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Implications of Social Infrastructure Investments on Living Conditions in India and China – A Comparative Analysis

With Special Reference to People Practicing Open Defecation

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ABSTRACT

Social Infrastructure and awareness among the society to adopt hygienic living conditions are considered asthe biggest challenge for any country to emerge out as a Socio-Economic super power. A comparative analysis was made in the current study between India and China on people practicing open defecation in rural and urban areas, its effect on death caused by communicable diseases and the extent to which the practice has been reduced through the health expenditure and conditions of improved sanitations. For the purpose of study, the annual time series data for the period 1990 – 2015sourced from World Bank wereemployed.The result of the cause-effect analysis indicated that the total public and private health expenditure as a percentage of GDP and improved sanitations in rural and urban areas in China hadsignificantly brought down the practice of open defecation and the cause of death due to communicable diseases. In case of India, it was observed that the rate, at which health expenditure and the improved sanitations had been increased, was found inadequate to bring down the practice of open defecation and the cause of death due to communicable diseases. It would be appropriate to admit the fact that the policy-makers, bureaucrats, corporate, public and other organizations have a collective responsibility to improve better living conditions.

Keywords: Open defecation, communicable diseases, sanitation.

1. INTRODUCTION

Social Infrastructure and awareness among the society to adopt hygienic living conditions are considered as the biggest challenge for a developing country to emerge out as a Socio-Economic super power. Better living conditions can be established in a social environment where communicable diseases and practices of

open defecation are maintained at minimum level through the health expenditure and improved sanitations. A country can excel in its economic performance and achieve its desired growth rate only when there are better living conditions. This research paper attempts to compare the living conditions in India and China by considering variables like (a) people practicing open defecation in rural areas; (b) people practicing open defecation in urban areas; (c) cause of death by communicable diseases, (d) total (i.e., both public and private) health expenditure as a percentage of Gross Domestic Product (GDP), and (e) improved sanitations.

2. LITERATURE REVIEW

In a study by Ranganayakulu Bodavala it was observed that healthcare system in India is almost five decades old. This is mainly due to insufficient doctors along with improper facilities, Subsequently there is lack of referral services in urban hospitals and specialist centres.[1] Monica Das Gupta and Manju Rani published a research paper entitled "India's Public Health System How Well Does It Function at the National Level?" Despite having well developed administrative system and lot of technical skills India has poor health outcomes. To find out the reason the author used instruments developed to evaluate the performance of the public health systems. This paper mainly focuses on the federal level in India. The data has been obtained from the central government officials.[2] In a research work by Abhijit Banerjee, et. al., a survey was conducted in Indian city Udaipur to measure the delivery of health care and impact it had on the health status of the population of the region. The study revealed that the quality of public service is poor and that unqualified private providers account for the large number of health care provision. The low quality of public facilities also had an undesirable influence on the people's health.[3] Narayana K V published paper entitled "Changing Health Care System" in 'Economic & Political Weekly'. Andhra Pradesh government has initiated various reforms to improve the health care system in public hospitals. There had been poor quality of treatment due to non availability of resources.[4] Raban, et. al., examined the "Essential Health Information available for India in the Public Domain on the Internet" in 'BMC Public Health'. For making major decisions we need to have perfect statistical information to plan the better facilities. A Pub Med literature database was used to identify the sources. There was no information available regarding non communicable and injuries which made practical implementations of any facility a tedious task. The gap has been analysed and health information system in India has been addressed.[5] In a research work by Agarwal on "The State of Urban Health in India: Comparing the Poorest Quartile to the Rest of the Urban Population in Selected States and Cities" in 'Environment and Urbanization', it was observed that there have been large disparities in health issues among urban population in India. It had also been found that the disparities for child and maternal health along with provision for health care & housing conditions had been extremely poor.[6] Monika Jain and Priyadarshi Patni (2011) writes on "Public Health Management in India: An Overview of ICDS" in 'Indian Journal of Management and Technology'. In this paper the strengths and weakness of the Integrated Child Development Services (ICDS) management has been identified and suggested what can be done to enhance its impact. ICDS is one of the major reflections of Indian government to improve the nutrition and health status of deprived population through direct interventions.[7]

3. OBJECTIVES

- To examine the trend in people practicing open defection, health expenditure and improved sanitations in India and China.
- To evaluate the influence of people practicing open defecation in rural and urban areas of India and China on death due to communicable diseases.

