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KEYA SENGUPTA
Indian Institute of Management, INDIA

HEALTH EXPENDITURE AND ITS IMPACT ON HEALTH STATUS

Abstract:

Health expenditure is an important determinant of the health status and economic development of a nation. Experience has revealed that countries which assign due recognition to this aspect have healthier and more productive human capital. This in turn raises the GDP of a nation, in contrast to countries which spend less on health sector. Health care users, particularly in poor and developing countries have to spend more on 'out of pocket' expenses, because in such countries public health expenditure falls short perhaps due to inadequate resources. Expenditure on health sector therefore has higher return in terms of health outcomes and economic development in poor and developing countries in comparison to already developed countries.

The present work with the help of data from all the states and union territories of India examined the impact of per capita health expenditure on infant and child mortality separately for the urban and rural sector of India using lagged multiple regression models. The findings of the study reveal that health expenditure taken alone do not have any impact on the health parameters. However, inclusion of mother's education and the poverty level of the household represented by per capita income, increases the effectiveness of health expenditure, which then becomes an effective tool for improving the health parameters of infant and child mortality. This implies that where the health beneficiaries are poor, level of education is low, awareness is less, and particularly in the rural sector public health expenditure is not incurred judiciously. However, consciousness of educated health beneficiaries make the ones who incur the health expenditure to be more careful as how the money is spent. Proper management, supervision and monitoring thereby assumes more importance. Ultimately therefore it is not always the amount of finance, but more important becomes how the money is spent. The study also reveals that there is a clear dichotomy in India between the rural and urban sector. Rural sector representing the less developed nations of the world, whereas urban India has situation similar to the developed world. This clearly focuses attention to the fact that uniform policies of health expenditure for the entire country may not be very effective and separate policies which should be based on the specific need and problems of spatial differences needs to be devised.

Keywords:

infant and child mortality,per capita health expenditure,female education,poverty,health policies

JEL Classification: I14

1. *Introduction*:

Expenditure on health is viewed more as a long term investment, whose benefits accrue more to the individual in the short run, but it is the society and the nation who ultimately reaps the benefit of such expenditure in the long run. Expenditure on health therefore like expenditure on any other socio economic aspect can be viewed as investment for enhancing the quality of life of the people. The expenditure incurred for bringing up the children in terms of good health contributes not only for his own self, but for providing healthy labour force for the future development of the nation. The GDP of such nations will eventually be much higher and better in comparison to those nations burdened with malnourished people with high morbidity and mortality rates. Resources required for meeting the challenges of health related problems of such nature has high opportunity costs. Such resources in less developed nations can otherwise be spent more profitably for the purpose of development of the nation had they not been spent for meeting the challenges of poor health of the population. It is not only by way of monetary investment alone, but a nation characterised by high morbidity and mortality rates also loses much of its human resources from whose productive contribution the nation is deprived of. Health expenditure is therefore considered as an investment because the benefits are also directly in terms of number of lives saved, extent of disability prevented and the amount of monetary loss that can be reduced.

Availability of requisite finance therefore plays a pivotal role in determining the status of health in a society. It is inadequate finance which is mostly responsible for poor health status among the less developing and poor nations. Small percentage of financial allocation on the health sector, results in failure to provide adequate health infrastructure such as hospitals, doctors, paramedical staff, and all types of technological upgradation related to health. The result is inadequate supply of health services while demand continues to surge ahead creating a wide gap between demand for and supply of health services. As a result, status of health condition deteriorates even further. Insufficient financial allocation for health also compels the individuals to spend on health needs from their own income. For instance in India, “out of pocket” expenses on health is one of the highest in the world amounting to 85 p.c. This is a major perpetuator of poverty in India. Debt for medical purposes particularly among the poor has been rising at an alarming rate. Health insurance which is one of the most important means to ensure health security to all is grossly inadequate in most poor nations, India being a glaring example.Status of health is better in developed nations for the reason that such nations can afford to invest and spend more on health. This in turn raises productivity and thereby leads to higher level of income. Therefore poverty can be tackled directly by tackling health issues

