

Patterns of socio-economic deprivation and its impact on quality of life: Case of a less developed region in West Bengal, India

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## ABSTRACT

In the current context of regional planning, the issue of socio-economic deprivation and its impact on quality of life is becoming highly significant. Though several regions in cities and their fringe areas are continuously developing, but the community development blocks of various sub regions in them exhibit a fairly evident pattern of dichotomy and duality in development. Consequently, the sub regions become more socio-economically susceptible and more prone to vulnerability compared to the cities having a higher level of preparedness in development. The key reason is the unequal distribution of national assets and resources across the systems of sub regions. Hence, there is a need to evaluate the degree of susceptibility in the different sub regions. The susceptibility in the process of development can be spatially explained by studying the patterns of deprivation in the sub regions. Additionally there is an observation on quality of life in terms of poor physical infrastructure and housing conditions, which has bearing with susceptibility. The present paper tries to identify the patterns of deprivation and its impact on quality of life from the two observations. The study has been performed based on the performances of fifteen

socio-economic growth indicators, broadly categorized as health, education and economic indicators following Human Development Index (HDI) guidelines. The patterns of deprivation of a sub region have been identified by calculating the distribution of deprivation index across the region. Finally, the paper has tried to understand the nature of relationship between deprivation index and quality of life indicators. There is a specific case of Malda, a comparatively less developed region of West Bengal which has been selected as the case study to best forward the concerns of the paper.

#### Keywords

Socio-economic deprivation, causal factors, pattern of deprivation, quality of life

## 1. INTRODUCTION

### 1.1 Background of the study

The term deprivation stands for the condition of a system or a community or a region which is lacking the basic necessities of a society or community. Analogically, socio-economic deprivation can be described as the lack of social and economic benefits which are considered to be basic necessities of a society or community or in a broader sense of a region. The regions with high demand and low supply of basic requirements often exhibit poor social and economic status compared to the other adjacent regions which mark the former as socio-economically deprived region (Pampalon et al., 2000).

According to Maslow's hierarchy of needs, the basic necessities refer to the food, shelter and warmth (Maslow, 1943). The development of any region primarily depends on the fulfillment of these three prime factors. But practically, it is difficult to measure the development of any community or regional system only in terms of availability of food, shelter and warmth. The fundamental factors have to be more specific and quantified to assess the degrees of deprivation. Therefore a set of quantitative indicators which collectively represent the three prime factors of development need to be identified to measure the overall development of any regional system. In the present study, to identify the pattern of socio-economic deprivation, the Human Development Index (HDI) indicators have been considered as the primary units of measurement. Human Development Index (HDI) is considered worldwide as a basic yardstick for the measurement of socio-economic development, whose fulfillment satisfies the reaching of "A composite index measuring average achievements in three basic dimensions of human development- a long and healthy life, knowledge and a decent standard of living" (Human Development Reports, 2003). The performances of HDI based indicators also reflect the quality of life of people of any particular region. As example, it can be stated that low per capita income (economic indicator) leads to poor quality of housing, high illiteracy rate (knowledge indicator) leads to less awareness, less number of doctors and beds in hospitals (health indicator) leads to poor health condition etc. Performances of the indicators determine the state of deprivation and in a larger scale the pattern of deprivation for the whole region. There are several other vicious causal factors which act upon a region and make significant diverse changes in the performances of the indicators. The impact of the factors upon any regional system can be fatal as they expose the region

towards different kinds of social and economic shocks, which in turn make a socio-economically deprived region highly sensitive. The factors can be of different types and can emerge from different dimensions. They can damage in direct and indirect way to both tangible as well as intangible assets and eventually affect the quality of life of the people living in the affected region. The extent of damage depends on the nature and intensity of shocks generated by them (Kim et al., 2009). This paper has primarily referred to a set of causal factors proposed by different researchers shown in Table 1.