- To evaluate the implications of total (both private and public) health expenditure as a percentage of GDP and improved sanitations to bring down the practice of open defecation in rural and urban areas of India and China.

4. DATA SOURCES AND METHODOLOGY

For the purpose of study, the annual time series data for the period 1990 – 2015 sourced from World Development Indicators were employed. Time series data on (a) China Cause of Death of Communicable Diseases (CCCD), (b) India Cause of Death of Communicable Diseases (ICDD), (c) China Health Total (Public & Private) Expenditure as a percentage of GDP (CHET%GDP), (d) India Health Total (Public & Private) Expenditure as a percentage of GDP (IHET%GDP), (e) China Urban Open Defecation (CHNUOD), (f) China Rural Open Defecation (CHNROD), (g) India Urban Open Defecation (INDUOD), (h) India Rural Open Defecation (INDROD), (i) China Rural Improved Sanitation (CHNRIS), (j) China Urban Improved Sanitation (CHNUIS), (k) India Rural Improved Sanitation (INDRIS), (l) India Urban Improved Sanitation (INDUIS) were considered for the study. The scenario of people practicing open defecation in China and India and its impact on Communicable diseases were studied. The influence of improved sanitations in China and India, on people practicing open defecation in Urban and Rural area was examined. The secondary data collected from World Development Indicators, were critically examined using multiple regression analysis.

5. THE COMPARATIVE SCENARIO

The scenario of Health care expenditure and its impact on People practicing open defecation and cause of death due to communicable diseases**.**

Exhibit 1

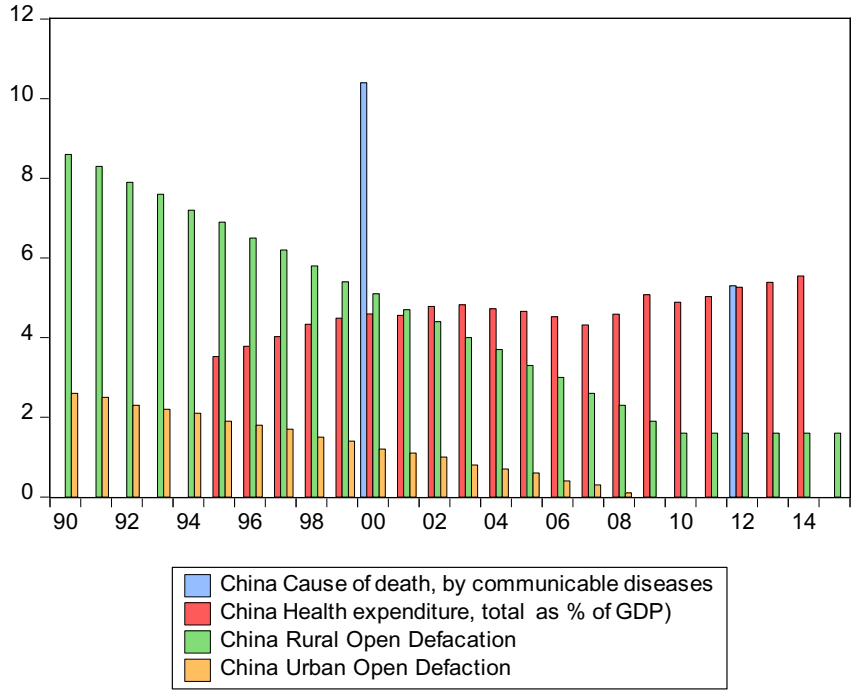
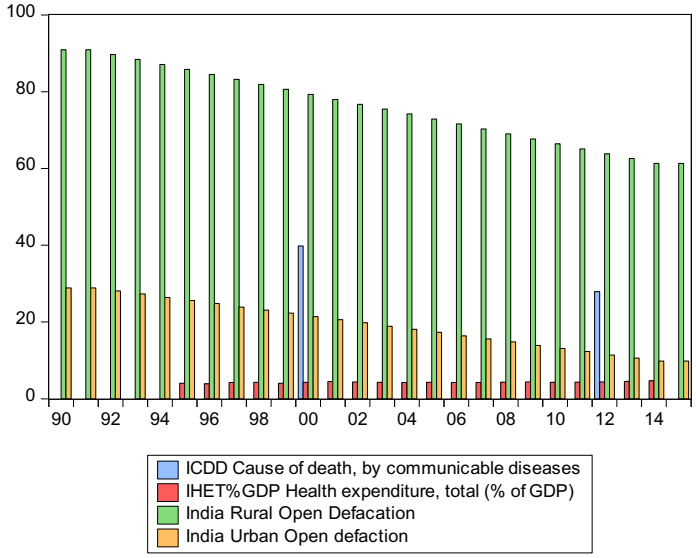


