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To cite this article: Sarit Kumar Rout, Kirti Sundar Sahu & Sandeep Mahapatra (2019): Utilization of health care services in public and private healthcare in India: Causes and determinants, International Journal of Healthcare Management, DOI: [10.1080/20479700.2019.1665882](https://doi.org/10.1080/20479700.2019.1665882)

To link to this article: <https://doi.org/10.1080/20479700.2019.1665882>



Published online: 11 Oct 2019.



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Utilization of health care services in public and private healthcare in India: Causes and determinants

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ABSTRACT

Objective: Despite several government initiatives aimed at improving public healthcare services, private-sector has been a dominant player in most of the Indian states. Limited evidence is available on the factors that influence the choice of using public or private health services, which assume significance in the present context, when the government is willing to purchase care from the private providers. This subject is further explored in the paper by using the 71st round of National Sample Survey, 'Key Indicators of Social consumption in India Health', 2014.

Data sources/study setting: The analysis included 15 major states of India, dividing them into three groups: low-, middle- and high-income, using average GSDP per capita. We further used multi-variate regression to examine the factors explaining the utilization of either public or private facility.

Findings and conclusion: The utilization of public facilities for outpatient and inpatient services was found to be very low, except Assam and Odisha, which attributed to the poor quality of care and long waiting hours. Caste, education and wealth quintiles were the main factors explaining the choice of either public or private facility and strength of association between socio-economic variables and their utilization that varied across 3-categories of states.

ARTICLE HISTORY

Received 19 March 2019
Accepted 4 September 2019

KEYWORDS

Healthcare utilization; public sector; private sector; socio-economic factors; India

In India, healthcare is dominated by private healthcare providers. In the early 1950s, the share of private sector was merely 8% of the total healthcare market [1,2] which has now risen to 70% of all the hospitals and 40% of total hospital beds [3–5]. The private sector healthcare facilities exist in various forms in the country ranging from unqualified medical practitioners operating in rural areas, quacks, single-doctor clinics, nursing homes, small hospitals, trust hospitals, and multi-specialty large corporate hospitals [6]. This sort of healthcare arrangement operates in most parts of the country and its services are in demand by all income groups.

According to the National sample survey (NSS) estimates, the private sector [7] caters to 75% of the out-patients and 62% of the in-patients that turns up for medical care. It is also observed from the NSS survey results that 12 out of 20 states in rural areas and 17 out of 21 states in urban areas have registered a decline in the utilization of government services for inpatient hospitalization [8]. Furthermore, another study, using data from the NSS over the last two decades, showed a decline in the share of utilization from public hospitals [9]. The utilization data of a government-sponsored health insurance scheme indicate that 70% of the hospitalization in India takes place in the private sector [10]. In terms of financing health, a significant proportion

(around 60%) of total health expenditure in India is financed through out-of-pocket expenditure [11].

Several studies in the past have examined the reasons for higher dependence on the private sector. Some studies argued that although the skill set and competencies of private doctors are much less than those of government doctors [12], the absence of doctors and other health workers in the public sector compel higher footfall at the private sector. Another study suggested that the private sector rarely meets the quality of care and is surrounded mostly by unqualified practitioners followed by unnecessary treatment [13] regimes. Besides, per-episode hospitalization cost in the private sector is four times higher than that of government facilities [8]. Similar observations were also made in other studies which raised concern regarding increasing costs and quality of care in the private sector [14,15]. This, therefore, suggests that choice of the private sector is essentially not guided by quality or cost, but constraints of the public sector.

Given variations in utilization, choices of healthcare facility and factors influencing the choice are an important area of investigation. Earlier, a few studies examined the role of socio-economic status and accessibility on the choice of public and private health facilities for reproductive and maternal and child health services [16–19]. However, to our knowledge, no studies have been undertaken to understand the

utilization of inpatient or outpatient care and factors determining the choice of utilization specifically, at the provincial level. This study aims at fulfilling this knowledge gap. It assumes significance in the present context, when the government implemented Pradhan Mantri Jan Arogya Yojana (PMJAY), which aims at providing financial protection to millions of poor people by involving the private sector.

Methodology

Data sources

Data sources include unit-level records of the 71st round of the NSS titled 'Key Indicators of the Social Consumption in India: Health', conducted between January and June 2014 [7]. The survey selected a nationally representative sample of 65,932 households with 3,33,104 persons across States and Union Territories (UTs) in India. The data include socio-economic characteristics of households, morbidity conditions, out-of-pocket expenditure, and utilization from the public and private sources.