Table 1. Causal factors

Source	Causal factors
Kelly and Schmidt, 1995	Poorly developed market and institutional systems, high dependency rate, and relative unimportance given to aggregate demand
Loughead et al., 2001	The limited or no access to the common property
Alcantara Ayala, 2002	Lack of access to resources, disintegration of social patterns, lack of strong national and local institutional structure, lack of public awareness, limited access to political power and representation, and certain beliefs and customs
Ellis F., Freeman A. H., 2004	Unemployment and gender differentiation in work places, macro-micro linkages, transformation of rural assets into money, disadvantageous position of women in urban food and labour market
Sastry, 2004	Poverty, transformation of farm land into urban land, change in the labour force participation pattern
Briguglio et al, 2006	Opening to the elements of the exogenous shocks
Holmes et al., 2010	Diversion of mean of earning from agriculture to non-farm activities, low household income
Pasteur, 2011	Selling assets like land and livestock
Sarkar et al., 2012	Price change of certain commodity affecting the economy of people, economic recession, technological changes, a major change in Government policy decision, a major political turnover, a change in taxation policy, any new law or amendment of an existing law

In Indian context, the study on socio-economic deprivation is gradually becoming significant due to the pressure created over the sub regions by rapid urbanization, changing pattern of demand and supply, globalization etc which have created different layers in the process of development. In the present context the level of development can be explained in three layers of development- development in cities, development in fringe areas and development in community development (CD) blocks. The cities are already developed and resourceful. The fringe areas

are trying to be a part of city to avail all the amenities in full fledged manner and therefore they are gradually developing. But the area of concern is the development level of CD blocks. Most of the times, the CD blocks being the most neglected part of a region face the highest level of deprivation in social as well as economic aspects. This negligence often leads towards multiple deprivations in both social and economic dimensions. Therefore, in order to understand the pattern of deprivation, the present study has considered the community development blocks as the spatial unit forming the sub regions.

### 1.2 Need of the study

It has been established in previous research works, that social and economic benefits are the basic necessities of a region and lack of the same makes that particular region exposed to different kinds of shocks and injuries. The region becomes highly sensitive and susceptible in response to the socio-economic shocks generated by the causal factors. When the susceptibility of the sensitive regions exceeds certain limit of tolerance, they become vulnerable to the similar kind of shocks. Secondly, the quality of life of people living in CD blocks is of major concern. Poor and degraded quality of life is a very common phenomenon in those regions. The present study not only attempts to understand the pattern of socio-economic deprivation in the CD blocks of a relatively less developed region in West Bengal, but also tries to explore the existence of any relationship between the pattern of socio-economic deprivation and poor quality of life. Since, the present study has referred to the HDI based indicators for measurement of deprivation, the investigation unveiling the relationship of socio-economic deprivation and poor quality of life becomes obvious. Accordingly, the following two objectives have been formulated to accomplish the present study:

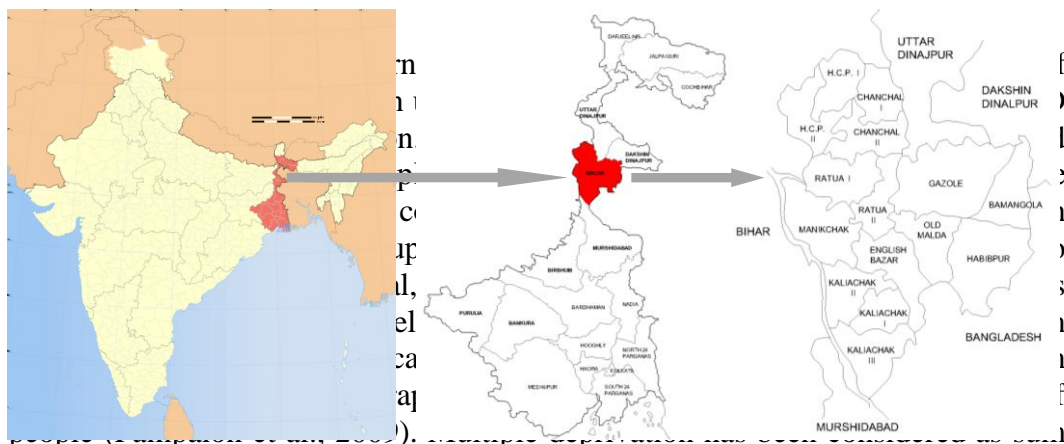
- To identify the pattern of socio-economic deprivation
- To understand the relationship of socio-economic deprivation and poor quality of life

