The incidence of government expenditure on health: A case study of Pakistan

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Abstract

This study has analysed the incidence of the government expenditure on health in Pakistan at regional and provincial level, using the latest data of Pakistan Social Standard Living Measures Survey (PSLM) 2004-05 and by employing the Three-step methodology. The inequalities in the benefits of these expenditures exit at regional and provincial level. The rural areas are more disadvantaged groups in the provision of the health facilities. The expenditures in health sectors are overall progressive in Pakistan while it is regressive in some sectors of health at provincial and regional levels. Mother Child subhead is regressive in Punjab and NWFP and General Hospitals and Clinics are regressive in rural Punjab and in Balochistan. Public health expenditures are pro-rich at least at provincial level in Pakistan.

I. Introduction:

Economic literature is quite clear that health is the key determinants of the human resources, better health ultimately contributes the growth of the economy and leads to a human welfare. The more efficient, productive and healthy labor force will contribute more output and growth. Governments are subsidizing the health facilities for its people in order to achieve better, more skillful, efficient and productive human capital resources. Governments bear whole or some part of the cost of utilizing health services. The size and distribution of these subsidies in health sector varies from country to country but the central question is how much these expenditures are productive and effective? It very much depends on the volume and the distribution of these expenditures among the people of different areas of the country? Besides the nature of the current situation of the human resource, any marginal change in government expenditures on health services may positively affect the human capital.

Government intervention is also based on the argument that health generates positive externalities for the society as a whole, as well as the equity concern that without public price subsidies only the wealthy would be able to afford health care. K. Lamiraud, F. Booysen and X. Scheil-Adlung (2005) social health protection is an important instrument aiming at fair burden sharing and reducing barrier to access health services.

There is and other justification for the government spending in the basic health is that to reduce burden of the diseases in the productive years of the life. The social rate of return and the burden of the diseases compel the policy makers to shift the public resources towards basic health care facilities. Ministry of Finance, Pakistan Economic Survey 2005-06, Pakistan spends 0.5 percent of GNP on health in order to make its labor force more healthy and sturdy. Various programs regarding health sector are operative in Pakistan. These programs include Lady Health Worker Program, Malaria Control Program, Tuberculosis and HIV/AIDS Control Program, National Maternal and Child Health Program, The Expanded Program on Immunization, Cancer Treatment program, Food and Nutrition Program and The Prime Minister Program for Preventive and Control of Hepatitis in Pakistan.

Despite the successive health policies to address the health issues, the communicable disease are still a challenge and the statistics shows that the nutrition and reproductive health problem in communicable diseases are still responsible for the 58 % of the disease burden in Pakistan. In Pakistan in 2005-06 total number of HIV cases was 2515 and AIDS cases were 317 by March 2005. USAID has estimate there are about 70,000-80,000 HIV positive people, approximately 0.1% of the total adult population in Pakistan.

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SPDC report 2004 points out that out of every 1000 children who survive infancy, 123 die before reaching the age of five. A large proportion of those who surviving suffers from malnutrition, leading to impaired immunity and higher vulnerability to infections. Malnutrition is big problem in Pakistan; according to Human Conditions Report (2003) about 40 % children under 5 year of age are suffering from malnutrition. About 50 % of deaths of children under 5 years old children are due to malnutrition. Rest of the paper is organized as section II consisted of Literature Review section III methodology, followed by section IV results and section V is conclusion and policy recommendation.

II. Literature Review

A vast body of literature on incidence of government expenditures has been written. Most of the studies have used the benefit incidence approach on household data. Findings demonstrate that public expenditures are either progressive or regressive and the share of the different segment of income group vary depending upon the distribution of the benefits of the public expenditures across region, caste, religions, gender etc, see e.g. Christian (2002), Rasmus *et al* (2001), Younger (1999), Jorge (2001), Roberts (2003), Hyun (2006), David *et al* (2000), Gupta *et al* (1998, 2002), Lamiraud *et al* (2005), SPDC (2004), Norman (1985), Castro *et al* (2000), Hamid *et al* (2003), Sakellariou and Patrinos (2004), Shahin (2001) etc. The studies which demonstrate progressiveness such as Rasmus *et al* (2001) focusing on the incidence of the public expenditure on education and health (Mozambique data) resulted poorest quintile of income groups receives 14 percent of total education spending; the poorest half receives 36 percent, and the richest quintile receives 33 percent. Hyun (2006) by using Thailand household data concluded that government subsidies (in-kind transfer income) benefit the poor and can reduce poverty. On Ecuador data set, Younger (1999) used combination of benefit and behavioral approaches finds that public spending improves the health indicators in the developing countries. Cross country studies such as Gupta *et al* (2002) used 56 country data and showed that the increase in public expenditures on health reduces the mortality rates in infants and children.