Statistical analysis and variables

We used the multivariate regression analysis to examine the factors explaining utilization of either public or private facility. In the model, utilization from either public or private healthcare facility was defined as dependent variable, whereas socio-economic variables – (education, caste, and expenditure quintiles) were the main predictors of the dependent variable. Caste is defined as social groups divided into Scheduled Tribes (STs), Scheduled Castes (SCs), Other Backward Classes (OBCs) and others. Educational level was divided into illiterate, below primary, primary middle, secondary/higher secondary, graduation and above. Economic class was categorized into wealth quintiles – poorest, second poorest, middle-income, second richest and richest. In the model, the highest education was considered as the reference group for education category, higher caste for social groups and the highest income quintile for wealth quintile.

The binary response of either visiting public or private facility and a set of predictor variables are defined by logit function, which is as follows:

$$\text{Logit } \pi = \text{Log} \left(\frac{\pi}{1 - \pi} \right) = \beta_0 + \beta X + e$$

The probability of visiting either public or private health facilities is represented and parameter (0) estimates log odds in the outcome for the reference group, and parameters (X) estimate differential in the log odds in the outcome for different predictors. The results of logistic regression are presented by odds ratio with 95% confidence interval (CI).

State stratification

We included 15 major states, constituting 90% of the population of India. These 15 states were divided into three groups: low-income, middle-income, and high-income, based upon their Gross State Domestic Product (GSDP) per capita for last one decade at 2004–2005 prices, hereinafter referred to as Category III, II and I, respectively. Accordingly, Haryana, Maharashtra, Gujarat, Punjab, and Tamil Nadu were defined as Category I; Kerala, Karnataka, Andhra Pradesh, West Bengal, and Rajasthan – Category II; and Odisha, Assam, Madhya Pradesh, Uttar Pradesh and Bihar as category III.

Results

As evident from Figure 1, the overall utilization of the private sector, in India, is nearly three times more than that of the public sector. Among the large states of India, the utilization of public health-care institutions for outpatient care was 78.8% in Assam, the highest among the states, followed by Odisha (72.6%). Reliance on public sector was the lowest in Punjab, where only 8.5% relied on outpatient care. For in-patient care, overall utilization was more in the private sector across the country except Assam and Odisha.

Table 1 summarizes the reasons for not utilizing public healthcare facility. Quality of care was the main reason for not seeking care from public hospitals as pointed out, with almost 43% of the total sample population. This was the highest in category III states. The second reason was 'long waiting hours' as stated by about 27% at all India level and 32% in Category I states. Overall, the quality in category III states, long waiting time in category I and II states, were the major reasons for not accessing public health facilities.

Socioeconomic characteristics of patients at all India-level

The results showed that 30% of those visited public facility for out-patient-department (OPD) and in-patient-department (IPD) services belonged to ST-SC category. The majority (34%) of those utilized OPD and IPD care in public facilities were illiterates.

Almost 41% of those visiting public health facilities for OPD services belonged to poorest and second poorest quintiles. Similarly, nearly 45% of those visiting IPD services belonged to lower quintiles. For OPD care, the difference between utilization rate in the highest and the lowest quintile was marginal, whereas in IPD care, more from the lowest quintile (23%) utilized public facility than the highest quintile (16%). This difference was wider in the private health facility (Table 2).

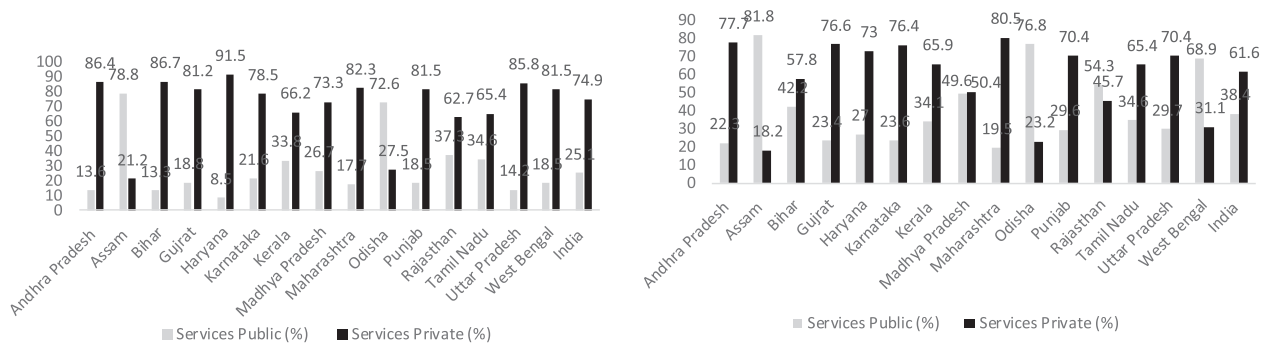


Figure 1. Utilization of the public and private out-patient (left) /in-patient services (right) in Indian states.