## 2.METHODS

### 2.1Case study region

To fulfill the objectives, Malda- a relatively less developed region in West Bengal, located in eastern part of India has been chosen as the case study. Malda is a district in West Bengal centrally located in the riparian zone of river Ganges (Figure 1). All CD blocks within it have some commonality in terms of soil type, spatial characteristics, demographic and socio-economic characteristics. The region is less addressed and underdeveloped in both agriculture and industrial sectors and consequently is lacking in basic social and economic necessities (Shamim and Ahmed, 2011). Low agricultural productivity, small size of land holding, high dependency on farming, drought and flood are the additional factors acting behind the state of underdevelopment (Siddiqui and Hussain, 2010).

Figure 1. Location of case study region



total of different dimensions of deprivation (Noble et al., 2006). In the present study, the dimensions of deprivation refer to the three basic dimensions of HDI—health, knowledge and economy. Since, the primary units of study must be as small as possible so that it can ensure a very high level of accuracy (Pampalon et al., 2000), in this study, depending upon the availability of data, CD blocks have been considered as the smallest units. After calculation of the deprivation index a mapping has been done to visually represent the pattern of deprivation. The formula for indices of multiple deprivations is as follows:

$$I_{ij} = (I_{\max} - I_i) / (I_{\max} - I_{\min})$$

$I_{ij}$  = Deprivation Index of  $i^{\text{th}}$  variable in  $j^{\text{th}}$  unit of study

$I_i$  = value of  $i^{\text{th}}$  variable in  $j^{\text{th}}$  unit of study

$I_{\max}$  = Maximum value of  $i^{\text{th}}$  variable

$I_{\min}$  = Minimum value of  $i^{\text{th}}$  variable

Indices of Multiple Deprivations

$$DI = \sum I_{ij} / n$$

$n$  = Total number of variables

For the second objective, the deprivation indices have been related with the quality of life indicators and the relationship has been graphically represented for the detailed illustration. The relationship has been explained with the help of Pearson's correlation coefficient. It is a measure of correlation between different

variables explaining their dependence up on each other. The correlation coefficient is generally delineated by 'r'. The value of r ranges from +1 to -1. Variables with the value near to  $\pm 1$  are considered to have very strong relationship with each other. The graphical illustrations have been made based on the z-scores of the QoL indicators and DI of each category of deprivations.

### 3.RESULTS

#### 3.1 Selection of indicators for deprivation index

The selection of indicators has emerged as the key concern of the study as the performances of the indicators are going to determine the degree of deprivation in every single unit of study. Therefore the indicators have to be selected with extreme attention so that they can interpret the actual socio-economic setting of the study region. As the present study from the very beginning has been emphasizing on the Human Development Index based indicators to best describe the social and economic scenario of any region, the three major dimensions have been conceived to frame a guideline for indicator selection. These three dimensions are- health, knowledge and economy.

For the initial selection of indicators, an exhaustive literature survey has been carried out from which an inventory of most appropriate indicators has been made. The inventory has been detailed out in Table 2 where the list of indicators has been produced along with the sources.