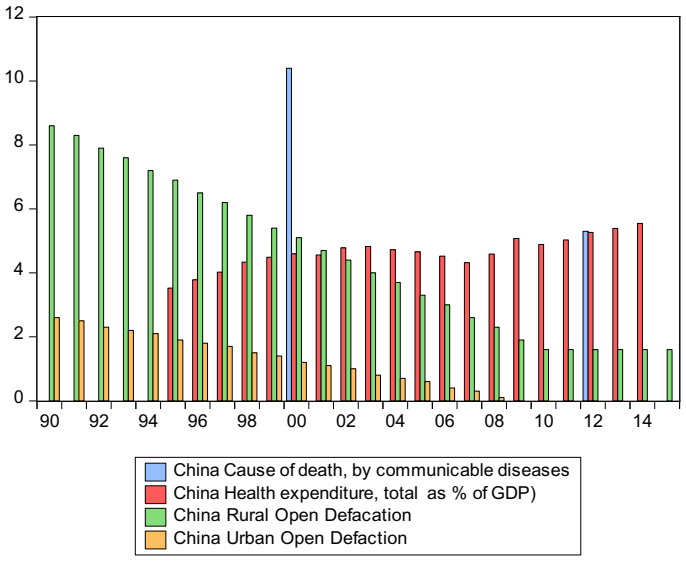
Exhibit 1 shows that the increase in total health expenditure as a percentage of GDP (CHET%GDP) in China from 3.52% to 5.54% from 1990 – 2014 had brought down the rural open defecation (CHNROD) from 8.6% to 1.6% from 1990 – 2015 and the urban open defecation (CHNUOD) from 2.6% to 0% and the cause of death by communicable diseases (CCDD) from 10.4% to 5.3%.