Economists use the term ***Human Capital*** to denote the investments made in the health sector to raise human capacities and raise labour productivity. Health capital plays a crucial role for the development of every nation because it can improve the return to investments in other economic sectors. Even the return to education is dependent on investments on health. School attendance in the formal sector is dependent on the health condition of the children which in turn is determined by investments in health. Higher expenditure on health especially public

expenditure is associated with better health outcomes and higher productivity, evidence of which is more common in poor nations than in the rich ones. Health sector, particularly in poor countries, therefore demands far more priority than is assigned at present .This in turn implies the need for higher allocation of GDP for the health sector.

Studies have also revealed that the return to investments in health is higher in developing countries than in the developed ones. The reasons attributed to greater relevance of investments in health in the less developed countries, is due to the fact that such nations are often crippled by much greater burden of disease. The extent of infant and child mortality is much higher in poor nations, where poverty is the real factor behind poor health .A marginal increase in investment per child in preventing infectious diseases such as malaria, diarrhoea, other water borne diseases or even better nutritious food can drastically reduce the burden of disease. It is revealed that malaria itself results in one million deaths every year and the African nations tops the list in this regard. It is also estimated by WHO that 15 % of the children who survive malaria are left with severe neurological problems and learning disabilities. The estimated direct cost of the disease in Africa alone was more than $ 3 billion annually in 2000.

Health expenditure has the component of both investment expenditure as well as consumption expenditure. When an individual has a better health status which is a form of consumption good he also becomes a better producer. However as far as financing health expenditures is concerned, it is irrelevant which is the source of health financing, because in most countries such finances come partly from private sector and partly from public sources. The combination varies from one country to another depending upon many factors (Muskin, 1962).

Investment in health is thus the same as the investment in the enhancing the quality of the people, because as mentioned earlier, changes in the quality of people means changing the contribution to economic growth. The central concern is the measurement of the addition to labour productivity and contribution to annual output and economic growth due to the additional investments in health care. Benefits can also be measured in terms of the gain in future work by the beneficiaries of health programms. The present value of the future earning of these people who would not have otherwise survived with the earlier mortality rates are considered as capital asset of health investments,the addition to national income by this group of people. Benefits of investment in man and thereby investment in health are measured in terms of the economic loss avoided, number of lives saved, extent of disability prevented. It is therefore pertinent for health planners to estimate the cost benefit ratios of allocation of scarce resources for different health programmes. However health economists are of the opinion that in the absence of any definite methodology for estimating the Cost Benefit Ratio for health programmes, the problems of measuring the benefits of health investment particularly for the less developed countries becomes very difficult. This is mainly because of inadequate health data in these countries.

2. Conceptual and theoretical background:

Public Health expenditure is normally incurred on **public health** which is a social and political concept and aims at improving health, prolonging life and improving the quality of life through health promotion programmes, disease prevention and other forms of health intervention. The

new public health implies spending in various forms of life styles and living conditions all of which determine health status and the necessity to mobilise resources and make sound investments in policies, programmes and services which create, maintain and protect healthy lifestyles.

Health expenditure is considered as a merit good, because large positive externalities are associated with health expenditure. In poor and very rich nations health expenditure is incurred mostly by the individuals themselves. In the former case the reason is resource constraint on the part of the state and in the latter, the state has invested the optimum level in the health sector due to which the population has attained a certain standard of health and therefore do not need to increase its proportion of health expenditure any further. Thereafter the subsequent expenditure is incurred by the individuals as per their health needs and requirements. The health outcome is however different in the two cases. In the former case it implies that a greater degree of reliance has to be placed on private delivery of health infrastructure and health services. It also means that there is inadequate access to health services by the poor.

