

# Out of pocket expenditure on surgical and nonsurgical conditions in Odisha

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## ABSTRACT

**Background:** Out of pocket expenditure (OOPE) for any illness is still a major problem in India. Several evidence is available regarding growing OOPE and its impact on household poverty. However, limited evidence is there regarding OOPE on multiple disease conditions in public hospitals. **Aim:** To estimate the OOPE for various hospitalized conditions at the secondary level of care in Odisha and find out various financial coping mechanisms adopted by the patients. **Methods:** The primary survey was done in the secondary care hospitals in the two districts of Odisha using a semi-structured interview schedule. Data were collected from 284 subjects (212 males, 72 females) in 2014 on the socioeconomic status and OOPE on multiple disease conditions. Descriptive statistics using Stata Version 11 were used to estimate the results. **Results:** The mean total OOPE was Indian Rupees (INR) 2107 (95% confidence interval [CI]: 1788–2426) for single episode of hospitalization out of which medical expenditure was INR 1530 (95% CI: 1238–1821) and nonmedical expenditure was INR 577 (95% CI: 501–653). The OOPE on surgical conditions was 1.7 times more than the nonsurgical conditions. Drugs and diagnostics were the major components of hospital expenditure, whereas the share of transportation expenditure was more in the nonmedical expenditure. Further, most of the patients had to face hardship financing due to limited financial protection measures. **Conclusions:** With the growing debate on the rolling out of universal health insurance scheme in India, this study assumes significance by providing critical information for designing public financing strategies to protect the interest of the poor in public health care institutions.

**Keywords:** Financial protection, hospitalization expenditure, multiple disease conditions, secondary level of care, surgical and nonsurgical conditions

## Introduction

India has a low public spending on health care, and the private out of pocket expenditure (OOPE) on health is one of the highest in the world. There is ample evidence showing increasing poverty due to high OOPE among the households. One study estimated that 32.5 million people have fallen below the poverty line in 1999–2000 due to OOPE on health and overall poverty increased by 3.2% after accounting for it.<sup>[1]</sup> Another study using international poverty line concluded that 37 million people are pushed to poverty line due to OOPE.<sup>[2]</sup> It is also observed that people in the poor households do not access health care facilities due to financial reasons.<sup>[3]</sup>

The public sector in India faces several constraints because of inadequate staff and physical infrastructure and the low public spending on health care. Over the years, the private sector has grown in size, so as the utilization.<sup>[4]</sup> For instance, the latest estimate from the National Sample Survey Organization (NSSO) suggests that 58% of the inpatient admissions in rural and 68% in urban areas take place in the private sector. This however has not changed in spite of the government's commitment to strengthen the public health system particularly after the introduction of National Rural Health Mission in the year 2005. The government expenditure on health care was around 1% of gross domestic product in 2011–2012.<sup>[5]</sup>

The country now is preparing itself for rolling out universal health coverage to all its citizens where everyone can have access to health

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**DOI:**  
10.4103/2249-4863.192377

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**How to cite this article:** Rout SK, Sahu KS, Swain S, Pati S. Out of pocket expenditure on surgical and nonsurgical conditions in Odisha. J Family Med Prim Care 2016;5:367-72.

care irrespective of caste, ethnicity, gender, age, and geographic locations without financial hardships. Achieving universal health care therefore needs a strong and efficient healthcare delivery system, affordable and accessible to all, and an adequate number of skilled, trained, and well-motivated human resources. This requires increasing public spending to provide financial risk protection to those visiting public health care system. Current evidence based on either large national level surveys or small hospital based and community level surveys indicate increasing OOPE in public health care systems. For instance, the OOPE in West Bengal was estimated to be Indian Rupees (INR) 4532 approximately, and hospitalization increased the chance of catastrophic health spending.<sup>[6]</sup> It was INR 2510 in Odisha for any hospitalization and 40% of households experienced hardship financing for hospitalization. In Punjab, the OOPE on surgery was INR 4564 in public hospital in 2013.<sup>[7]</sup> For cancer, the mean expenditure was INR 14,597 in public hospital in Delhi (AIIMS) for the year 2007.<sup>[8]</sup> For Chikungunya infection, the OOPE was INR 3500 in 2007 in Odisha.<sup>[9]</sup> Similarly, for childbirth in public hospital, the mean expenditure was INR 1406 in rural Lucknow, Uttar Pradesh, in the year 2011–2012. A study in 2013 in Mumbai, India, calculated total OOPE was INR 4413 in public health care facilities.<sup>[10]</sup> Apart from high OOPE, the benefits of public health care institutions do not reach to the poor and those who deserve the most. One study indicated that public health subsidies are disproportionately distributed in favor of the richer groups and are not well targeted toward the poor in India, especially those in rural areas.<sup>[3]</sup> A recent study done in Odisha using primary data from eight districts (Public Health Beneficiary Study - 2010) estimated the OOPE for common ailments as INR 2041 and it was INR 3562 for trauma and other ailments requiring special care.<sup>[11]</sup> Although several studies in India have estimated OOPE due to hospitalization, limited evidence is available on OOPE for specific disease conditions at the state level. Most of the evidence relate to either maternal health or only one specific condition. To date, a few studies have examined the OOPE on multiple disease conditions at the facility level. When India is preparing for rolling out universal access to health care, such crucial estimates assume significance for strengthening the public health care system. To address the knowledge gap, this study is undertaken in Odisha, one of the most backward states of the Indian Union.