Exhibit 2



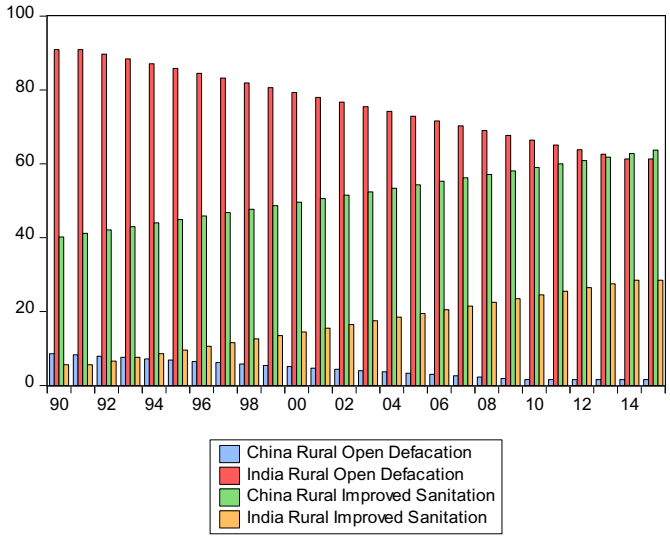
The scenario of people practicing open defecation and the health expenditure in India as a percentage of GDP is depicted in Exhibit 2. It is observed that India's health expenditure as a percentage of GDP (IHET%GDP) for the period from 1990 – 2014 ranging from 4.01% to 4.68% had insignificantly reduced the practice of open defecation both in Rural and Urban areas. The people practicing open defection in rural areas (INDROD) had declined from 90.8% to 61.3% and in the urban areas (INDUOD) the practice of open defecation had declined from 28.9% to 9.8%.

Exhibit 3



According to exhibit 3, china's health expenditure as a percentage of GDP(CHEXP % GDP) seems to be in fluctuating rate from 1995 to 2014. China's rural open defecation has been reduced in a decreasing rate from 9% in 1991 to 3% in 2015. Also chins's urban open defecation from 3% in 1990 to 0% in 2009. China's dearth rate due to communicable diseases was 10% in 2000-01 reduced to more than half its value to 5.7%in 2011-12.

Exhibit 4



On taking a look on at exhibit 4, it projects a comparison between India's Rural open defecation and improved sanitization with China's Rural open defecation and improved sanitization. India's rural open defecation has declined from 91% in 1990 to 70% in 2015 and from 10% to almost nearing to 0% in the year 2015.on the other hand, China's rural health expenditure has increased from 40% in 1990 to 60% in 2015 and for India it is 5% in 1990 to 22% in 2015. On comparing the rural open defection, India seems to be higher than China bt has decreased on a yearly basis. Also the Rural improved sanitation, China tops when compared to India.

Exhibit 5

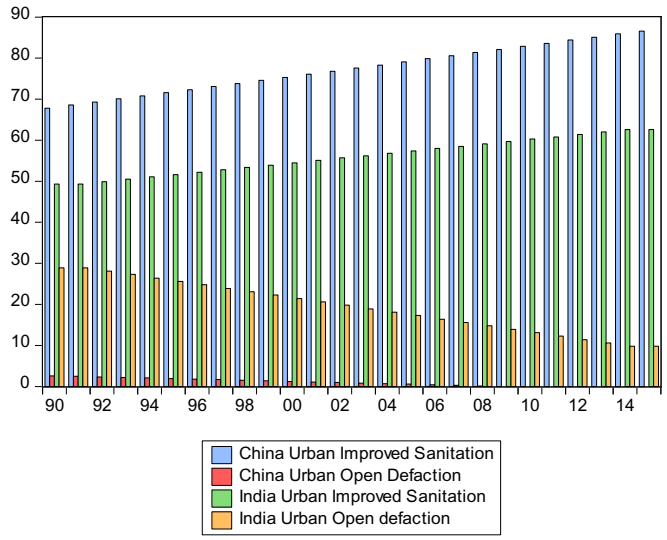


Exhibit 5 depicts the graphical representation of Urban improved sanitation and urban open defecation between India and China. In 1990 China's urban improved sanitation was 68% and increased to 89% in 2015, and for India it is a 5% increase from 50% in 1990 to 55% in 2015.when we look at the urban defecation in China it is declined from 2% in 1990 to almost 0% in 2007. In case of India the rural open defecation has reduced from nearly 30% in 1990 to more than 10% in 2015.

