 991283666124.85 |
| LE | 141 | 66.1432 | 5.2267 | 54.4141 | 76.7120 |
| POU | 87 | 14.7602 | 3.8734 | 5.3000 | 23.5000 |
| SE | 103 | 54.3773 | 19.4403 | 20.8072 | 100.4431 |

Table 3 shows the direction of the relationship that exists between the variables. Life expectancy (LE), capital, and education are positively associated with PRO. The negative labor symbol indicates that labor (L) has a negative correlation with worker productivity.

**Table 2: Correlation Results**

| Variables | PRO | L | K | LE | SE |
|---|---|---|---|---|---|
| PRO | 1.0000 | | | | |
| L | -0.4101 | 1.0000 | | | |

| | | | | | |
|---|---|---|---|---|---|
| K | 0.1713 | -0.2237 | 1.0000 | | |
| LE | 0.5451 | -0.0481 | -0.0416 | 1.0000 | |
| SE | 0.5235 | -0.0122 | 0.3223 | 0.7088 | 1.0000 |

## RESULTS AND DISCUSSION

*This section contains the empirical results of the study. Table 4 shows the results of the OLS panel, fixed effects model, random* effects model, and generalized method of moments (GMM). The main objective of our study is to examine the influence of human health on worker productivity. Ullah et al. (2019) demonstrated that improving health would increase productivity, and the education coefficient was positively and significantly associated with worker productivity. The OLS panel results show that life expectancy has a positive correlation with worker productivity. The coefficient of LE is 2.55, which indicates that a 1% change in LE causes a 2.55% change in worker productivity. The study also reveals that education has a positive effect on worker productivity; The coefficient shows that a 1% increase in education generates a 0.0076% change in worker productivity. The labor coefficient (-2.4326) shows a negative impact on productivity. Productivity is measured by GDP per employee relative to labor, so the trend of increasing labor has an inverse impact on productivity. The results are consistent with the literature (Siddique et al., 2020).

The results of the fixed effects approach also show that life expectancy is an increasing factor in productivity, the coefficient of LE is 2.8143, indicating that a 1% change in LE causes a 2.81% change in worker productivity. The study also reveals that secondary education generates a 0.0454% change in worker productivity. The coefficient of labor is -0.7683 which shows a negative correlation with productivity. The capital ratio is 0.4722, which expresses the positive and significant correlation with productivity. According to the results of the random effects approach, the life expectancy coefficient is 4.1246, which indicates that a 1% change in LE causes a 4.1246% change in productivity. The study also reveals that secondary education leads to a change in productivity of 0.2143%. The coefficient of labor is -2.2376, which shows a negative but significant correlation with productivity. The GMM results show that health, education and capital are the increasing factors of workers' productivity, while the labor coefficient (-0.1666) shows a negative but significant correlation with productivity. The results are consistent with the studies of Biyase and Maleka (2019), Lenkei et al. (2018) and Siddique et al. (2020).

**Table 4: Results**

| Variables | Dependent Variable: Productivity | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Panel OLS | | FE Model | | RE Model | | GMM Model | |
| | Coef. | Prob. | Coef. | Prob. | Coef. | Prob. | Coef. | Prob. |
| L | -2.3426 | 0.0000 | -0.7683 | 0.0000 | -2.2376 | 0.0000 | -0.1566 | 0.0043 |
| K | -0.0217 | 0.5744 | 0.4722 | 0.0000 | 0.0028 | 0.4806 | 0.0376 | 0.0038 |
| LE | 2.4437 | 0.0016 | 2.8143 | 0.0008 | 4.1246 | 0.0000 | 0.987 | 0.0280 |
| SE | 0.0067 | 0.0011 | 0.0454 | 0.5178 | 0.2143 | 0.0038 | 0.0017 | 0.9879 |
| C | 8.1822 | 0.0350 | -2.6683 | 0.2024 | 0.6181 | 0.6516 | 0.1714 | 0.4369 |
| R-square | 0.7213 | | 0.6822 | | 0.6816 | | 0.7287 | |
| *Obs.* | 89 | | 89 | | 89 | | 89 | |

## CONCLUSION

It is claimed that there is a strong association between economic development and health. Improved health directly influences productivity and therefore increases economic growth. However, this study investigates the association between health and productivity in South Asian countries between 1991 and 2019. Health not only increases life expectancy but also increases productivity. Skilled workers contribute more to economic growth than uneducated and unskilled people. Healthy living increases prosperity and improves the living standards of citizens Village. Both the federal and provincial governments should increase investment in the healthcare sector. For better functioning of the healthcare system, the government should increase its share of financing of the healthcare sector II.

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