The objectives of the study are to estimate the OOPE for various hospitalized conditions at the secondary level of care in Odisha and find out various financial coping mechanisms adopted by the patients.

## Methods

Odisha located in the eastern region of India shares 3.4% of total population of India. The state is one of the most backward states of Indian union dismally performing in most of the socioeconomic indicators. For instance, the infant mortality rate of Odisha stands at 51 in comparison to 40 at the national average.<sup>[12]</sup> Similarly, the maternal mortality ratio is 222 compared to 167.<sup>[13]</sup> The state public health care system has a three-tier

structure where the secondary care is mostly rendered by the district hospital (DH). Each DH caters to population of 1–1.2 million with capacity of minimum of 100 beds.

For our study, two districts, one from tribal and another from the coastal region, were selected. From the two districts, two DHs were selected. The reason for selecting DH for this study was that this serves as the referral hospital for the substantial number of inpatients having various diseases. For selection of patients, we collected the number of patients admitted and discharged per day for the last 1 week of the survey from the hospital record. On an average, 95 inpatients were present in the hospital of which 20–25 patients got discharged per day. Considering the discharge rate, we decided to interview 15 patients per day selected randomly which constituted three-fourth of the patients discharged. Due to time and resource constraints, the survey was conducted for 20 days. In total, 300 patients were estimated for the study.

Information on socioeconomic and demographic status such as age, sex, educational level (number of years of schooling), occupation of the head of the household, availability of toilets, and drinking water facilities in the households were collected. Expenditure for each disease was captured under two broad headings such as medical (consultation fees, medicine, diagnostics, medical or surgical appliances, bed charges, other consumables, and foods) and nonmedical (transport, lodging, food for respondents, and others). Information on coping mechanisms such as household income/savings, borrowings, sale or mortgage of assets, and contribution from friends or relatives were collected.

The hospitalized conditions were further classified into two groups, surgical and nonsurgical conditions. The surgery included appendicitis, hernia, cataract, and orthopedics related surgeries. In the nonsurgical category, disease conditions such as malaria, typhoid, and infectious diseases were included. Two medical doctors were consulted to classify the health expenditure into these categories and when there was no consensus on a particular medical condition, the view of the third doctor was considered. The mean OOPE was estimated separately for the two hospitalized conditions.

The instrument was translated into the local language, Odia. The Odia-version of the instrument was pretested for feasibility on a small sample of nonstudy patients, and necessary revisions were made. The instrument was then back translated into English, and the questionnaire was evaluated for fidelity to the original intent or purpose of asking each question.

Quantitative information was entered into Microsoft Excel Spreadsheet, and statistical analysis was done using Stata version 11. (StataCorp. 2009. Stata Statistical Software: Release 11. College Station, TX: Stata Corp LP)

The study was approved by the Institutional Ethics Committee of Indian Institute of Public Health, Bhubaneswar. Before the

study, necessary permission was obtained from the hospital authority. Further, informed consent was obtained from the patients. Utmost care was taken to maintain confidentiality of data shared by the patient and identity of the patients were not revealed during the analysis.

## Results

The socioeconomic status (SES) of the patients indicated that one-third of the patients belonged to the Schedule Castes and Scheduled Tribes, who are considered the most backward caste in the state. Two-fifths belonged to higher caste. The profession of the head of the household indicated that one-third of them were daily laborers, and 11.62% were salaried class. In terms of education, around half had primary education while 7% had completed high school. In the case of 29% of households, the highest education in the family was high school, and above and rest were below it.

Most of the households used tube well and well as a source of drinking water and 13% had piped water connection. It was further observed that more than 65% of the households had no toilet in the household and practiced open defecation [Table 1].