Public Investment in health especially in poor countries are crucial because the inability to do so means that the poor have to spend more from their pockets and since they cannot afford to spend too much on health, thereby suffer from disease ,malnutrition, ill health and other related problems .Though direct correlation ship between public health expenditure and health outcomes cannot be established yet, the different indicators of health status such as life expectancy, infant mortality and maternal mortality are higher in those countries where public health expenditure is inadequate.

Public health expenditure can therefore be of two categories, which will be highly relevant for the purpose of our analysis. Public expenditure can be on general health care services, termed as “public health” like doctors, nurses and other health personnel, hospitals and other health infrastructure, the impact of which on health is indirect. The other category of public health expenditure has more direct impact on health outcomes. These expenditures relate more to those areas of public health which target to change the overall conditions of nutrition and sanitation that effect health outcomes. Investment on clean drinking water, immunisation or treatment for communicable diseases results in direct health benefits through reduced rates of disease. Private expenditures on all such items will not take into account the positive external effects and therefore yield less than socially optimal levels of such activities. It is asserted that even public expenditure on general health care services having positive externalities, not only because of social costs of morbidity and illness, but also because inequalities in health care can create other social problems. State intervention therefore becomes essential either in the form of price subsidies to encourage the consumption of health care services or direct public expenditure for the provision of such services.

Another reason for market failure in the health care sector is due to asymmetric information between two parties, i.e. patient and the health service provider, where one of the parties has access to some information which is not known to the other party. Situations of this nature arises when the interest of the two parties do not coincide .State intervention in the form of

licensing of health care providers, insistence on some professional norms prohibiting low quality, regulated advertisements becomes imperative in an attempt to ensure and raise welfare by improving quality of health care and health delivery services.

The theoretical case for health expenditure by the government thus becomes extremely important unlike as in the case of other goods and commodities for the purpose of striking the right balance between efficiency and equity.

3. Review of Literature:

A good number of studies have been conducted on health expenditure ,which is viewed mostly as having long term returns of 'health investment'. Muskin (1962) in his work on "Health as an Investment" emphasises the changes in the quality of people through investment in health and the consequent impact on economic growth. According to him, health outlays improve labour productivity and yields a return over a period of time. The labour product created by this care according to him and the savings in health expenditure in the future, if any, as a consequence of reduction in disease is the yield. Like physical capital, human capital formation through expenditure on health may also be counted through cost analysis, which are costs of environmental and curative health services embodied in the life spans in the present labour force according to the author

Fuchs (1966) in his work on health economics maintains that in terms of economics, the contribution of an industry is measured in terms of its output. Since resources are scare,the study of health economics assumes importance, because if they were not scarce, all health needs could be met and the study of health economics and health management would not be necessary . The most important is the contribution of health services to health.

On a similar note, Culyer (1971) argues that there are some conceptual difficulties in defining the nature of optimal allocation for health care services when discussing the optimal allocation of health care services for a nation. He puts forth three arguments for consumer's rationality behaviour with respect to health care services .Firstly, "many consumers, though sick, do not hesitate treatment and may even be ignorant of their sickness" Secondly, the mentally sick fit oddly into consumer's sovereignty model" and thirdly patients requiring emergency treatment are often not in a position to reveal their preferences. It is due to all these factors that the demand, cost and the uncertainties relating to the demand for health cannot be worked out exactly in the same way as for other commodities in the market.

Paxson and Schady (2005) in their study have shown that infant mortality had gone up by 2.5 p.c. in Peru between 1981-1990 ,which according to them was due to a decline in per capita GDP by 30 p.c. during the corresponding period. Public health expenditure also declined by 58 p.c. and proportion of health expenditure to GDP from 4.3 p.c. to 3 p.c.

4. Objectives and the Methodology:

The main objectives of the study will as follows:

1. To examine the impact of per capita health expenditure (both private and public) on infant and child mortality.

2. To assess whether any other determinant of health status such as mother's education, and per capita income of the households or the general level of poverty of the state along with health expenditure influences the health status.