Table 2. Initial list of indicators

Source	Indicators
World Bank	Per capita expenditure on health
	Under 5 mortality rate
	Crude birth rate
	Per capita expenditure on education
	Literacy rate
	Number of school teacher
	Expected years of schooling
	Enrolment/ number of students
	Gross National Income per capita
	Per capita income
	Below Poverty Line population
	Total population
	Labour force participation
	Telephone subscribers
	Gross Domestic Product
	Consumption
	National Sample Survey
Worker population ratio	
Proportion unemployment	
Unemployment rate	
Steinführer et al., 2009	Low income group population
	Disabled population
	Recent migration
	Vulnerable housing
	Older population
Eakin et al., 2008	Age
	Education level
	Adult education level
	Number of adults in households
	Total area
	Livestock
	Irrigated area
	Tractor
	Land rental
	Farm tenure
	Credit
	Insurance
	Technical assistance

	Climate information centre
	Area in crops
Tapsell et al., 2005	Age
	Gender
	Employment
	Occupation
	Education level
	Household composition
	Type of housing
	Number of rooms per households
Cutter et al., 2003	Personal wealth
	Age
	Density of built environment
	Housing stock and tenancy
	Occupation
	Infrastructure dependence
	Single sector economic dependence

After the initial compilation, the indicators are fitted into the given three dimensions. At the same time, three more parameters for selecting the indicators have been applied to identify the final set. They are: i. Data availability on local scale, ii. Exclusion of factors that do not affect vulnerability level within the case study region and iii. No interlink among factors. The final set of indicators has been enlisted in the Table 3.

Table 3. Final set of indicators

Health	Knowledge	Economy
Under five mortality rate	Illiteracy rate	Unemployment rate
Crude birth rate	Teacher in primary school	Commercial banks
Beds in hospitals	Enrollment in primary school	Rural banks
Polio vaccination	No. of primary school	Net collection from small savings
Patients treated		Co-operative society
		Fair price shop

### 3.2 Pattern of deprivation

The pattern of deprivation has been identified by calculating the deprivation index (DI) for each unit of study that is for each CD block of the case study region. The



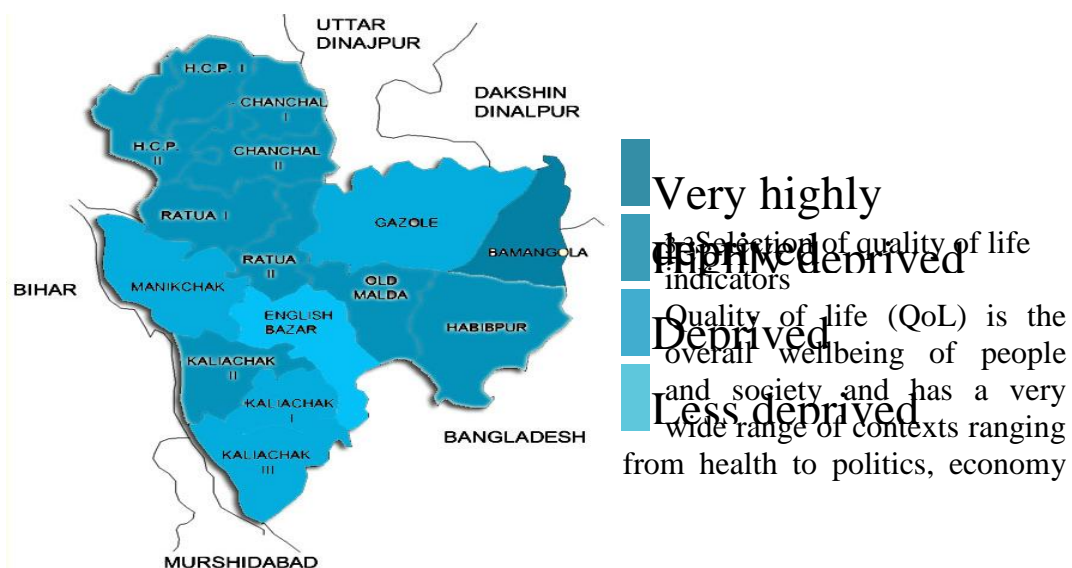
values of the deprivation index of the CD blocks represent the spatial distribution of deprivation. To calculate the deprivation index the data have been collected from the Census of India, 2011 (<http://censusindia.gov.in/>) and District Statistical Handbook, Malda (2011). The Census of India is published from the Directorate of Census Operations, Govt. of India and District Statistical Handbook is published by the Bureau of Economics and Statistics, Govt. of India. The raw data for each indicator has been standardized by calculating the z-score. Then the z-score of each indicator has been put into the formula of indices of multiple deprivations. Finally the average deprivation index for all the CD blocks has been identified. Table 4 shows the deprivation index of each block.