### Out of pocket expenditure on hospitalization

The mean OOPE for hospitalization was INR 2107 (95% confidence interval [CI]: 1788–2426) of which the share of medical expenditure was INR 1530 CI: 1238–1821 constituting 72% of total health expenditure. The expenditure on medicine constituted 24% of total medical expenditure. Another major component was expenditure on diagnostics and this was INR 305 (95% CI: 242–368) forming 20% of medical expenditure. Expenditure on food by the patients constituted 42% of total medical expenditure. Total nonmedical expenditure was INR 577 (95% CI: 501–654) and one of the major components was the expenditure on transportation of the attendants [Table 2].

The average OOPE for surgery-related hospitalization was INR 3081 (95% CI: 1859–4304) and was INR 1814 (95% CI: 1625–2003) for nonsurgical conditions. The mean OOPE on surgery was approximately 1.7 times more than the nonsurgical conditions. There was a marginal difference between the average expenditure on medicine between the surgical and nonsurgical conditions. However, the difference is more for diagnostic services. For instance, the mean OOPE on diagnostic services was INR 244 for nonsurgical conditions, whereas this was INR 341 for surgical conditions. The households incurred higher nonmedical expenditure consisting of food, transport by the medical attendants, and lodging for surgery-related hospitalization in comparison to nonsurgical conditions. The average length of hospitalization was 5 days for nonsurgery cases in comparison to almost 9 days for surgery [Table 3].

### Coping mechanism of households

As mentioned in Table 4, 45% of the households were not covered with any financial protection measure. Among the 55% who were covered, almost all were covered under Rastriya

Swasthya Bima Yojana (RSBY), a publicly financed scheme. A majority of households had to borrow to meet the hospital expenditure. 61% of the households borrowed either fully or partially to meet the hospitalization expenditure and 33% had to borrow fully suggesting they could not able to spend anything from their income or savings to meet the hospital

**Table 1: Background characteristics of the patients (n=284)**

Variable	Number	Percentage
Age group of the patient (in years)		
0–18	18	6
19–60	216	76
61+	50	18
Sex		
Male	212	75
Female	72	25
Caste		
Scheduled Tribes	43	15
Schedule Caste	52	18
Other backward caste	76	27
Others	113	40
Profession of the head of the household		
Wage earner	95	33
Self employed	65	23
Salaried	33	12
Others	91	32
Education of the patient		
Illiterate	61	21
Up to primary	144	51
Up to secondary	57	20
10 <sup>th</sup> and above	21	7
Highest education of the family member		
Illiterate	9	3
Up to primary	43	15
Up to secondary	145	51
10 <sup>th</sup> and above	83	29
Water supply		
Personal tube well/well	44	15
Public tube well	147	52
Tap water	38	13
Other	9	3
Toilet facility		
Yes	83	29
No	197	69

**Table 2: Out of pocket expenditure for hospitalization (in Indian Rupees)**

Expenditure	Mean	95% CI	SD	Median	Range
Medicine	372	304–439	577	99	0–3000
Diagnostic	305	242–368	541	0	0–2200
Food	653	560–746	756	400	0–4440
Total medical (n=264)	1530	1238–1821	2406	1100	0–33,750
Transport for attendants	264	222–306	359	120	0–1600
Other	258	206–309	430	0	0–2200
Total nonmedical (n=264)	577	501–654	629	400	0–3300
Total expenditure (n=264)	2107	1788–2426	2630	1525	0–36,050

SD: Standard deviation; CI: Confidence interval

**Table 3: Out of pocket expenditure on disease category (in Indian Rupees)**

Disease category	Mean	95% CI	SD	Median	Range
<b>Nonsurgical</b>					
Medicine	374	298–451	553	99	3000
Diagnostic	244	180–309	535	0	2200
Total medical	1289	1123–1455	1198	1000	8200
Total nonmedical	525	443–607	595	350	3300
Total expenditure	1814	1625–2003	1363	1500	9200
<b>Surgical</b>					
Medicine	382	212–551	672	0	3000
Diagnostic	342	203–480	541	0	1800
Total medical	2330	1193–3466	4439	1200	33,750
Total nonmedical	752	570–933	709	500	2500
Total expenditure	3081	1859–4304	4775	1910	36,020

SD: Standard deviation; CI: Confidence interval

**Table 4: Financial risk protection measures**

Financial protection mechanism	Number of respondents (%)
Insured	156 (55)
Not insured	128 (45)
Borrowed	174 (61)
Not borrowed	110 (39)
Borrowed fully	93 (33)
Borrowed partially	191 (67)
<b>Among insured</b>	
Borrowed fully	42 (27)
Borrowed partially	52 (33)
No borrowing	62 (40)
<b>Among noninsured</b>	
Borrowed fully	51 (40)
Borrowed partially	29 (23)
No borrowing	48 (37)

expenditure. The percentage of households who borrowed due to hospitalization varied among the insured and noninsured households. Among insured, 27% borrowed fully whereas relatively more around 40% from the noninsured households borrowed fully to meet hospitalization related OOPE.