3.To study the impact of all the above mentioned explanatory variables in a spatial form for the rural and the urban sectors .This is essential for a vast nation like India, with extremely wide diversity between the rural and the urban sector of the economy, with 70 % of India still dominated by the rural sector.

The study is based entirely on secondary data for the 35 states and Union Territories of India, collected from the data of Planning Commission for various years, Census Report, 2011, Central Bureau of health Intelligence. Data collected have been converted into percentages wherever necessary for the purpose of maintaining homogeneity. Linear Multiple Regression Models have been developed, with at least one year lag wherever applicable. This was done for the sake of their potentiality for greater power and easier interpretations compared to multi category models. The generic model for the linear regression of a binary nature will be represented as follows:

$$yi= \alpha - \beta_1 xi_1+\varepsilon i$$

The variable or the vector of the variables on health such as infant mortality and child mortality below five years will be represented by yi and the vector of the explanatory variable i.e the proportion of the population in different states and Union Territories. xi_1, with β_1 are the coefficient of the explanatory or the independent variable. The negative/positive sign before the coefficient shows the inverse/direct relationship between the vector of the dependent and the independent variables.

Generic form of the multiple linear Regression models which will be adopted for the purpose of our work will be as follows:

$$yi= \alpha - \beta_1 xi_1+\beta_2 xi_2+...+ \beta_n xi_n+\varepsilon i, \qquad i=1,...,n,$$

where, α = constant, yi is the vector of dependent variable which is infant and child mortality(total, rural and urban)in our case. β are the coefficients of the independent or the explanatory variable which in our case includes per capita expenditure on health incurred by the state and the central government, mother's literacy, per capita income, number of people in the state below the poverty line taken together denoted by X ,i.e. the predictor variables and the subscript 1.2…….n denotes the particular observational unit. The X_I are the 'n' observations of the independent variables and are assumed to measure without error. In other words, the observed values of X are assumed to be a set of known constants, and yi and X_I are paired observations both of which are measured on every observational unit. ε is the error term and has zero mean with a common variance and assumed to be normally distributed.

It is normally observed that expenditure incurred on health cannot have impact on health parameters within the same period. In a similar manner when mothers are educated the influence on the child's health can be evident after a time gap. Consequently the regression models developed for the current period and also we have developed some ***lagged model*** with one year lag, where the variable of the previous period impacts the dependent variable

of the current year. The lag of one year is denoted by (t-1). For mother's education, two year lag has been selected in the model.

$$yi= \alpha - \beta_1 xi_{1(t-1)}+\beta_2 xi_{2(t-1)}+\ldots+ \beta_n xi_{n(t-1)}+\varepsilon i, \qquad i=1,\ldots,n,$$

The other values used in the models are as follows:

α = the constant

β_1 , β_2, β_3, and β_n = the coefficient of the different explanatory variables

ε = the error term

For the purpose of our study '***infant mortality'*** is defined as the death of a child before attaining the age of one year, per 1000 live births. '***Mortality rate'*** is under five years of age which is taken as the usual definition of a child who is born during a particular year, but dies before reaching the age of five, which is estimated for every 1000 live births, subject to age specific mortality rate for that period.