Table 4. Deprivation index

CD Blocks	Average DI
Bamongola	0.878
Old Malda	0.785
Chanchal I	0.768
Ratua II	0.751
Chanchal II	0.748
Harishchandrapur I	0.744
Kaliachak II	0.723
Habibpur	0.683
Harishchandrapur II	0.674
Ratua I	0.634
Kaliachak III	0.577
Manikchak	0.539
Kaliachak I	0.492
Gazole	0.463
English Bazar	0.275

Depending upon the values of average DI, the blocks have been categorized in four groups. They are: very highly deprived ( $DI > 0.8$ ), highly deprived ( $0.6 > DI > 0.79$ ), deprived ( $0.3 > DI > 0.59$ ) and less deprived ( $0 > DI > 0.29$ ) region to emphasize the pattern of deprivation. The categorization in detail shows that there is only one block (Bamongola) which is very highly deprived, nine blocks are highly deprived, four blocks are deprived and only one block is less deprived which means a major part of Malda district is highly deprived in both social and economic dimensions. Only one block is categorized as less deprived which is a major issue of concern. The pattern reveals the existing socio-economic status of the whole case study region that is the district of Malda. The spatial distribution of deprivation has been shown in Figure 2.

Figure 2. Pattern of deprivation



**Very highly deprived**  
 as selection of quality of life indicators

**Highly deprived**  
 Quality of life (QoL) is the overall wellbeing of people and society and has a very wide range of contexts ranging from health to politics, economy

**Deprived**

**Less deprived**

to psychology, education to environment and leisure to social belongings (Gregory et al., 2009; Nussbaum and Sen, 1993). The World Health organization (WHO) defines QoL as : “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment” ([http://www.who.int/mental\\_health/media/68.pdf](http://www.who.int/mental_health/media/68.pdf)). Therefore it is difficult to identify a particular set of indicators. Since the present study is more focused on socio-economic deprivation, authors have considered housing condition and physical infrastructural facility indicators as the micro level QoL indicators. The final set of QoL indicators are enlisted in Table 5.

Table 5. Quality of life indicators

Category	Indicators
Housing condition	Number of households living in temporary housing
Physical infrastructure	Number of households having toilet and bathroom
	Number of households having drainage
	Number of households having electricity
	Number of households having water supply

#### 3.4 Impact of deprivation over quality of life

To understand the impact of deprivation over QoL, the correlation coefficients for DI and all QoL indicators have been determined. The values explain the very strong relationship between DI and QoL indicators. The correlation coefficients are shown in Table 6. Total number of households in study area is 8,46,991 and total population of study area is 39,88,845 (<http://censusindia.gov.in/>).

Table 6. Correlation of DI and QoL

DI	Number of households living in temporary housing	Number of households having toilet and bathroom	Number of households having drainage	Number of households having electricity	Number of households having water supply
	0.979	-0.984	-0.978	-0.992	-0.988

To easily understand the relationship of deprivation with quality of life, a graphical illustration has been made. Five graphs have been drawn to show the nature of response of the quality of life indicators to the socio-economic deprivation. Figure 3(a,b,c,d, and e) illustrates the results. The X-axis represents the average deprivation index for all four patterns (Figure 2) of deprivation and Y-axis represents the average z-scores of quality of life indicators in the four differently deprived regions.

