

## Out of Pocket Expenditure incurred by COVID Patients during second wave of COVID Pandemic in North coastal Andhra Pradesh

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### Abstract

**Background:** COVID-19 causes various complications in patients, requiring hospitalization and treatment in Intensive Care Units (ICUs), resulting in high medical expenditure. At least 80 percent of COVID-19 patients are being treated in government hospitals across the country. The present study focuses on the expenditure of hospitalized patients, patients admitted to COVID care centers, and patients treated in home isolation. **Objective:** To measure the Out-of-Pocket Expenditure (OOPE) spent by hospitalized patients admitted to COVID care centers, and patients treated in home isolation due to COVID. **Methodology:** An observational cross-sectional study was conducted in Visakhapatnam among 180 individuals pertaining to 10 Primary Health Centers who tested positive for COVID infection in the second wave (after April 2021) through Reverse Transcription Polymerase Chain Reaction or TrueNat. An interview using a structured questionnaire consisting of socio-demographic details, expenditure details, insurance claims, and government schemes availed by COVID patients during the treatment was conducted. **Results:** The Median OOPE incurred by the patient towards hospital charges was INR 5000 [Interquartile Range (IQR) 0;88000]. About 109 (60%) of the study subjects were hospitalized, of which 35.7% sought care from government hospital. In the study, only 59 (32.7%) patients had health insurance, which was not useful to most of them during COVID. About 73.3% had an *Arogyasri card*/Employees Health Scheme (EHS) card, but only 22.7% could use it. **Conclusion:** The study shows that health insurance has not recovered the expenditure, suggesting that insurer cost-sharing waivers may not have covered all hospitalization-related care.

**Keywords:** OOPE, hospitalization, COVID-19 infection

### Introduction

The Novel Corona virus infection was considered as the most dangerous and deadly disease owing to a rapid increase in cases all over the world. World Health Organization (WHO) declared COVID-19 a pandemic in March 2020<sup>(1)</sup>. COVID-19 in India initially emerged in late January 2020 and resulted in a challenging issue for its healthcare delivery system. In India, from 3<sup>rd</sup> January 2020 to 5<sup>th</sup> January 2022, there have been 35,018,358 confirmed cases of COVID-19, with 482,551 deaths reported to WHO<sup>(2)</sup>. COVID-19 causes various complications in patients, requiring hospitalization and treatment in Intensive Care Units (ICUs), resulting in high medical expenditure. This pandemic has most severely impacted all countries, including India, by causing large numbers of human loss and economic distress to the households as well as to the government healthcare delivery system<sup>(3)</sup>. This pandemic has some demands from the Indian government to regulate the rising costs in relation to healthcare in private hospitals, which provide the bulk of the country's medical treatment. India nearly has twice as many

private hospitals as public ones (43 487 versus 257 781 hospitals respectively). Despite these many hospitals, about 85.9% of India's rural population and 80.9% of its urban population have no health insurance<sup>(4)</sup>. Household Out-of-Pocket Expenditures (OOPE) were 77.5% of the current health expenditure in 2017. Government schemes paid 13.6% of healthcare expenditure, while other schemes paid 8.7%. These include social health insurance schemes (0.7%), voluntary health insurance schemes (0.5%), non-profit schemes (6.3%), and rest of the world financing schemes (1.1%)<sup>(5)</sup>. The ministry conducted the survey on household social consumption related to health during July 2017–June 2018 as part of the 75<sup>th</sup> round of National Sample Survey (NSS). As per the national survey of households on health in 2017-18, only 14% of the rural population and 19% of the urban population had any form of health insurance coverage<sup>(6)</sup>. The national survey also suggested that 58% of all hospitalization occurs in private facilities and the rest in government hospitals<sup>(7)</sup>.

To address this COVID-19 pandemic situation, the government has set up a three-tiered structure for pandemic preparedness to quarantine, isolate, and treat COVID-19 cases, through COVID care hospitals in the public and private sector, dedicated COVID care centres, and taking care of the ones under home isolation<sup>(3)</sup>. Government had also implemented restrictions on travel and mass gatherings; use of mandatory masks and quarantine measures; and rolled out and ramped up access to COVID-19 testing, contact tracing, and, when possible, COVID-19 treatment. COVID-19 vaccinations were urgently approved, and vaccination campaigns were held with coverage of 130 million to date. High-income countries and many middle-income countries have been able to finance their government programs through financial reserves, reallocation of government resources, and through borrowing<sup>(8)</sup>. The response to COVID-19 caused simultaneous economic and health crises and resulted in significant expenses across all nations.