We have firstly used per capita health expenditure incurred by the government as the explanatory variable because expenditure on public health is incurred with the purpose of deriving the direct health outcomes. It has been observed in many developing countries including India that even if public health facilities is available, the benefits are not commensurate due to various reasons, ranging from mismanagement of the health centre and poor delivery of services to ignorance of the beneficiaries. Therefore, even if expenditure is incurred, health benefits need not always be commensurate. Such scenarios in the health sector is prevalent more in the less developing countries. This happens mainly due to lack of education, particularly among the mothers. Education of the mother, has therefore also been accepted as another factor which can influence infant and child mortality across all countries of the world by creating awareness about the health benefits of the various facilities of public health. The impact of mother's education being much higher in less developing countries than in the already developed nations, where infant mortality is much lower and literacy rate among the mother's is also high. Therefore any increase in mother's education has lower elasticity with respect to health benefits, which already enjoys a better health status. Consequently, we have taken mother's education as an additional explanatory variable. In the next models mother's education represented by female literacy rate has been selected. The role of mother's education in developing awareness about availing of health benefits of public health of various nature, has also been used in our models. **$LITf_{(t-1)}$** therefore represents mother's education and the subscript (t-1) denotes a lagged model of one year. The reason is that the education of the girl child in the earlier period develops consciousness and awareness among the mother regarding health and hygiene. Poverty has often been ascribed as an important factor leading to infant and child mortality especially in poor and less developing countries. Poverty results in lack of education and lack of education results in lack of awareness about health benefits. We have therefore taken as additional explanatory variable, the poverty level of the state as well as the per capita income of the population as other explanatory variables. This poverty extends both to the individual poverty at the household level and also poverty of the nation at a macro level. Household poverty often results in inadequate awareness due to

lack of education, resulting in high degree of illness and death. The poverty at the national level prevents the government to allocate adequate resources for the health sector, resulting in poor physical and manpower infrastructure in the health sector, including inadequate drugs and all other facilities for treatment. We have therefore used some more additional explanatory variables such as **$POV_{(t-1)}$** in the lagged model, meaning the percentage of people in the state under the defined specific poverty lines. This is estimated by the Tendulkar Methodology showing the number and percentage of population below the poverty line. Here too we have used lagged model because poverty of the state deprives the population to have access to the health facilities provided by the government, the impact of which is evident over a period of time. Per capita income of the population of all the 35 states and UTs for the year 2010-11 have been accepted as another explanatory variable denoted by **$PCI_{(t-1)}$** in the lagged model. All these determinants of infant and child mortality have been used in the study as explanatory variables in the model.

Consequently the regression models for the current period and also ***lagged model*** with one year lag have been developed, where the variable of the previous period impacts the dependent variable of the current year. The lag of one year is denoted by (t-1).

$$yi = \alpha - \beta_1 xi_{1(t-1)} + \beta_2 xi_{2(t-1)} + \ldots + \beta_n xi_{n(t-1)} + \varepsilon i, \qquad i = 1,\ldots,n,$$

The other values used in the models are as follows:

α = the constant

β_1 , β_2, β_3, and β_n = the coefficient of the different explanatory variables

ε = the error term

Negative sign (-) and positive signs (+) have been used for the coefficients of the explanatory variable indicating the relationship with the dependent variable. Positive relationship implies the theoretical underpinnings of the study that the dependent variable will increase/decrease along with a corresponding increase/decrease of the explanatory variable. In contrast, negative relationship implies, indirect or reverse relationship between the dependent and independent variables.

On the basis of the above the hypothesis developed for our study is that:

H:1 Health expenditure results in improvement of health outcome.

H:2 Health expenditure does not result in any improvement in health benefits.

5. Analysis of the estimated results and discussion:

a) Infant Mortality and health expenditure:

Examination of the estimated results with per capita health expenditure as the explanatory variable for infant mortality, for the country as a whole and also separately for the urban and the rural sector do not yield any satisfactory result. Neither the value of R^2 or the value or the statistical significance of the coefficient of the independent variable warrant accepting the model for our purpose. This compels us to conclude that health expenditure per capita in India may not affect infant mortality directly. However, since the role and significance of such crucial

determinant cannot be dropped straightway we have explored whether health expenditure plays its role through some other significant variable. Consequently we have adopted mother's education as a lagged variable, with two years lag along with per capita health expenditure in the model and as expected the explanatory power of all the models have gone up significantly. The coefficient of the explanatory variables have also improved and they have now become statistically significant. The estimated results are reported below:

$IMR_t = 113.90 - .212\ PCHE - .614\ FL_{(t-2)} + \varepsilon$ $R^2 = .400$, SE =9.863,F = 10.315

t= (6.179) (-1.445) (-4.183)

where

PCHE = per capita health expenditure

$FL_{(t-2)}$ = mother's education with a two years lag

The estimated results reveal that 40 % of the relationship is explained by the model when mother's education is included in the model. In fact, the coefficient of the variable of mother's education is .614 and is also statistically significant as indicated by the value of't'. The value of the coefficient of per capita health expenditure which was extremely low when taken as the only explanatory variable has improved and is also statistically significant. The model is also theoretically sound as implied by the signs before the coefficient. It, may thus be concluded that health expenditure cannot directly have any impact on infant mortality but only when the mother is educated, awareness about benefits and the means of treatment develops , who may thus avail the benefits of health care treatment provided by the state.

It is further interesting to note that when the model is tested spatially for the rural and the urban sector in India, the model is more satisfactory in the rural area of India more than the country as a whole. In contrast, the explanatory power of the model becomes very poor for the urban sector of India. The reason could perhaps be due to the fact that in the rural sector government healthcare facilities are not too easily available. The distance of the health centres and the other logistic problem, understaffed health centres and inadequate drugs and medicines, poor or total absence of roads and communication system in the rural sector discourages taking the infants to these centres. The alternative is home medicines or resorting to the village quacks. However, when the mother's are literate awareness of the dangers of their child being treated by village quacks or homemade medicines is realised by them. Consequently, inspite of the numerous problems of the health care system in the villages and rural India, efforts are being made to carry their infants to the health centres. As a result, the impact of health expenditure and mother's education therefore becomes crucial determinants of infant mortality in the rural areas. However, the same is not always true in the urban sector. Due the easy availability of health care facilities and also better quality services in comparison to the rural sectors in terms of better physical and manpower infrastructure in healthcare, mother's education may not play any direct role in determining the extent of infant mortality. As a result, the explanatory power of the model becomes very weak. The estimated model that is therefore accepted for our purpose, which is valid in the rural India is stated below:

$IMR_r = 81.799 - .096PCHE_t - .721\ FL_{r\ (t-2)} + \varepsilon$ $R^2 = .512, F = 8.352$,SE 9.453

t = (7.194) (.474) (-3.564)

where $FL_{r\ (t-2)}$ = mother's education in the rural sector with two year's lag.

The results of the estimated equation reveals that the explanatory power of the model which is .512, is much higher than the model for the country as a whole and is also statistically satisfactory as revealed by the value of 'F'. The elasticity of mother's education as indicated by the coefficient of mother's literacy in rural India is as high as .712 with a 't' value of 3.564 .The model is also theoretically sound with negative signs for all the coefficients meaning that higher the health expenditure and mother's education, lower is also the infant mortality.

In the models we have tested whether the strength of the model improves by incorporating the poverty indicators of the states represented by per capita income and also the overall poverty level of the state as a whole and also taken separately for the rural and urban sector. The results of the estimated equation reveal that the strength of the model for the country as whole improves slightly by including poverty indicators as additional explanatory variables, but improves significantly for the rural sector. However, for the urban sector, though the explanatory power of the models improve, yet it is still not so strong that warrants any discussion. Therefore, the models for the rural sector with the additional explanatory variables of poverty is reported below:

$IMR_r = 86.678 - .145PCHE_t - .661\ FL_{r(t-1)} - .331\ PCI + \varepsilon$ $R^2 = .562, F = 9.993$,SE 11.453

t = (8.013) (.959) (-3.976)(-2.036)

$IMR_r = 13.522 - .174PCHE_t - .699\ FL_{r(t-1)} - .394\ PCI - .161POV_r + \varepsilon$ $R^2 = .601, F = 7.553$,SE 12.461

t = (6.621) (.991) (-4.128)(-1.979) (.725)