Table 1. Reason for not visiting government facilities in India and state categories.

	India	Category 1	Category 2	Category 3
No medical facility in the neighbourhood	10.30	9.42	9.43	13.25
Facility of satisfactory quality not available	42.71	43.77	37.25	52.01
Facility of satisfactory quality too expensive	11.58	9.91	11.38	13.41
Facility of satisfactory quality involves long waiting	27.36	31.98	30.58	16.51
Ailment not considered serious	0.48	0.09	0.63	0.35
Others	7.57	4.74	10.73	4.47

Socioeconomic characteristics of patients across state categories

Category I states

The socioeconomic characteristics of patients visiting public and private healthcare institutions varied across three categories of states (Table 2). The caste structure showed that the majority (54%) of those, who used public facilities for OPD services, belonged to OBC category followed by 21% SC and 12% ST. Compared to this, only 4% were STs and 16% belonged to SC in the private facilities. For IPD services, 45% belonged to OBC followed by 30% of SC population in the public facility compared to only 4% ST and 15% SC in the private facility.

Similarly, the share of illiterate was more in the OPD and IPD services of public health facilities. In category I states, more from the highest income quintile (21%) used public facility for OPD care than the lowest quintile (13%). However, the richest quintile had higher share in IPD and OPD services of the private facilities.

Category II states

Among category II (middle-income) states, the majority, of those utilized OPD and IPD services, belonged to OBC in the public facilities. In the private facilities, the majority belonged to others/general caste for OPD services, whereas 47% belonged to OBC for IPD service. About one-third of those used OPD services in public facilities compared to 30% in the private facilities were illiterate.

Furthermore, we noticed that 15% belonging to the lowest quintile relied on public health facilities for OPD care compared to 27% in the highest quintile. In contrast, 9% of poorest quintiles used private

facilities for OPD services compared to 31% of the richest quintile.

Category III states

Among category III states (low-income), the majority, utilizing OPD and IPD services in the public facilities, belonged to OBC. SCs constituted second largest group (18%) in OPD as well as IPD (23%) services of public health facility. In the private sector, only 2% were STs, 14% SCs and a majority (44%) belonged to general caste. The utilization of public facility by the lowest income quintile was more than the highest quintile compared to high- and middle-income states both for OPD and IPD care.

Factors affecting utilization of OPD services (Table 3)

The multivariate analysis showed variations in factors influencing utilization from the public or private facility across state categories and at all India-level. At all India, in comparison to private health facility, the odds of utilizing from public healthcare were higher among the illiterate (AOR 2.5; 95% CI 2.15–2.85) and the primary education level (AOR 2.7; 95% CI 2.35–3.17) compared to the higher educated. The STs had the higher odds of seeking care from the public sector (AOR 3.8; 95% CI 3.38–4.18) compared to the higher caste. Similarly, the patients belonging to the lowest income quintile had the highest chance of visiting a public health facility than the highest income quintile. Education, caste, and wealth quintiles were significantly associated with the utilization of OPD services in the public facilities.

Table 2. Socioeconomic characteristics of the sample population in Indian states.

[illegible]

Table 3. Factors affecting utilization of public facilities for OPD services.

