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*Review Article*

# Social Sector Investment and Healthcare Outcomes: A Case Study of Assam

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**Abstract:** Human resource development is a cornerstone of societal progress, emphasizing development of, by, and for the people. Health and education are its primary pillars: health serves as the foundation for development, while education accelerates its pace. The financing of the health sector and its associated challenges have garnered significant attention among policymakers. This paper examines the influence of social sector expenditure—encompassing education, arts and culture, medical services, family planning, public health, sanitation, and other community services—on human resource development in Assam. Specifically, it investigates the impact of increased social sector spending on crude birth rate (CBR), crude death rate (CDR), and infant mortality rate (IMR). Findings reveal that while higher expenditure significantly affects CBR and CDR, its impact on IMR remains negligible. Compared to national benchmarks, Assam's performance in these indicators is less satisfactory. The study also highlights a theoretical and empirical correlation in Assam: a decline in CDR is associated with a reduction in CBR. These insights underscore the need for targeted policy interventions to enhance health outcomes and human resource development in the region.

**Keywords:** Social sector; crude birth rate; crude death rate; infant mortality rate

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## 1. Introduction

Human resource development is pivotal to societal progress, embodying the principle of development of, by, and for the people to foster comprehensive growth. The 1996 Human Development Report emphasized this by stating, "Human development is the end—economic growth a means." It cautioned that unchecked economic growth could become jobless, voiceless, ruthless, rootless, and futureless, ultimately undermining human development (HDR, 1996). Thus, the quality of growth is as critical as its magnitude for reducing poverty, enhancing human well-being, and ensuring sustainability. Moreover, economic growth lacks durability without parallel advancements in human development, establishing a reciprocal relationship between the two. The social sector encompasses goals such as universal education, gender equity, reductions in Infant Mortality Rate (IMR), under-five mortality, and Maternal Mortality Rate (MMR), as well as curbing the spread of HIV/AIDS and

other communicable diseases. Among these, education and health stand out as vital elements of human resource development that bolster economic progress. Health lays the foundation for development, while education propels it forward. Consequently, the allocation of resources to the health sector and the challenges tied to its complexities have drawn significant attention from policymakers.

Given the scarcity of resources, their optimal use in building health infrastructure is essential to achieving economic growth targets. In Assam, government revenue expenditure is categorized under key areas: General Services, Social and Community Services, Economic Services, and Grants-in-Aid. Within these, spending on Social and Community Services covers areas such as education, arts and culture, medical services, family planning, public health, sanitation, and other related initiatives. This expenditure reflects the state's commitment to fostering human resource development and its broader socio-economic implications.

## 2. REVIEW OF LITERATURE:

The concept of investing in human resources has gained prominence in recent decades. Economists often refer to human capital or human resources as encompassing education, health, and other capacities that enhance productivity when strengthened. Appleton and Teal (1998) broaden this perspective, describing human resources as acquirable traits that boost income, with education and health as central components. Human resource development, in a holistic sense, integrates education, training, healthcare, nutrition, population policies, and employment opportunities (Muqtada and Hildeman, 1993). This framework positions health and education as critical inputs in economic production, working synergistically to elevate individual productivity and contribute to overall welfare (Appleton and Teal, 1998). However, the recognition of health within human resource theory has been inconsistent. Schultz (1961) defined human resources as inherent attributes—such as knowledge, skills, and attitudes—that individual can exchange to improve their living conditions, notably omitting health from his analysis. In contrast, subsequent research underscores health's economic significance. Bloom et al. (2002) estimated that a one-percentage-point rise in adult survival rates could boost labor productivity by up to 2.8%. Similarly, Bhargava (2001) found that, in the poorest nations, a 1% improvement in survival rates correlates with a roughly 0.05% increase in economic growth, highlighting a clear link between health outcomes and economic performance.

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being, extending beyond the mere absence of disease or infirmity. This broader view aligns with findings from the National Commission on Macroeconomics and Health (2005), a joint report by India's Ministry of Health and Family Welfare and Ministry of Finance. The report advocates for disease prevention—especially of costly non-communicable diseases—as the most cost-effective approach for resource-constrained nations, particularly those aiming for double-digit GDP growth. Yet, India's per capita government health expenditure remains strikingly low at US $7, compared to US $2,548 in the United States, underscoring a significant gap in health investment despite its proven economic benefits.

## 3. CONCEPTUAL FRAMEWORK:

The term "human resource" emerged in the 1960s as a modern concept rooted in political economy and economics, where it was traditionally referred to as "labor," one of the four classic factors of production. However, prior to the mid-1980s, human resources did not receive adequate recognition in economic theory. It was only with the advent of the new endogenous growth theory that the critical role of human resources in driving economic development gained prominence. This theory emphasized the significance of human capital—alongside physical capital—and highlighted its externalities and contributions to sustainable economic progress. Over the past century, advancements in human

resource development have been remarkable and unprecedented, reflecting significant strides in education, skills, and productivity.

