

## **Title: Catastrophic and Impoverishing Expenditures due to Surgical Care in India: Retrospective Analysis of Nationally-representative Survey**

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**Conflicts of Interest:** None (for both)

### **Background:**

Globally, 44% and 57% of people seeking surgery are at the risk of catastrophic and impoverishing health expenditures (CHE and IHE). While the research associated with the Lancet Commission on Global Surgery (LCoGS) created country-level estimates, there is still a lack of comprehensive country-wide data on surgical CHE and IHE for India. We filled this gap to create national, state, and district-level CHE and IHE estimates due to hospitalisations for surgical procedures for India.

### **Methods:**

We conducted a retrospective analysis of data collected from the National Sample Survey (NSS) 75<sup>th</sup> Round on Social Consumption in Health (July 2017 – June 2018) with a nationally representative sample having >95% geographical coverage. We calculate the proportion (%) of households with at least one surgical hospitalization in the last 365 days facing CHE and IHE out of all surgery-seeking households. Calculations were as follows: 1) Total costs (in INR- Indian National Rupee) corresponding to hospitalization were calculated as summation of costs of treatment packages, transportation, non-medical expenses. 2) Out-of-pocket expenditure (OOPE) was calculated as total costs after removing the total amount reimbursed by the medical insurance company or employer. 3) CHE was defined as the OOPE greater than 10% of average household expenditure. 4) Similar steps were followed for IHE where we calculated the proportion (%) of households that fell below poverty line after surgery plus the below-poverty-line households pushed into impoverishment using the state-specific rural and urban poverty line thresholds from the Reserve Bank of India. Wilcoxon tests adjusted for multiple comparisons (Holm-Bonferroni correction) were used to investigate rural-urban differences at 5% significance level.

### **Findings:**

Nationally, 59.3% surgery-seeking households faced CHE while 6.7% faced IHE. The proportions were greater for surgery-seekers residing in rural areas (61% for CHE and 7.7% for IHE) compared to urban areas (56.3% for CHE and 4.9% for IHE). State-level

rural-urban comparison revealed statistically nonsignificant differences for CHE (n= 72, effect size= 0.05, p= 0.675) and IHE (n= 72, effect size= 0.05, p= 0.689). There was a wide variation across 36 states/union territories and 662 districts.

## Interpretation:

To our knowledge, this is the first study investigating nationwide surgical care expenditures in India. The high CHE and IHE prevalence among surgery-seekers rationalizes greater allocation to surgical packages under public health insurance schemes. Findings are limited by the shortcomings of the parent dataset, such as under-sampling, recall bias, etc.

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