OPD	AOR	95CI	P	OR	95CI	p	OR	95CI	OR	95CI	p
	All India			Category 1			Category 2		Category 3		
<i>Education</i>											
Illiterate	2.47	2.15–2.85	0.000*	1.80	1.33–2.45	0.000*	3.25	2.53–4.17	0.000*	3.77	2.67–5.35
Primary	2.72	2.35–3.17	0.000*	2.00	1.43–2.80	0.000*	3.91	3.01–5.07	0.000*	3.91	2.72–5.65
Middle	2.5	2.16–2.88	0.000*	2.26	1.65–3.09	0.000*	3.48	2.71–4.47	0.000*	3.02	2.12–4.32
Secondary	1.6	1.38–1.87	0.000*	1.33	0.94–1.87	0.100	2.19	1.68–2.86	0.000*	1.84	1.27–2.66
<i>Social group</i>											
ST	3.76	3.38–4.18	0.000*	3.82	2.96–4.94	0.000*	1.61	1.21–2.15	0.001*	5.79	4.58–7.30
SC	1.73	1.60–1.88	0.000*	1.11	0.93–1.34	0.251	2.09	1.84–2.39	0.000*	3.90	3.25–4.70
OBC	1.32	1.24–1.42	0.000*	0.99	0.85–1.14	0.894	1.78	1.61–1.98	0.000*	2.66	2.26–3.13
<i>Quintile</i>											
Poorest	1.90	1.74–2.06	0.000*	1.70	1.36–2.13	0.000*	2.03	1.76–2.35	0.000*	2.16	1.78–2.62
2nd poorest	1.63	1.49–1.77	0.000*	1.72	1.36–2.18	0.000*	1.60	1.40–1.83	0.000*	2.24	1.86–2.66
Middle	1.36	1.25–1.48	0.000*	1.29	1.00–1.65	0.044	1.41	1.24–1.62	0.000*	1.63	1.38–1.94
2nd richest	1.16	1.07–1.27	0.000*	1.25	0.96–1.62	0.094	1.25	1.09–1.43	0.001*	1.15	0.97–1.38

* $p < 0.05$ statistically significant; OR = Odds Ratio; 95%CI = 95% Confidence Interval.

The results across three categories of states as presented in the following section.

Education: In the category-I states, people with mid-level of education had twice the odds (AOR 2.3; 95% CI 1.65–3.09) of utilizing public facilities for OPD services compared to the secondary or higher education. However, in the categories II and III states, the odds of utilizing OPD services from public were higher among the people with the primary education compared to people with the secondary education. Also, in the category III states, the people who had no education had significantly higher chances (AOR 3.8; 95% CI 2.67–5.53) of utilizing public healthcare services.

Social group: Among the category I states, the STs had significantly higher odds (AOR 3.8; 95% CI 2.96–4.94) of utilizing public health facilities for OPD care compared to higher caste. In the category II states, SCs had twice the odds of utilizing a public facility for OPD care compared to higher caste. However, in the category III states, STs had six times (AOR 5.8; 95% CI 4.58–7.30) higher chances of utilizing public facilities for OPD services than higher caste.

Wealth quintiles: In the category I states, the poorest and the second poorest quintiles had two times more chances of using public facilities compared to higher wealth quintiles. This was statistically significant for the poorest (AOR 1.7; 95% CI 1.36–2.13) and the second poorest (AOR 1.7; 95% CI 1.36–2.18) quintiles. Similarly, in the category II states, the poorest quintiles had twice the odds (AOR 2.0; 95% CI 1.76–2.35) of using public facilities compared to the richest quintiles. Among the category III states, the poorest (AOR 2.16; 95% CI 1.78–2.62) and the second poorest (AOR 2.24; 95% CI 1.86–2.66) quintiles had twice the odds of using public facilities compared to the richest quintiles.

education level (AOR 3.0; 95% CI 2.68–3.28). The STs had comparatively higher odds (AOR 3.4; 95% CI 3.12–3.60) of utilizing public health care institutions than the private healthcare institutions, followed by SC and other backwards sections. In the wealth quintiles, the odds of utilizing public facility by the poorest were 2.9 (95% CI 2.70–3.06) times higher than the richest quintile. Education, caste and wealth quintiles were significantly associated with the utilization of IPD services in public facilities.

The results across three categories of states as presented here.

Education: In the category I states, the people with the primary education had higher odds (AOR 2.97; 95% CI 2.45–3.61) of utilizing public services compared to higher educated people. This was highest for the category II and III states, where illiterates had four times higher chances of using public facilities for IPD services compared to higher educated people.

Social groups: In the category I states, the odds of utilizing public health facility were three times higher among ST population (AOR 3.6; 95% CI 3.03–4.19) than the higher caste. This was also similar to category III states. However, in the category II states the utilization of public facilities was significant among the illiterate.