**4. OBJECTIVES OF THE STUDY:**

The study seeks to,

1. Analyse the relationship between economic development and health indicators.

2. Examine the relationship between social sector expenditure and CBR, CDR, IMR.

3. Examine the relationship between CDR and CBR.

**5. Data Source and Research Methodology:**

The present study covers the relationship between social sector expenditure and human resource. It covers data relating crude birth rate (CBR), crude death rate (CDR), infant mortality rate (IMR) and social sector expenditure in Assam for the period 2013-18 have been taken for analysis. The study is mainly based on the secondary data. Books, government and non-government reports, journals are accessed from library and also from the internet. The methodology adopted is consisted of both qualitative and quantitative analysis. For the analysis of data simple tables, diagrams and regression has been used.

**6. RESULTS AND FINDINGS:**

Concentration on economic growth alone will not ensure human resource development. The pre-requisite of human resource development is the allocation of scarce resources to the appropriate channel. Otherwise, economic growth and human resource development will have divergent results. Because of this reason to achieve a superior human resource development social sector expenditure is a highly significant concept than the general economic growth in the country. For example, as per the UNDP Human Development Report (2007) among 182 countries the ranks of China, India and Bangladesh are 92nd, 134th and 140th respectively. China's life expectancy at birth is 73.5 years against ten percent economic growth rate and India's life expectancy at birth is 64.4 years against almost nine percent growth rate. On the other hand a very low growth achiever country Bangladesh's life expectancy at birth is 66.9 years. Again the average schooling years in China, India and Bangladesh are 7.5 years, 4.4 years and 4.6 years respectively. Hence it is evident from the fact that economic growth may not always direct human resource development if the fund is not directed towards the priority tracks.

**Details of some health indicators:**

Birth and death are the two most important factors determining the size of the population and in turn the strength of the human resource development.

**Table 1:** Social Sector Expenditure, CBR, CDR and IMR

| YEAR | SOCIAL SECTOR EXPENDITURES(Rupees in Lakhs | CBR (per '000) | | CDR (per '000) | | IMR (per '000) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Assam | India | Assam | India | Assam | India | Assam | | |
| | | | | | | | TOTAL | RURAL | URBAN |
| 2013 | 270162 | 24.8 | 26.3 | 8 | 9.1 | 60 | 67 | 70 | 35 |
| 2014 | 289801 | 24.1 | 25.1 | 7.5 | 8.8 | 58 | 66 | 67 | 38 |
| 2015 | 336149 | 23.8 | 25.0 | 7.6 | 8.7 | 58 | 68 | 71 | 39 |
| 2016 | 426242 | 23.5 | 24.6 | 7.5 | 8.7 | 57 | 67 | 70 | 42 |
| 2017 | 398710 | 23.1 | 24.3 | 7.4 | 8.6 | 55 | 66 | 68 | 41 |
| 2018 | 447748 | 22.8 | 23.9 | 7.4 | 8.6 | 53 | 64 | 66 | 39 |

Source: SRS Bulletin (Various Years) RGI, Statistical Hand Book, Assam, 2018.

Linear Regression:

**Box-1:**

| Dependent Variable | Independent Variable | $R^2$ | F Value | Sig. |
|---|---|---|---|---|
| Crude Birth Rate | Social Sector Expenditure | .851 | 22.806 | .009 |
| Crude Death Rate | Social Sector Expenditure | .839 | 20.918 | .010 |
| Infant Mortality Rate | Social Sector Expenditure | .233 | 1.218 | .332 |

**Box-2:**

| Dependent Variable | Independent Variable | $b_1$ | t value | Sig. |
|---|---|---|---|---|
| Crude Birth Rate | Social Sector Expenditure | -1.018E-5 | -4.776 | .009 |
| Crude Death Rate | Social Sector Expenditure | -2.277E-6 | -4.574 | .010 |
| Infant Mortality Rate | Social Sector Expenditure | -8.767E-6 | -1.104 | .332 |

The results are discussed below.

**Crude Birth Rate (CBR):**

Crude birth rate is the ratio of the total registered live births in some specified year in a particular area to the total mid-year population of that area multiplied by thousand. Theoretically, higher amount of social sector expenditure means less amount of CBR. The impact of social sector expenditure on CBR for Assam is indicated by the coefficient of determination (r2) at 0.851, which implies that 85.1 % of the variation in the crude birth rate can be accounted by an increase in the expenditure in the social sector. The regression model predicts the crude birth rate efficiently as revealed by the F value of 22.806, which is significant at $p< 0.01$. The regression coefficient (b1) representing the gradient of the regression line is estimated at -1.018E-5, implying that expenditure in social sector by 1 lakh will decrease the crude birth rate by more than one (i.e. 1.018). The expenditure in the social sector has a significant impact on the CBR as is evident with b1 being significant at $p < 0.01$.