From the figures the observations drawn are:

Figure 3(a): Number of temporary housing increases with high DI indicating very poor housing conditions in very highly and highly deprived regions.

Figure 3(b): Number of households with toilet and bathroom gradually decreases with the increase in DI indicating the lack of hygiene, poor health status and poor condition of living in the very highly and highly deprived regions.

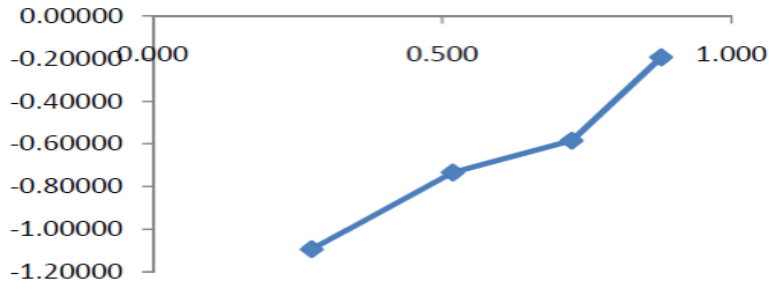
Figure 3(c): Number of households with drainage facility gradually decreases with the high DI explaining the poor physical infrastructure leading towards poor quality of life in the region with high deprivation.

Figure 3(d): Number of households with electricity decreases with the increase in DI indicating the poor infrastructural framework and lack of access to basic necessities leading towards poor quality of life in the highly deprived regions.

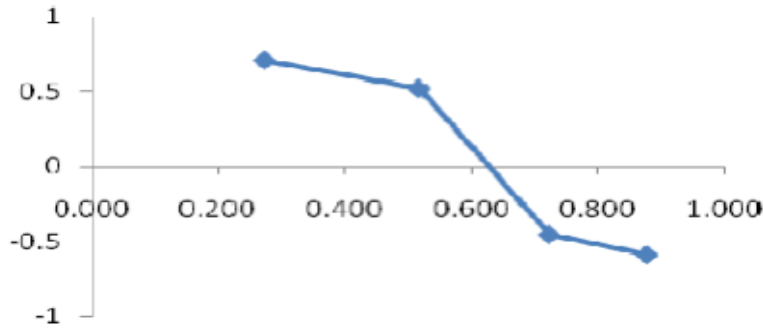
Figure 3(e): Number of households with water supply gradually decreases with the increase in DI explaining the lack of access to basic necessities, lack of proper physical infrastructure which leads towards poor living conditions in the regions with high deprivation.

Figure 3. DI and QoL relationship

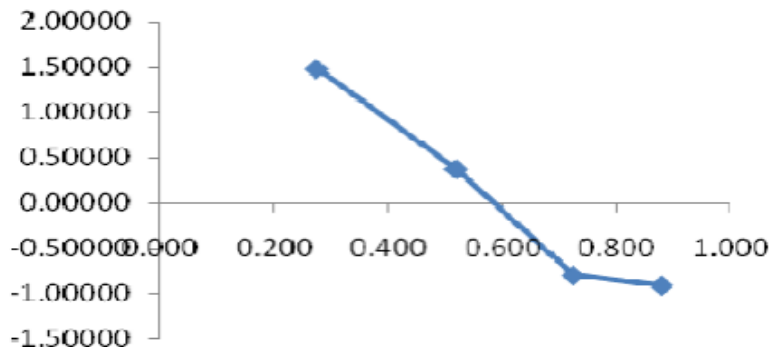
(a)



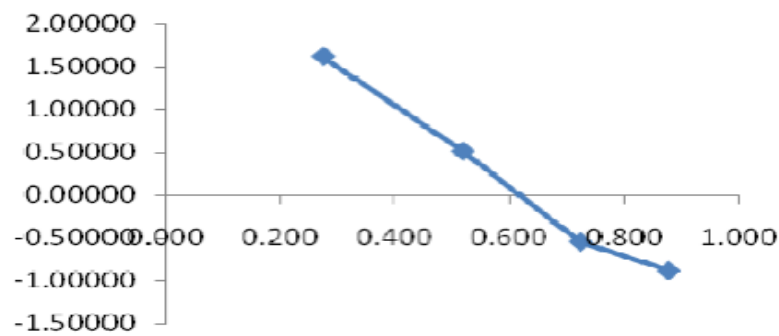
(b)