Other set of studies that determine the repressiveness of incidence of public expenditure such as Norman (1985) concluded that much government expenditure on health benefits upper income more than the lower income groups. Castro-Leal *et al* (2000) examined the public spending on curative care in several African countries and found that this spending favour mostly the better off rather than the poor. Hamid *et al* (2003) this study covers 56 countries analysis from the period 1960 -2000 in which benefit incidence analysis (BIA) approach has been applied resulted in on average spending on health is pro rich, particularly in sub-Saharan Africa, but is well targeted and progressive only in the Western Hemisphere.

Shahin (2001) in the male-female comparison, inequity in benefits from education spending in Côte d'Ivoire is greater amongst the female population than in the male population – this is not as true for health in Guinea. There exists a strong negative relation between income and expenditure shares. Bjo¨rn (2004) in China based on data from households in 18 provinces in 1988 and in 1995. Few points deserve to be discussed; the first point about the impact of *the level* of public expenditures on human capabilities is a debated point, because not all studies have found an empirical link between the two. The link between successfully addressing poverty issues and spending is not primarily a function of the percent of GDP that is devoted to total spending on health and, but depends foremost on the intra-sectoral allocation to health spending etc. Evidence demonstrates Infant and child mortality rates become lowest in countries with high shares of health spending devoted to primary (preventive) care. Second, the fiscal policy makers confront with the nature and magnitude of fiscal incidence. The policy choices require information about which groups are likely to pay for and which groups are more likely to benefit from expenditures. Policy makers have many questions about how to lighten the burden of taxation for lower income groups and about how to increase the effectiveness of the public expenditures. How to target public spending in order to improve the conditions of the poor? Hence, incidence analysis provides some critical information to help policy makers achieve a more equitable distribution of income and improve effectiveness of public policy.

The literature is very much substantial in understanding the question of nature of incidence of public expenditure across the developing as well as developed countries, second, largely, the available literature conducted on old data sets of household surveys, and the studies are not updated or fresh, third, lack of comparisons of incidence among the cross countries one hand and incomparability of cross country results are other hand, third, the impact on different groups of populations or gender or regional wise impact of incidence are not taken into

consideration, the factors which emphasized by Seldon and Wasylenko (1992). Fourth, the literature in understanding the incidence of the public expenditure and its distribution in Pakistan is hardly available

This study is being pursued to explain the nature of incidence of public expenditures in Pakistan on health by using latest household survey data Pakistan Social and Living Standards Measurement Survey (PSLM) (Round-1) 2004-05, collected by the Federal Bureau of Statistics Pakistan. By using recent data set this paper will highlight the current nature of incidence, indirectly provide the guideline to what extent health policy targets have been successfully achieved, who benefit how much, which kind of inequalities are existed region and income wise etc. Additionally, by measuring the inequalities in the distribution of the benefits of expenditures will provide a line of action if required how the policies should be directed to achieve optimal targets and results etc.

III. Methodology and Data

To analyze the incidence of the government expenditures in health sector in Pakistan the benefit incidence technique has been implied. The benefit incidence approach is called the classic approach or non-behavioral approach, which was pioneered by twin world bank studies conducted by Selowasky (1979) for Colombia and Meerman (1979) for Malaysia. Many authors have use this methodology to analyse the government expenditure incidence such as Chris Sakellariou and H.A Patrinos (2004) to analyze incidence of public support to the private education sector in Cote d Ivoire. F. Castro-Leal, J. Demery, & K. Mehra (2000) have used this methodology to analyze public spending on health care in Africa. Jorge Martinez-Vazquez (2001) applied it to measure the impact of budgets on the poor. The advantage of benefit incidence analysis is that it allows us to focus on the important issues of how effectively public expenditure programs targeted the poor by concentrating on different rates of usage of publicly provided goods and services.