Where

PCI = per capita income

POVr = rural poverty

Examination of the results reveal that with the improvement of the explanatory power of the models, the value of the coefficient for per capita health expenditure which is the main focus of our study improves considerably with the incorporation of the variables of per capita income and the level of poverty in the rural sector of the state, though the elasticity of the mother's education is reduced slightly. However, the statistical and the theoretical significance of the models is highly satisfactory. The overall conclusion from the estimated results reveal that poverty level of the family determines to a large extent, at least in rural India whether the girl child should be sent to the school. Therefore when the income level of the family is high, girls are sent to schools, which in turn has a positive effect on infant mortality in the rural sector. The poverty level of the state determines the extent of expenditure that can be incurred on

health. Therefore lower the poverty level of the state as a whole higher is the potentiality of health expenditure. Higher health expenditure working through mother's education can reduce infant mortality in the rural sector. The models do not have the same validity in the urban sector, perhaps because health expenditure by the state do not always have direct impact on infant mortality, may be due to the fact that 'out of pocket' expenditure is much higher, where due to higher income the dependence on government health sector is much less. Besides it is also a fact that the education of the girl child is not determined so much by the level of income in the family as in the rural sector.

It may thus be concluded on the basis of the estimated results of the models that health expenditure per capita do not have any direct impact on child mortality rate in India as a whole or separately for the rural or the urban sector. However, mother's education and poverty level of the family and the state along with mother's education impacts infant mortality in the rural sector of India. However, the same is not true for urban India. It is therefore evident from these findings that to tackle the problem of infant mortality in India, health policy measures cannot be homogeneous in the rural and the urban sectors of India. For tackling this issue investment in health expenditure is not the only solution. Investment in girl's education particularly in the rural sector is equally even if not more important as a policy measure.

b) Child Mortality and Health Expenditure

Examining the results of the estimated models for child mortality as the dependent variables and per capita health expenditure separately for the rural and the urban sectors reveal that the model is not acceptable as the relationship depicted in the model is extremely weak as revealed by the value of R^2.As in the case of infant mortality even in case of child mortality it is revealed that per capita health expenditure do not have any direct impact on child mortality. The reason that could be understood is that expenditure does not affect child mortality directly but may be impacting child mortality through other variables, which is not uncommon in case of socio economic variables. In an identical manner the inclusion of the mother's education improves the explanatory power of the model both in the case of rural and urban mortality rate, perhaps for the same reason as discussed for infant mortality. Though the explanatory power of the model is stronger in the case of the rural sector, yet both the models are not as strong as in the case of infant mortality. The value of the coefficient for the mother's education as well as its statistical and theoretical significance as evidenced by the sign before the coefficient indicates. The reasons for the explanatory power of the model with the inclusion of mother's education being lower in case of child mortality in comparison to infant mortality could be that as the child grows up, many other factors affect the health of the child ranging from environmental factors, accessibility to sanitation facilities, clean drinking water, availability of nutritious food ,cleanliness ,hygiene etc. Consequently, mother's education though still an important determinant, but becomes only one of the important determinant of child mortality along with other equally crucial determinants. However, in case of infant mortality mother's care along with the medical facilities emerge as more important as the child may still not be exposed to all the other factors as mentioned above. As a result the impact of mother's education emerges as more important in case of infant than in case of child mortality. In view

of the acceptance of the models with the inclusion of these two variables, the results of the estimated model is reported below:

$MR_r = 120.243 - .042CHE_t - .685\ FL_{r\ (t-2)} + \varepsilon$ $R^2 = .452, F = 7.24$,SE 14.123

t = (6.066) (.214) (-3.522)

where $FL_{r\ (t-2)}$ = mother's education in the rural sector with two year's lag.