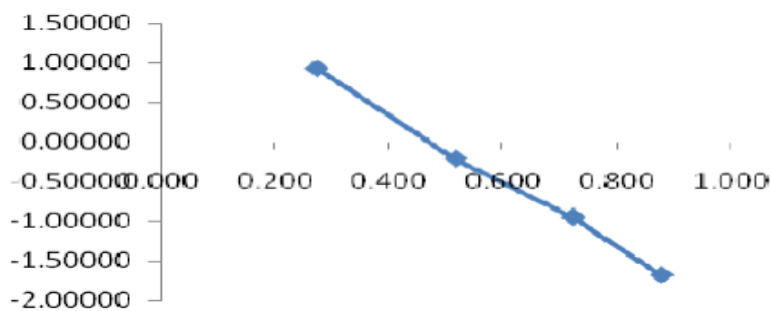
(c)



(d)



(e)



#### 4.DISCUSSION

The present study has tried to identify the pattern of socio-economic deprivation in a relatively less developed region and the impact of

the socio-economic deprivation over quality of life of that particular region. Earlier, in different researches it has been established that, deprivation index is considered as a widespread tool to understand the pattern and degree of socio-economic disparities (Drukker et al., 2003; Schuurman et al., 2007). Deprivation deals with various aspects causing lack of access to basic necessities and related resources which in turn affects the way of life (Nolan and Marx, 2009; Townsend 1979). Relevant researches in European countries have established that socio-economic deprivation and various dimensions of quality of life especially health related issues are associated with each other (Drukker and Os, 2003; Drukker et al., 2003). A study by Drukker et al. (2003) has revealed the relationship between socio-economic status and health related quality of life in The Netherlands. Moreover, the study has shown that, with the little variation in socio-economic deprivation, there is change in quality of life.

The vast application of the method has been seen mostly in the health related studies. However in the present paper the authors have tried to apply the concept of deprivation in case of quality of life of people. Firstly, the results for pattern of deprivation show a high level of socio-economic deprivation in the entire Malda district. Also, the quality of life of people living in the case study region is not up to the mark according to the statistics obtained from different reliable sources like Census of India 2011 and District Statistical Handbook 2011. Secondly, the results (table 6 and 7) explaining the impact of socio-economic deprivation over quality of life show that with the increased value of deprivation index, the value of the quality of life indicators decrease. In case of all the five quality of life indicators namely, number of households living in temporary housing, number of households with toilet and bathroom, number of household with drainage, number of household with electricity and number of household with drinking water supply, have lower values with high deprivation index. This incident explains that with high deprivation index, the quality of life becomes poorer, meaning the direct relationship of deprivation and poor quality of life. Consequently, socio-economically deprived regions always lead a degraded quality of life in terms of poor housing qualities and poor physical infrastructure which may lead towards multidimensional vulnerability to different kinds of social, medical and economic shocks.

## 5.CONCLUSIONS

The preset study has tried to understand the pattern of socio-economic deprivation in a relatively less developed region of developing nations. The study shows how the quality of life of people can be affected by deprivation and how the general idea of quality of life of a particular region can be made based up on the socio-economic status of the region. The strong level of association between the DI and QoL explains the appropriateness of the study. The study identifies the basis of socio-economic susceptibility and consequent vulnerability by understanding the pattern and relationship of deprivation and QoL in a developing region. However, deprivation index is not an individual level measure and also does not provide an descriptive framework. The study is applicable for any less developed region of developing nations. The indicators can be modified according to the nature of derivation and focus of the study.

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