The study aims to determine the OOPE incurred by COVID patients during diagnosis and treatment of COVID among hospitalized patients, patients admitted to COVID care centers, and patients treated in home isolation. The objective of the study was to measure the out-of-pocket expenditure spent by hospitalized patients, admitted to COVID care centers, and patients treated in home isolation due to COVID.

### Methodology

An observational cross-sectional study was conducted among 180 individuals in Visakhapatnam District who tested positive for COVID-19 during the second wave from April 2021 to July 2021. Visakhapatnam district is divided into eight zones and has 97 Primary Health Centres (PHCs) distributed in urban, rural, and tribal areas. The study's sampling unit was an individual with a history of COVID.

As COVID-19 is a novel disease and because of the limited existence of evidence related to COVID disease expenditure, assuming 50% of affected individuals had OOPE due to COVID and considering the allowance error of 8%, a sample size of 157, considering the non-response rate of 10% and rounding it off, the sample size derived was 180. The sampling technique used was the multistage sampling technique. In the first stage, out of 97 PHCs, 10 PHCs were randomly selected, and a list of COVID positives households was obtained for the months of April 2021 to July 2021. The 10 PHCs selected were Gajuwaka, Allipuram, Madhurwada, Payakarao Peta, Revidi, Minumuluru, FRV Arilova, Aganampudi, Devada, Munagapaka. From the COVID list obtained from 10 PHCs, 180 patients were selected proportionately from all 10 PHCs. Individuals who were residents of Visakhapatnam, who had suffered from COVID-19 and were treated at a hospital, COVID care center, or home were included in the study. Patients of all age groups who

tested positive for COVID and who gave consent for the study were included in the study. Individuals who had COVID and took treatment outside Visakhapatnam and were not residing in Visakhapatnam during the study period and those who didn't give consent to participate in the study were excluded.

The study tool included a structured questionnaire constituting socio-demographic details, expenditure details, insurance claims, and government schemes availed by COVID patients during the treatment. After obtaining the informed consent, the concerned family members were interviewed. The information obtained was entered in MS excel 2013 and analyzed using Statistical Package for Social Sciences (SPSS). Ethics committee approval was obtained from KGH Institutional ethics committee, Visakhapatnam and permissions from district health authorities were also obtained for the conduction of the study.

**Table 1: Socio-demographic characteristics of COVID-19 patients and availability of health cards**

Characteristics	Frequency (%)
<b>Gender</b>	
Males	107 (59.5)
Females	73 (40.5)
<b>Age Distribution</b>	
<20 years	9 (4.8)
20 to 40 years	73 (39.2)
40 to 60 years	89 (47.2)
>60 years	9 (4.8)
<b>Monthly income of patient</b>	
INR <20000	163 (90.5)
INR 20000 – 40000	11 (6.1)
INR 40000 – 60000	5 (2.7)
INR >60000	1 (0.5)
<b>Monthly income of family</b>	
INR <20000	134 (74.4)
INR 20000 – 40000	31 (17.2)
INR 40000 – 60000	8 (4.6)
INR >60000	7 (3.8)

### Results

The mean age of the study participants was  $41.90 \pm 12.4$  years. Among the study participants, males were 107 (59.4%) and females 73 (40.5%). The median monthly income of the study participants was INR 9500 [Interquartile range (IQR) 5000;14500]. The median monthly income of the family was INR 15000 (IQR 10000;23500).

Health insurance coverage	
Health insurance present	59 (32.7)
No Health insurance	121 (67.3)
Total	180 (100)
Health Card/EHS/Arogyasri card	
No	48 (26.6)
Employees Health Scheme (EHS)	9 (0.05)
Arogyasri card	123 (68.35)
Total	180 (100)

In the study, only 59 (32.7%) patients had health insurance, which was not useful to the majority of them during COVID. About 73.3% had an *Arogyasri card*/EHS card, but only 22.7% could use it.

About 109 (60%) of the study participants were hospitalized, of which 35.7% sought care from Government hospital. About 43 (23.8%) patients were treated in COVID Care Centers, and 77 (42.7%) were in home isolation.