In practice the conduct of incidence analysis generally involve three steps

4- Obtain the estimates of the unit cost or subsidy implied by the provision of a particular public service. Data for this step usually comes from public expenditure accounts. For example, budget data on per student cost or subsidy by level of schooling.
5- Impute the subsidies to individual or household identified as user of the service by using information available on use by different income groups. For example enrollment rates in public school across population deciles ordered by income level ranging from poor to rich or clinic visits as reported by different households in consumer expenditure surveys.
6- Aggregate individuals or households in groups ordered by income or expenditure or any other grouping of interests such as race or gender, distribute the benefits among the different groups and arrive at an estimate of the incidence of per capita subsidies accruing to each group.

These steps can easily be transformed into mathematical equations.

The service-specific public subsidy received by an individual is,

$$S_k = q_k c_k - f_k \qquad (1)$$

Where S_k represents subsidy received by the individual on service k, q_k indicates the quantity of service k utilized by individual c_k represents the unit cost of providing k in the region where individual resides and f_k represents the amount paid for k by individual.

$$S_j = \sum_{i=1}^{4} H_{ij} \frac{E_i}{H_i} = \sum_{i=1}^{4} \frac{H_{ij}}{H_i} E_i \qquad (2)$$

Where S_j is the value of the total health subsidy imputed to group j, H_{ij} represents the number of health visits of group j to the health facilities at the level i (i representing Hospitals and Clinics, Mother Child or Preventive Measures in health), H_i is the total no of such visits (across all groups) and E_i is the government spending on health at level i (with fees and other cost recovery netted out). Note that E_i/H_I is the unit subsidy of funding a health consultation at level i the share of the total health or education subsidy E_i accruing to the group is given by

$$S_j = \sum_{i=1}^{4} \frac{H_{ij}}{H_i}\left(\frac{E_i}{E}\right) = \sum_{i=1}^{4} b_{ij}.e_i \qquad (3)$$

Clearly, this share (and indeed overall inequality in the benefit incidence) is determining two proximate factors: The share of the group in total health consultation at each level of the facility b_{ij} and the share of the each level of the health care in total health spending e_i. The value b_{ij} reflect household health care decision where as the value e_i reflects government spending allocation.

Data used in this study has been taken from the following sources.

9 - The information on the use of the publicly provided health services, income of the household and the individual expenditures on the health have been obtained from Pakistan Social and Living Standards Measurement Survey (Round -1) 2004-05, Federal Statistics Division Government of Pakistan

10 - To find out per capita expenditure in health the data on population has been obtained from National Institute of Population Study (2005)

11 - Total expenditures on health in Sindh data is taken from Budget 2006-07, Vol.III, Current Expenditure on Education & Health "Finance Department, Government of Sindh"

12 - Total expenditures on health in NWFP data is taken from Demand For Grants Current Expenditure For 2006-07, Vol.III, (PART-A) "Government of NWFP"

13 - Total expenditures in health in Punjab data is taken from Estimate of Charged Expenditure and Demand for Grants (Current Expenditure) Vol.I (Fund No. PC 21016-PC 21016) 2006-07

14 - Total expenditures in health in Balochistan data is taken from Demand For Grants and Current Expenditure (New Accounting) For the Year 2006-07, Education Vol.III-A) Provincial "Government of Balochistan" Finance Department

15 - Total expenditures in health in Pakistan data is taken from Demand For Grants and Appropriations 2006-07 "Government of Pakistan" Finance Division Islamabad

16 - For the distribution of the total expenditures in different sectors of the percentage distribution has been taken from PRSP, Annual progress Report FY 2004-06, PRSP Secretariat, Finance Division Government of Pakistan September 2005

IV . Results

The net subsidies at household level have been calculated first by subtracting total individual expenditure on the use the medical facility at household level from the total government expenditures in the provision of the medical facility at household level. This net subsidy has been used to analyse the nature of the incidence of the government expenditures on health. Further this has been used to calculate the share of different quintiles and the GINI and concentration coefficients to know that whether health expenditures are progressive or regressive. Variation in the shares of different quintiles measures the inequalities in the benefit of the public expenditures on health received by these quintiles. The results of this analysis are being presented below in tables 1.

Ministry of Finance, Government of Pakistan describes that in 2005-06 Pakistan is spending 0.5% of GDP on health services. The world Health Organization (WHO) in its recent report on macroeconomics has recommended that US $ 34 per-capita as required package as essential health services. Currently Pakistan is spending Rs. 171.37 per-capita is quite low as compared with the WHO recommendation of US $ 34 per-capita expenditures. This implies that in Pakistan per-capita expenditures are almost 10% of the WHO recommendations.