## Discussion

This paper based on the primary data collected from the secondary level hospitals examined the SES of patients visiting public health care institutions and estimated disease wise OOPE. The findings of this study suggest that a majority of patients utilizing public health care institutions belongs to the low SES status. This is similar to other studies which indicate that the public sector is largely utilized by people from the low SES in Odisha.<sup>[14]</sup> Despite availing services in public hospitals, almost all patients are incurring OOPE. This has already been reported in several studies in India. The major components of OOPE as indicated in our study were expenditure on medicine, diagnostic services, and food. As observed from this study, the expenditure on medicine accounted for 24% of total medical expenditure, whereas the expenditure on food was 42% of total medical expenditure. In recent years, the government has initiated several

efforts to increase the supply of drugs in public hospitals which have resulted in the decline in the share of OOPE on medicine. An earlier study indicated that the share of medicine accounted for 73% and 77% of total OOPE on health in rural and urban areas, respectively.<sup>[4]</sup> A study based on a primary survey in Odisha suggested that the share of medicine was 53% in total OOPE in 2010.<sup>[11]</sup> Although the expenditure on medicine has reduced substantially, patients incurred more on diagnostic services and other consumables as indicated by this study. Another study analyzing data on diagnostic services for infectious disease in Odisha observed that expenditure on diagnostic services constitutes 39% of the total OOPE.<sup>[9]</sup> Although this study did not mention the OOPE separately in public and private facility, this apparently shows some evidence on OOPE related to diagnostic services.

This study estimated that the OOPE on surgery-related hospitalization was 1.7 times more than the nonsurgery related admissions. According to this study, the higher mean OOPE for surgery was mainly due to two factors: diagnostic-related expenditure and nonmedical expenditure. Patients incurred more expenditure on diagnostic services and food and accommodation which is a major part of nonmedical expenditure for surgery-related hospitalization. It was observed that the patients admitted in surgery unit had to stay for a longer period and this was the main reason for more nonmedical expenditure on this head. This showed that the nonmedical OOPE contributed more to the financial burden of surgery-related admissions. Similar observation was made in the case of road traffic-related injury.<sup>[15]</sup>

Poor financial protection on hospitalization has been a major issue in India where the insured are around 10% and health insurance has to extend its presence optimally for financial risk protection.<sup>[16,17]</sup> The NSSO India 2014 suggested that as high as 86% of rural and 82% of urban population of India were still not covered under any scheme of health expenditure support resulting in high OOPE.<sup>[18]</sup> This study suggests that the financial protection schemes have not reached to a majority of households. More than two-fifth of patients were not covered under any financial protection scheme. As a result, most of the patients had to borrow to some extent to meet the hospital related expenditures. Around one-third of the patients faced severe financial hardships to meet the hospital expenditure as they borrowed fully without any financial support either from household saving or current income. Another study showed that in Odisha, about 25% of the households reported hardship financing during the year 2012 due to health care expenditure.<sup>[19]</sup> It was noticed that among the insured persons, 26% borrowed fully to meet the hospitalization expenditure. This indicated that the insurance coverage could not reduce the financial hardship among the households. This could be due to many reasons. In this study, all patients were covered under the RSBY, a publicly funded scheme which provides financial risk protection up to INR 30,000 for hospitalization to households belonging to below poverty line category and informal sector workers covering street vendors, beedi workers, and construction workers. The utilization

rate of RSBY was low and one study in 2011 indicated the claims ratio as 7% in Odisha.<sup>[20]</sup> Several studies in India reported that insured households incurred OOPE due to hospitalization.<sup>[21,22]</sup>

## Conclusions

This paper generates evidence on OOPE related to surgery and nonsurgery cases separately which are crucial for designing health financing interventions to protect the interest of the poor who utilize public hospitals largely in the state. With the growing debate on the rolling out of universal health insurance scheme in the country, this paper assumes significance by providing critical information on areas that need to be strengthened for improving service delivery in the public health care institutions.

## Acknowledgment

This is part of a larger study conducted to examine the morbidity among the patients attending public health care institutions in Odisha. We acknowledge the financial support provided by the Department of Health and Family Welfare, Government of Odisha, for this study. Our sincere thanks are due to the medical officers at the healthcare facilities and senior officials of the health and family welfare department for providing the support during the study. We are also thankful to the patients and their relatives who participated in the survey.

## Financial support and sponsorship

Department of Health and Family Welfare, Government of Odisha.

## Conflicts of interest

There are no conflicts of interest.

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