Wealth quintiles: In the category II states, the odds of utilizing public health facility by the lowest quintile were four times (AOR 4.2; 95% CI 3.71–3.06) higher compared to the richest wealth quintile. The poorest quintile from the category I states and had two times (AOR 2.35; 95% CI 2.07–2.69) higher chances of utilizing public health facility compared to the richest quintiles whereas this was three times in category III states (AOR 3.30; 95% CI 2.85–3.84).

Factors affecting utilization of IPD services (Table 4)

The odds of utilizing public health facilities for IPD services in India were, in general, higher among the illiterate (AOR 2.8; 95% CI 2.58–3.11) and the primary

Discussion

Our paper generated evidence on the utilization of public and private health facilities, factors determining the utilization, and its variations across states of India.

Table 4. Factors affecting utilization of public facilities for IPD services.

IPD	OR	95CI	<i>p</i>	OR	95CI	<i>p</i>	OR	95CI	<i>p</i>	OR	95CI	<i>p</i>
	All India			Category 1			Category 2			Category 3		
<i>Education</i>												
Illiterate	2.83	2.58–3.11	0.000*	2.29	1.93–2.71	0.000*	3.85	3.17–4.66	0.000*	3.98	3.04–5.21	0.000*
Primary	2.97	2.68–3.28	0.000*	2.97	2.45–3.61	0.000*	3.29	2.67–4.04	0.000*	3.33	2.50–4.43	0.000*
Middle	2.84	2.58–3.13	0.000*	2.29	1.92–2.73	0.000*	3.47	2.85–4.22	0.000*	3.58	2.72–4.71	0.000*
Sec	1.82	1.66–2.02	0.000*	1.57	1.31–1.90	0.000*	1.98	1.61–2.44	0.000*	2.57	1.94–3.40	0.000*
<i>Social group</i>												
ST	3.35	3.12–3.60	0.000*	3.57	3.03–4.19	0.000*	2.2	1.85–2.63	0.000*	3.42	2.85–4.09	0.000*
SC	1.73	1.63–1.83	0.000*	1.4	1.25–1.56	0.000*	2.15	1.93–2.39	0.000*	3.41	2.99–3.87	0.000*
OBC	1	0.96–1.05	0.812	1.08	0.98–1.17	0.099	0.94	0.86–1.02	0.165	1.91	1.70–2.13	0.000*
<i>Quintile</i>												
Poorest	2.87	2.70–3.06	0.000*	2.35	2.07–2.69	0.000*	4.22	3.71–4.79	0.000*	3.3	2.85–3.84	0.000*
2nd poorest	2.3	2.17–2.45	0.000*	1.94	1.70–2.23	0.000*	2.95	2.62–3.31	0.000*	2.4	2.10–2.76	0.000*
Middle	1.88	1.77–2.00	0.000*	1.66	1.45–1.90	0.000*	2.25	2.00–2.52	0.000*	1.88	1.65–2.14	0.000*
2nd richest	1.53	1.44–1.63	0.000*	1.59	1.37–1.84	0.000*	1.68	1.49–1.88	0.000*	1.52	1.33–1.73	0.000*

**p* < 0.05 statistically significant; OR = Odds Ratio; 95%CI = 95% Confidence Interval.

The findings suggested that overall utilization from the private sector is almost three times higher than the public sector at all-India level. We observed that most of high- and low-income states except Assam and Odisha showed low utilization from the public sector. This variation is possibly due to high rural and tribal population in both the states [20]. Furthermore, there is a high concentration of poor people with low purchasing power in these two states [21], which might have led to the slow growth of the private sector. For instance, one study in Chhattisgarh showed higher concentration of private hospitals in better-off districts which is inversely proportional to vulnerability [22]. This provides some insights into the higher utilization from the public sector; however, more in-depth studies are needed to draw logical conclusion for these variations.

Furthermore, our findings suggest that in Haryana, Punjab, Uttar Pradesh, and Maharashtra, the utilization for OPD care from public facility was extremely low. Studies in the past have indicated that the majority of Indians prefer to seek care at private health facilities, a trend which has been increasing over time [18]. There are several constraints that affect the delivery of services in public health facilities. Numerous studies have pointed out that inadequate infrastructure, limited availability of drugs and consumables, and poor staff motivation are affecting the service delivery in public facilities [23]. Moreover, there is an acute shortage of doctors especially in rural areas and one recent study in India showed that there were about 5.9 doctors including both qualified and unqualified available per 10,000 population and there are huge inter-state variations in the availability of health workers across states with 23 per 10,000 in Bihar and North East states except Assam to 7 in Jharkhand [24]. Furthermore, only 10% work in the public health sector, as reported by the National Health Profile (NHP) 2017 [25]. As pointed out by another study the availability of skilled doctors, nurses, and staff improved quality of healthcare [26] have a major bearing on the performance of public health delivery system.