Prevention is better than the cure. Pakistan is spending most of its health budget on preventive measures and health facilities. Public expenditures in preventive Measures and health facilities sector are progressive. It means that that the poor are getting more share than the rich in the public expenditure in preventive measures and health facilities. Low-income groups are getting more benefits than the rich people. This is clear from the table no. 1, which shows the GINI coefficient and the concentration coefficient. Concentration coefficients lower than GINI coefficient implies that the expenditures are more equally distributed than the income. Expenditure in Preventive Measures and Health Facilities are pro-poor because the poor are more in the population and the preventive

measures are free for all they have to pay no cost. The share of lower quintile in preventive measures is 22% and the share of higher quintile is 20% in overall Pakistan. While at urban and rural level in Pakistan the share of the lowest income group is lower than the highest income group.

At provincial level the expenditures in the preventive Measures and the Health Facilities are progressive. In all the provinces the GINI coefficient are higher than the concentration coefficient. But there exist small variation in upper quintile and lower quintile shares in the expenditures of this sector. Especially in Punjab and Balochistan this difference is higher than the other provinces that are almost 7 points higher for upper quintile as compared to the lower quintile in overall Punjab and it is 9 point higher for rural Punjab and for rural Balochistan this is 7 points higher than the lower quintile share. In Sindh and NWFP there exist nominal differences in the shares of lower and upper quintile in Preventive Measures and Health Facilities expenditures.

Public expenditures in General Hospitals and Clinics sector of health are progressive in Pakistan over all both in Rural and urban areas. The share of lower quintile in the Hospitals and Clinics expenditures is 16% while it is 20 % for the higher quintile in Pakistan over all as shown in table no. 1. While in Rural areas share of the lower quintile is almost double than the share of the higher quintile but for urban areas the case is reverse. In rural areas the normally the public hospitals and clinics are very few and population is huge and poor have no options other than these clinics or dispensaries that's why the poor get more benefits from the public expenditures as compared with the high income groups. The high income groups in rural areas have access to hospitals and specialized institutions in urban areas easily that's why normally they prefers to get treatment from private hospitals located in urban areas.

At provincial level the expenditures are progressive in Punjab, Sindh and NWFP overall. These expenditures are regressive in the Balochistan overall and for Rural Balochistan and for rural Punjab. In rural Punjab the share of the lower quintile in public expenditures in Hospitals and Clinics is almost 8 times lesser than the share of the higher quintile. In rural Punjab the hospitals and Clinics expenditures are regressive. This may be to the lack of the doctors in the dispensaries and lack of confidence in the service provided by these dispensaries.

The data on the Balochistan in case of mother child was not available and data on the remaining provinces and Pakistan overall was to not sufficient to make the analysis at rural and urban level. The analysis of the available information is presented in the table 1 The distribution of the health expenditures in the different sectors of the health like Mother Child, General Hospitals and Clinics and Preventive measures is much skewed. There exist large inequalities across region and sectors. As in Mother Child sector of health the expenditures distribution is progressive which implies that poor are getting more benefit from these expenditures as compared to the rich.

This is because the poor can not afford o pay the expenditures of the private maternity hospitals that is why they intend to go government hospitals services where the cost are much low as compared to the private hospitals. Secondly the high-income groups prefer to go to private clinics where the better quality facilities are available and they can afford to pay for it. Share of lower quintile in the mother child sector health expenditures is 11 % and higher quintile share in these sector expenditures is 25%. Although the share of poorest group is very low but over all expenditures in mother child are pro-poor. This result is clear from the GINI coefficient and the Concentration coefficient shown in the table no.1.