**Crude Death Rate (CDR):**

The CDR is a ratio of the total registered deaths of a specified year to the total mid-year population, multiplied by thousand. As CBR, in case of CDR also Assam is at an inferior position in comparison to the national average. In 2013 the CDR of India was eight per thousand, which decreases to 7.4 per thousand in 2018. In case of Assam it was 9.1 per thousand in 2003 and decreases to 8.6 per thousand in 2018. However, Assam has to do a lot to decrease its CDR at least up to the national average.

Higher amount of social sector expenditure means the same impact on crude death rate as is on crude birth rate. Here the impact of social sector expenditure is indicated by the coefficient of determination (r2) at 0.839, which implies that 83.9% of the variation in the CDR can be accounted by an increase in the expenditure in the social sector. The regression model predicts the CDR efficiently as revealed by the F value of 20.918, which is significant at $p< 0.01$. The regression coefficient (b1) representing the gradient of the regression line is estimated at -2.277E-6, implying that

increase in expenditure in the social sector by one lakh will reduce CDR by an additional number of 0.2277. Hence the expenditure in the social sector has a significant impact on the reduction of CDR as is evident with b1 being significant at $p < 0.01$.

**Infant Mortality Rate (IMR):**

Infants are defined in demography as an exact age group, namely age 'zero', or those children in the first year of life who have not yet reached age one. IMR is regarded as an important and sensitive indicator of the health status of a community. Compared to other indicators like CBR, CDR, and Maternal Mortality Rate (MMR) and under five mortality rates etc, this indicator has always been accorded greater importance by the public health specialists; because IMR is the single largest category of mortality. Changes in specific health interventions affects IMR more rapidly and directly and hence it may change more dramatically than CBR in a population. This is clearly demonstrated in a developing country like India. In the 1960s India used to hover around the 100 marks in the country. However due to rapid strides that the country has taken in socio- economic development, health and education; average IMR is currently estimated to be 60/1000 live births/ year (SRS, 2013). Though compared to other developed countries and countries in transition, India's IMR is quite high, it is close to the world average 56/1000 (Year 2012). Again, among Indian states Assam is still in the high IMR belt area. Because of this reason the expenditure in the social sector in Assam has no significant effect on the reduction of IMR whether it is in the urban or the rural area. Data for IMR shows a fluctuating trend. Though IMR in the urban area is at a satisfactory condition in comparison to the rural Assam, the national and the world average, yet as a whole it fails to improve the situation for the state altogether.

In case of IMR rural Assam is at a worse condition than the urban areas. IMR was almost double in Assam in the year 2013 as compared to the national level data. Although the gap between the rural and the urban areas is showing, a decreasing trend in the subsequent years.

Let us now discuss the relationship between the CBR and CDR for the period 2013-2019.

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .972[a] | .944 | .933 | .2316 |

a. Predictors: (Constant), CDR ASSAM

ANOVA[b]

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.560 | 1 | 4.560 | 85.013 | .000[a] |
| | Residual | .268 | 5 | .054 | | |
| | Total | 4.829 | 6 | | | |

a. Predictors: (Constant), CDR ASSAM

b. Dependent Variable: CBR ASSAM

Coefficients[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -10.425 | 3.809 | | -2.737 | .041 |
| | CDR ASSAM | 4.036 | .438 | .972 | 9.220 | .000 |

a. Dependent Variable: CBR ASSAM

Decreasing levels of CDR ensures decreasing CBR. Here the impact of decreasing CDR on CBR is indicated by the coefficient of determination (r2) at 0.944, which implies that 94.4% of the variation in the CBR can be accounted by a reduction in the CDR. The regression model predicts the CBR efficiently as revealed by the F value of 85.013, which is significant at $p < 0.01$. The regression coefficient (b1) representing the gradient of the regression line is estimated at 4.036, implying that decrease in CDR by one per thousand will reduce CBR by an additional number of approximately four per thousand. Hence the reduction in CDR has a significant impact on the reduction of CBR as is evident with b1 being significant at $p < 0.01$.

**POLICY PRESCRIPTIONS:**

**1.** Decreasing CDR will always have a significant effect on the reduction of CBR. Hence government should give more emphasis on the reduction of death rate in comparison with the birth rate.

2. In case of health indicators greater care should be given to the IMR in comparison with the other indicators health. Because IMR is the most sensitive indicator than all other elements. Decreasing IMR will have an indirect effect on the decreasing CBR.

3. Proper allocation of funds towards appropriate channels will also have no meaning unless and until proper utilisation of the fund is exercised. Hence there should be proper allocation as well as proper utilisation of the allotted funds.

4. Creation of consciousness among the mass people should be the prime objective of the government. Because the increasing amount of social sector expenditure will be nothing but wastage if people are not willing to take the benefits of the increasing health facilities.

**7. CONCLUSION:**

Now-a-days human resource is the most important component of economic development which also influences the physical capital in the economy. Hence Government should take proper policy to develop the status of health and education level in the society which enriches the human resources. Between the two components of human resource health is always the most important component than education. Only a healthy person is able to contribute something for the development of the society. Hence along with the increasing levels of social sector expenditure the government should try to build up consciousness among masses to improve the health scenario of the state.

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