The present study suggests that low quality of care was the prime reason for low service utilization from the public health facility and this varied across states specifically highest among category III states. Long waiting time was another important reason for not attending public health facilities in category I and II states. Several other studies also cited poor quality of care, closed public facilities, high monetary payments for private care, and informal payments for public care, long waiting time, inadequate and inappropriate care as the important reasons for low utilization from public facilities [27]. Studies from rural areas of the poorer states of Madhya Pradesh and Chhattisgarh indicated people bypassed local primary care public facilities and accessed private facility for quality reasons [28,29]. Similarly, another study also observed people chose private facility due to quality reasons for obstetric care [30].

Exploring the factors affecting utilization of public health services among three categories of states, findings from this study suggest that utilization from public health facilities is more among less privileged and people belonging to the low socioeconomic status. The findings align with previous studies that show poorer (vs richer) and less educated (vs more educated) individuals are more likely to access public health facilities compared to private health facilities due to the lower cost of care provided by the former [13,31,32]. Moreover, a recent study suggests more vulnerable population in Andhra Pradesh and Tamil Nadu utilized public health facility compared to West Bengal and importantly, the majority of who utilized the public sector in Andhra Pradesh were poor [33]. Similarly, another study showed the poor are more likely to utilize public health facility, especially, scheduled tribes are five times more likely to use the public health than the private facility [34].

This study shows that SES variables influence the choice of public and private healthcare facility and this varies across state categories. People with low education or the low social groups (STs) are more likely to

use public facilities for OPD care than higher educated or higher caste in the low-income states. Moreover, the STs are six times more likely to use the public facility than the higher caste. Nonetheless, the chances of utilizing the public facility is also more for the second and the third quintile in the middle-income states. This utilization behavior especially by relatively richer sections in the middle-income states is a positive sign in the context of growing dissatisfaction among the middle class regarding the services in public health facilities. This indirectly shows higher confidence of the people on the public health system in these states and several studies show better performance of southern states – Tamil Nadu and Kerala [35–37]. This evidence further suggests that even though the utilization from the public facility is declining, the chances of utilizing public health services are more by people belonging to low SES irrespective of their state categories.

Conclusion

Our findings show that the public sector has not been a choice for OPD and IPD care for a majority of the population across Indian states. Moreover, the SES variables strongly influence the choice of health facility invariably and people from the low SES have higher chances of utilizing the public facility irrespective of high- or low-income states. Quality of care and long waiting time have been the major causes of low utilization from the public health facility as evident from this study. However, as mentioned in many studies in this paper, quality is also equally a disquieting fact in many of the private health care institutions in India. Corroborating evidence from this study and others, it is, therefore, important to design appropriate strategies to protect the interest of those who utilize public health facilities. We believe this evidence will be useful for designing healthcare interventions across states of India.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Dr Sarit Kumar Rout (PhD) has around 16 years of experience in public policy research related to health, education and human development issues. Dr Rout is currently working as an Associate Professor at the Indian Institute of Public Health, Bhubaneswar. His major responsibilities include teaching health economics, financing and policy and conducting research on health economics and financing, health insurance, national health accounts, costing of healthcare interventions, health systems and economics of tobacco. He had earlier worked with WHO, Population council, Save the children, Government of India and other state and national level research organizations. As a lead

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Dr Kirti Sundar Sahu has completed his Master's degree in Public Health from India in 2014. He is a Physiotherapist with more than a decade of clinical, academic and managerial experience. He was involved with Strengthening Ecosystem for Sustainable and Inclusive Health Financing in India (SESSIHI) a USAID-funded project and health policy formulation for Odisha, one of the states in India. Dr Sahu has several publications in peer-reviewed journals.

Dr Sandeep Mahapatra is a dental graduate with a Masters in Public Health (MPH). Dr Mahapatra has over half-a-decade of experience working in the field of public health with internal academia, state and central governments, multi- and bi-lateral agencies and civil society groups. He has been involved and has led planning, implementation, monitoring and evaluation of multiple health projects funded by national and international donor agencies, in collaboration with the state and central government of India.

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