6. HYPOTHESIS

- There is no significant influence of Health Expenditure on urban and rural defecation in India and China
- There is no significant impact on urban and rural improved sanitation on urban and rural open defecation and communicable diseases

7. ANALYSIS AND INTERPRETATION

Table 1 depicts the descriptive statistics of various variables of China. On an average China spends about 51% in Improved sanitation where as India spends only 17% (as per Table 2) which is compared to be lower than China. In case of health expenditure as percentage of GDP, both China and India spend around 4.2 and 4.6% respectively.

Table 1
Descriptive Statistics - China

PARTICULARS	*CHNUOD*	*CHNUIS*	*CHNROD*	*CHNRIS*	*CHET_GDP*
MEAN	1.007	77.219	4.423	51.969	4.645
SD	0.905	5.757	2.411	7.188	0.504
SKEWNESS	0.310	0.001	0.258	–0.001	–0.346
KURTOSIS	1.688	1.792	1.682	1.795	2.970

Table 2
Descriptive Statistics - India

PARTICULARS	*INDUOD*	*INDUIS*	*INDROD*	*INDRIS*	*IHET_GDP*
MEAN	19.350	55.950	76.103	17.034	4.292
SD	6.261	4.333	9.704	7.481	0.177
SKEWNESS	–3.31E-16	–2.31E-16	0.002	0.006	–0.163
KURTOSIS	1.737	1.746	1.737	1.743	3.552

Upon comparing status of rural and urban open defecation, it is clear that China had brought down al., both urban and rural open defecation both India is far behind than China with an average of 76% which is an abnormal variation. If we view the skewness for the variables in China, except improved sanitation and health expenditure other variables have moved towards the extreme right meaning they are positively skewed. While in India the rural open defecation and improved sanitation the values positively skewed. All the variables for both the countries viz India and China are lepokurtic indicating a positive cluster of values and small changes in variables happen less frequently.

Table 3
Results of Mutiple Regression Analysis

DEPENDENT VARIABLE	*INDEPENDENT VARIABLE*	*R- SQUARE*	*PROBABILITY*
CHNUOD	CHNUIS	0.192	0.649
	CHET_GDP		0.417
CHNROD	CHNRIS	–0.384	0.009
	CHET_GDP		0.017
INDROD	INDRIS	0.822	0.000
	IHET_GDP		0.000
INDUOD	INDUIS	0.295	0.002
	IHET_GDP		0.000
CCDD	CHNROD	0.709	0.106
CCDD	CHNUOD	–1.159	0.300
ICDD	INDROD	0.854	0.042
ICDD	INDUOD	0.506	0.077

The above table indicates that urban open defecation in china is only 19%dependent on the health expenditure as a percentage of GDP. On the contrary the urban open defecation in India is 29% dependent on its health expenditure as a percentage of GDP. It shows that the urban open defecation in both the countries are not statistically significant. While comparing the rural open defecation and health expenditure between the countries, India's rural open defecation is 82% dependent on the health expenditure thereby proving a perfect fit model. But China's results goes negative and proves to be a unfit model.

It can be inferred that the Indian rural open defecation and communicable diseases is a perfect fit model than the rural defecation and communicable diseases in China with India being 85% dependent on communicable diseases and 70% for China which is compared to be lower than India. Rural communicable diseases and communicable disease are more significant than china's rural open defecation. On the other hand, urban open defecation is 50% dependent on the communicable disease proving to be a moderate fit model and China's urban open defecation shows negative results and thus there is no significance between the communicable diseases and the urban open defecation in China.

8. CONCLUSION

The result of the cause-effect analysis indicated that the total public and private health expenditure as a percentage of GDP and improved sanitations in rural and urban areas in China had significantly brought down the practice of open defecation and the cause of death due to communicable diseases. In case of India, it was observed that the rate, at which health expenditure and the improved sanitations had been increased, was found inadequate to bring down the practice of open defecation and the cause of death due to communicable diseases. It would be appropriate to admit the fact that the policy-makers, bureaucrats, corporate, public and other organizations have a collective responsibility to improve better living conditions.

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