Hospitalized	
Government	39 (35.7)
Private	70 (64.2)
Total	109 (100)

#### Hospitalized Expenditure

Total OOPE (median) incurred by the patient towards hospital charges was INR 5000 (range was INR 0 to 1,45,800); IQR showing that 50% of hospitalized patients have OOPE of INR 5000 and below. About 25% had OOPE of INR 88000 and above. Direct medical costs (median) incurred by patients towards diagnosing and treatment was INR 2000 (with 50% having OOPE of INR 2000 and below). About 25% had an expenditure of INR 10000 and above. Indirect costs (median) or expenditure incurred during transport to visit the patient in the hospital was INR 1000 (with only 25% of patients having INR 5000 and above expenditure). The median wage loss suffered by the patient due to COVID disease was INR 3000, and the median wage loss suffered by the caregiver towards attending the patient was INR 4000.

**Table 2: Expenditure incurred by Patients admitted in hospitals, COVID Care Centres, and under Home isolation**

	Hospitalization Median (IQR)	CCC Median (IQR)	HI Median (IQR)
Frequency	109/180	43/180	77/180
Percentage (%)	35.7	23.8	42.7
Overall OOPE (INR)	5000 (0;88000)	Almost 0 (0)	Almost 0(0;1000)
Direct expenditure (INR)	2000 (0;10000)	Almost 0 (0)	Almost 0(0;1025)
Indirect expenditure (INR)	1000 (0;5000)	Almost 0 (0)	Nil
Wage loss Suffered by Patient (INR)	3000 (0;12000)	Almost 0 (0;1750)	Almost 0(0;5000)

Note: IQR mentioned as Q1;Q3 Abbreviations: CCC: COVID Care Center, HI: Home Isolation

#### Expenditure of patients admitted in COVID Care Centre and Home Isolation

Overall expenditure (median) incurred by the patient admitted to COVID Care Centres and patients put under home isolation was almost zero.

#### Discussion

According to Pandey et al., OOPE usually make up to 62% of all healthcare costs in India<sup>(9)</sup>. According to the National Health Policy 2017<sup>(10)</sup>, it is estimated that 7% of the Indian population is pushed into poverty each year because they are unable to afford OOPE. This became an even more greater concern during the time of the COVID-19 pandemic. It shows that people have to pay for individual healthcare from their own pockets rather than from insurance or government-aided health schemes. In the study done by Garg et al.<sup>(11)</sup> the catastrophic expenditure incurred by COVID patients was

59% and in study done by Rajalakshmi et al.<sup>(12)</sup> the OOPE experienced by COVID patients was 61.7%. In the present study OOPE was found to be 50% among hospitalised patients during COVID times. This was slightly low than the study done by Pandey et al.<sup>(9)</sup>, Garg et al.<sup>(11)</sup> and Rajalakshmi et al.<sup>(12)</sup>. In the present study, the mean age of the study population is 42 years, similar to the study conducted by Kotwani et al.<sup>(13)</sup>. Nearly 57% of the study populations were males, and 40% were females. Similarly in the study done in Germany by Jeck et al.<sup>(14)</sup>, in India by Garg et al.<sup>(11)</sup> and in Iran by Nakhaei et al.<sup>(15)</sup> males constituted higher in number than females. The majority (74%) of participants in the study have monthly family income levels below INR 20,000, similar to the study done in the Indian setting in Gujarat by Kotwani et al.<sup>(13)</sup>. The median direct cost of treating a patient in the hospital was INR 2000 (IQR=0;10000) which was similar to

study done by Nakhaei et al.<sup>(15)</sup>. In the present study, the total OOPE (median) incurred by the patient towards hospital charges was INR 5000, however, it ranges from INR 0 to 1,45,800. This is contrary to a study by Selvaraj et al.<sup>(3)</sup>, Rajalakshmi et al.<sup>(12)</sup> where the mean OOPE was INR 67,470 (27,000-126,000) and INR 122,221 (92,744-1,51,698) respectively. This huge difference among these studies could be because of larger sample size (1 lakh and 1200 population respectively).

#### Limitation of the study

This is a cross-sectional study including a sample of 180 representing only 10 PHCs of the Visakhapatnam district, which restricts the generalizability of the cost data.

#### Conclusion

This study provides evidence related to direct and indirect OOPE incurred by COVID positive patients. There is some impact of the coronavirus pandemic on the health insurance sector of India, as the study included one - third of health insurers who could not avail COVID-19 related health benefits. This evidently seeks a change in structuring the health insurance policies in India.

**Conflict of Interest:** Nil

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