$MR_u = 122.853 - .106CHE_t - .662\ FL_{u\ (t-2)} + \varepsilon$ $R^2 = .401, F = 5.922$,SE 8.716

t = (6.066)(.214) (-3.522)

The inclusion of the level of poverty as represented by per capita income and the poverty level of the state, retains the theoretical and statistical significance of all the models, however since the value of R^2 is not acceptable we do not report the results of the model .The reason for the weak explanatory power of the model could be that poverty is not so much an obstacle for child mortality since other factors as mentioned above which affects mortality become equally even if not important. However, the fact remains that per capita health expenditure taken alone do not have any direct impact on either infant or child mortality but inclusion of the mother's education improves the effectiveness of health expenditure in the case of all our models. The impact of mother's education is higher in case of rural than in case of urban sectors for both infant and child mortality. However, the impact is a little lower in case of child mortality than in case of infant mortality. Inclusion of the poverty level has some impact for infant mortality, though it does not have similar impact in case of child mortality.

6. Conclusion:

Merely concentrating on expenditure on health in the absence of proper guidelines for the same often leads to skewed distribution of health expenditure across space and time. This in turn prevents achieving the target of health expenditure in developing countries resulting in low health status of the population. The gap in such expenditure is often met by private sector health investment for health infrastructure and health delivery system. The result may be health care services will be denied to the underprivileged and the socially deprived which in turn adversely affects social welfare, labour productivity and the overall growth and development of the nation. Though there may not be immediate and direct correlationship between health expenditure and health outcomes, nevertheless where health expenditure is high, people are much better off in terms of health conditions which in the long run increases longevity, reduces maternal and infant mortality. It is therefore pertinent and extremely crucial that proper policy for health investment and health expenditure be formulated. This is more pertinent for developing nations than for the already developed nations. It is therefore essential to examine not only the proportion of health expenditure to GDP ,which though may indicate the importance public authorities attach to the health sector, but more importantly it is also the sectoral allocation of resources which indicates the status of health in the nation. However, health expenditure do focus attention to certain dimensions that are ignored by descriptions of mortality, fertility and health services. Therefore decision of a country's health policies and

programmes requires the understanding of the size, structure, nature and composition of health expenditures of the country, so that their effect on the health status and the factors that affect the status may receive the requisite attention by researchers and policy makers.

The p.c. of GDP for public health implies the relative importance assigned to health and also health status of the people. India has devoted less than even 1 p.c. of its GDP for public health as against 5 p.c. in the developed countries and 3 p.c. in the other Asian nations. The p.c. had declined even further to 0.9 p.c though recently it has gone up marginally. Even out of this meagre amount ,a greater proportion is spent on meeting the salaries doctors and other medical staff, leaving very little for meeting the other important medical needs. There is also a wide variation in public health investment across different states in India. What is a matter of concern in health investment in India is that states with poor health record have been witnessing declining trend of per capita public health spending. Another matter of equal concern is that even this paltry amount is devoted more for curative rather than preventive healthcare. The implications are greater because the latter is more biased in favour of the poor and thus can increase their capabilities and also raise human development. Expenditure on the health sector conveys the status and importance of the sector vis a vis the other sectors. It helps to identify the real priorities in contrast to stated or official priorities. It also focuses attention to the areas of the health sector that needs to be addressed by the policy makers. For instance, it provides a different perspective from the usual descriptions of facilities and outputs such as immunization. Policy makers may need to relook into the fact as to whether raising health spending is the only solution to better health outcomes or managing the existing resources would give better results. It is no doubt that more resources are needed for many of the cost effective public health interventions. In most developing countries low levels of fund utilization in public health services indicate that in the absence of any major restructuring and improving the way money is spent, merely increasing spending will surely not improve the outcomes. Better use of the existing resources is included within the purview of health management. For instance quality and efficiency of public health service could be improved through effective management system. Better management of both the public and private health system to achieve the goals of health policy also increases the effectiveness as well gives better health outcomes. Therefore, health economics and health managements are in reality only two sides of the same coin.

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