Estimating Catastrophic Health Expenditures: Need for Improved Methodology and Interpretation

Sir,

We read with interest the article published by Patil *et al*. in the Indian Journal of Community Medicine.[1] The article explores the extent of vertical equity (percentage of health expenditure to total income, among households according to socioeconomic strata) in accessing child health care services in an urban slum in Karnataka. The study observes higher per illness expenditure on children among households in higher socio-economic groups (INR 327 among class I) as compared to the rest (INR 105 among class V). Authors highlight that almost every household incurred catastrophic health expenditure. Finally the authors conclude that "…poorest members of the community incurred catastrophic health expenditures" which calls for policies to provide financial protection to poorer households against economic impact of illness. Despite the fact that the findings of this study are in line with established evidence against the impact of high out-of-pocket health spending in India,[2] we would like to draw attention to the need for improved methodology and interpretation of study findings.

Firstly, the authors have added the socioeconomic group specific income and health expenditure [Table 2] and used the latter to show the proportion of group-specific income spent on health expenditure. This is valid to the extent of using these proportions as a measure of vertical equity. However, the authors use a 5% threshold to compare overall health expenditure as a proportion of total income. Since the latter (group-specific total health expenditure as a proportion of total income) is greater than or equal to 5% for all groups, the authors state that almost every household incurs catastrophic expenditure. This is methodologically flawed interpretation. A correct method for estimation of catastrophic health expenditure measures the proportion of household income spent on health care for each household against a certain threshold and thereafter measures the prevalence of catastrophic health expenditure in the community, by simply dividing the number of households which exceeded the limit as against the total.

Secondly, the authors conclude that poorest members incurred highest catastrophic health expenditure which is not substantiated by findings. On the contrary, study shows a progressivity in out-of-pocket financing of health care among slum dwellers [Table 2]. The richer socioeconomic groups spend higher proportion of income on health care (17.9% for class I, and 9.3% for class II) as compared to poorer counterparts (4.96% for class IV). The bottom quintile has a far smaller sample of 16 households to make a robust statement. However, this apparent progressivity needs careful interpretation. Is it truly equitable spending or is it that the poor do not seek health care for risk of financial catastrophe? If the latter is believed to be true, it amounts to welfare loss and an inefficient method of health financing. Moreover the poor spend much more on basic subsistence such as food than the richer household and hence the health expenditure needs to be analyzed from household's non-food income.

Thirdly, there seems to be greater consensus among economists in favor of using consumption expenditure as against income to calculate catastrophic health expenditure for reasons cited above.[3] The most direct (and popular) measures of living standards are income, expenditure and consumption. In general terms, income refers to the earnings from productive activities and current transfers. It can be seen as comprising claims on goods and services by individuals or households. In contrast, consumption refers to resources actually consumed. Although many components of consumption are measured by looking at household expenditures, there are important differences between the two concepts. First, expenditure excludes consumption that is not based on market transactions. Given the importance of home production in many developing countries, this can be an important distinction. Second, expenditure refers to the purchase of a particular good or service. However, the

good or service may not be immediately consumed, or at least there may be lasting benefits. This is the case, for example, with consumer durables. Ideally, in this case, consumption should capture the benefits that come from the use of the good, rather than the value of the purchase itself. Measured income often diverges substantially from measured consumption. In part, this is due to conceptual differences in the respective terms—it is possible to save from income and to finance consumption from borrowing. Moreover, although this is not inherent in the definition of income, income surveys often exclude household production. There is a long-standing and vigorous debate about which is the better measure of standards of living. For developing countries, a strong case can be made for preferring consumption, based on both conceptual and practical considerations.

Income, expenditure and consumption data are expensive and difficult to collect, and many otherwise useful data sources lack direct measures of living standards (e.g., the demographic and health surveys). In order to, however, classify households based on living standards, researchers use data on household assets and other characteristics to construct alternative measures of welfare or living standards.[4] This approach has the considerable merit of requiring only data that can be easily and quickly collected in a single household interview and, although lacking somewhat in theoretical foundations, can provide a convenient way to summarize the living standards of a household.

Some studies have used what may be referred to as "naïve" indices to proxy or control for living standards, often constructed as the sum of indicator or dummy variables for whether a household possesses certain assets. As an alternative to a simple sum of asset variables that are available in the data, it is possible to use statistical techniques to determine the weights in the index. The two most common approaches for doing that are principal components analysis and factor analysis. These are essentially tools for summarizing variability among a set of variables.

Lastly, the authors did not adjust the household income for size and composition which could again give erroneous results. More superior methods for estimating equity in health spending and health service utilization are available. Concentration index is one such measure which estimates the extent to which service utilization is pro-rich or pro-poor. The value of concentration index ranges from −1 to +1. A positive value of the concentration index implies that the health variable under consideration in concentrated among the rich and vice versa. Computationally, the value of concentration index is the area between the concentration curve and the line of equality (Lorenz curve). Concentration curve has the cumulative distribution of health variable on the y-axis, and cumulative distribution of population ranked by a wealth index on the x-axis. Presumably, as the concentration index which is the area under concentration curve and line of equality (a diagonal line) and summates any positive and negative deviations from line of equality, its value can move toward null if the concentration curve crosses the line of equality at some point. Hence CI (concentration index) is recommended to be used in conjunction with the concentration curve to avoid incorrect interpretation.

Ensuring financial protection of poorer household is a paramount goal for health systems across the world. This assumes greater significance in India, which is in a transitional phase with a booming economy. Global evidence favors the Kuznets hypothesis which states that the inequality follows an inverted 'U' shaped curve in relation to country's gross domestic product.[5] This calls for an imperative need to exercise caution in our social, economic and health policies to ensure that the inequalities in health care access and financing are not perpetuated with rising income of the country.

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References

1. Patil SS, Berad AS, Angadi MM. A study to assess catastrophic household expenditure on childhood illness in an urban slum of Bijapur. Indian J Community Med 2009;34:335-7.
2. van Doorslaer E, O'Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg CC, *et al*. Effect of payments for health care on poverty estimates in 11 countries in Asia: An analysis of household survey data. Lancet 2006;368:1357-64.
3. O'Donnell O, Van Doorslaer E, Wagstaff A, Lindelow M. Analyzing Health Equity Using Household Survey Data A Guide to Techniques and Their Implementation. Washington, DC: The World Bank; 2008.
4. Montgomery MR, Gragnolati M, Burke KA, Paredes E. Measuring living standards with proxy variables. Demography 2000;37:155-74.
5. Nielson F, Alderson AS. The Kuznets Curve and the Great U-Turn: Income Inequality in U.S. Counties, 1970 to 1990. Am Sociol Rev1997;62:12-33.

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