	Preventive Measures and Health Facilities				General Hospitals and Clinics				Mother-Child			
Region	*Lower20 %Share in Expenditure*	*Upper20 %Share in Expenditure*	*GINI Coefficient*	*Concentration coefficient*	*Lower20 %Share in Expenditure*	*Upper 20% Share in Expenditure*	*GINI Coefficient*	*Concentration Coefficient*	*Lower20 % Share in Expenditure*	*Upper 20 % Share in Expenditure*	*GINI Coefficient*	*Concentration Coefficient*
Punjab	15.423	22.363	0.382	0.076	8.028	34.783	0.362	0.326	2.784	20.224	0.358	0.417
Rural	14.669	23.687	0.336	0.091	5.585	44.68	0.311	0.456	---	---	----	---
Urban	16.216	20.545	0.394	0.054	9.101	27.854	0.374	0.191	---	---	----	---
Sindh	19.1	21.304	0.417	0.023	11.608	17.533	0.427	0.071	11.236	52.295	0.29	0.301
Rural	20.168	20.826	0.841	0.754	5.609	20.611	0.331	0.153	---	---	----	---
Urban	18.852	21.37	0.432	0.034	16.033	15.666	0.43	0.048	---	---	----	---
NWFP	20.148	20.89	0.351	0.007	14.081	39.19	0.313	0.236	19.313	12.427	0.216	-0.21
Rural	19.222	22.139	0.276	0.02	16.173	28.8	0.241	0.095	---	---	----	---
Urban	19.958	22.187	0.354	0.024	14.721	22.06	0.309	0.181	---	---	----	---
Balochistan	18.029	25.54	0.38	0.073	4.554	29.219	0.356	0.369	---	---	----	---
Rural	18.028	25.554	0.343	0.073	2.69	43.665	0.338	0.498	---	---	----	---
Urban	18.522	24.532	0.407	0.072	25.953	32.93	0.35	0.102	---	---	----	---
Pakistan	22.309	20.209	0.295	0.03	16.477	20.209	0.268	0.03	11.328	25.327	0.294	0.162
Rural	19.575	22.155	0.274	0.041	29.725	15.873	0.241	-0.044	---	---	----	---
Urban	19.067	20.487	0.289	0.019	14.351	26.495	0.314	0.285	---	---	----	---

At provincial level the expenditures in Mother Child health sector in the Punjab and Sindh are regressive. These expenditures are pro-rich. The Share of highest quintile is almost 8 times higher than the lowest quintile share in Punjab and it is almost 5 times higher in Sindh. While Mother Child sector expenditures are progressive in NWFP. In NWFP the share of lowest quintile is higher than the share of the highest quintile.

V. Conclusion and Policy Implication

The hypothesis that expenditures in health are progressive is rejected. Third hypothesis that there exist large inequalities in the shares of the different quintiles in health expenditures can not be rejected. The expenditures in health sectors are overall progressive in Pakistan while it is regressive in some subhead expenditures of health at provincial and regional levels. Mother Child subhead is regressive in Punjab and NWFP and General Hospitals and Clinics are regressive in rural Punjab and in Balochistan. This is because in public hospitals the quality of services is low standard and in rural areas these services are almost non-existent. In health sector more inequalities prevails in the share of the lower and upper quintiles in government expenditures in health sectors. So expenditures in preventive measures sector is progressive. While the expenditures in Mother Child and General Hospitals and Clinics we can say are regressive at least at provincial level. The rural urban inequalities are more profound. The rural areas are more disadvantaged regions in health facilities. The government expenditures on health sector government expenditures are partially progressive in Pakistan. The share of the lower quintile is lower than higher quintile in government expenditures on health.

On the basis of our results following policy implication are proposed.

1- Inequalities in the shares of different quintiles in the benefits of government expenditures on health in Pakistan are vilely accepted. Inequality exists at provincial and regional level. Horizontal and vertical equity in allocation of the resources to health both at provincial and regional level can make the expenditure programs in health sector more effective and result oriented.

2- The principal of horizontal equity calls for equal treatment of equal individual and vertical equity calls for the unequal treatment of unequal individuals. Government program should more target to specific populations rather managing public Health.

3- Reallocation of resources and reformulation of the health policy that target to benefit the poor more and improve the low income people access to these services is the need of the time and through this the health policy can make a huge difference.

4- Health policies measures should be targeted towards poor as fee waiver, cash transfers and in-kind transfer or any other public support may result increase of subsidy to poor and will enhance the share of lower quintiles.

5- Although the hypothesis that public expenditures in health are progressive in Pakistan cannot be rejected. But current indicators of health in Pakistan demonstrate the poor picture of expenditures on health. As Pakistan is among the countries which has lowest Human Development index (HDI) and other health and education parameter.

6- As the literature demonstrates investment in human capital has larger returns, increase investment in human capital will result more return. The increase in the expenditures as percentage of GDP on health besides other social sector expenditures is need of the time.

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