REGIONAL HEALTH VULNERABILITIES OF TRIBAL HOUSEHOLDS DURING COVID-19

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ABSTRACT

The National Family Health Survey Reports for 2015-16 (NFHS-IV) and 2019-20 (NFHS-V) and the Expert Committee Tribal Health Report (GOI 2018) outline the unsatisfactory health performance and growing health vulnerabilities at the state level. Across social groups, STs, particularly in states like U.P. M.P. Bihar, and Jharkhand, face the highest burden. The spread of infection and illness, specifically during the second wave of the pandemic, was intense due to the overburdened and inadequate primary health care system in the tribal regions. Against this backdrop, the present study aims to assess the health vulnerabilities and coping strategies of the tribal populations in the aftermath of the Covid 19 Pandemic.

DATA AND METHODS

The paper analyses the unit-level data from the NFHS-IV and V to understand the health vulnerabilities of the tribal households. Further, the paper analyses the case study based on the Tharu Tribes' survey in Uttar Pradesh. Seventy-five households were surveyed using in-depth interviews and a semi-structured questionnaire to assess the impact of the Covid lockdown on the household health burden. Apart from the qualitative analysis, the survey data uses the binary logistic regression model to determine the factors causing vulnerabilities. The model analyses the relationship between out-of-pocket health expenditure and factors determining health status and outcomes in tribal households. The determinants considered are income status, nature of employment, education status, family size, vehicle ownership, non-public health providers, types of diseases, and prominent health issues in tribal households. The model indicates that Family size, health expenditures, and prevalence of non-communicable diseases increase the probability of catastrophic out-of-pocket expenditures for tribal households.

Keywords: *Covid-19, public health care, tribal health, universal health coverage, vulnerabilities*

INTRODUCTION

Health vulnerabilities in the Covid times have become deeper and broader than the risk of getting infected with the Virus. This pandemic has acted as an equalizing and non-regressive to a great extent among various communities and geographies. Nevertheless, it has accumulated the health burden and, therefore, health vulnerability, particularly for the disadvantaged sections, one of them being tribal (indigenous) households. Health vulnerabilities have been defined in the literature as a multidimensional concept [1]; [2]; [3], including four major factors. A) awareness about health problems, their causes, and possible remedial provisions by the government. Low-income and disadvantaged people have low awareness levels for obvious reasons. Moreover, in the context of the tribal population, health awareness is contingent upon their cultural beliefs and systems. With the increasing mainstreaming, awareness is increasing but remains confined to the rising use of medicines rather than causes and available institutional support for their health problems. B) access to the public health system. It is one of the factors leading to not only increasing expenditure burden or health-driven poverty trap but also low awareness levels about basic health care. Government reports always emphasize upon the health access gaps (in terms of physical and human infrastructure as well as medicines and medical treatment) for rural and tribal areas. C) health outcomes, morbidities, and risk of worsening health outcomes. Although, there have been significant improvements in standard health outcomes for the tribal population between the National Family Health Surveys of 2005-06 and 2019-20, such as life expectancy, fertility rates, mortality, and prevalence of communicable diseases across age groups. But, there is a growing risk and inequalities based on non-communicable ailments and coverage of any type of health scheme. D) socio-economic determinants of health vulnerability, such as income, education, livelihood options, household level amenities, household size, and many others, have been regularly investigated. Impact on livelihood, food security, market access for minimum sustenance needs, mobilization and migration, non-farm activities, and a few others were much more severe than infections and deaths. Health vulnerabilities have also been examined under three groups: exposure, sensitivity, and adaptive capacity [4]; [5]; [6]. Exposure and sensitivity depend not only on the geographical location and demographics of a particular population group but also on socio-economic determinants of health, including access to a formal health system. Adaptive capacity is related to the coping mechanism and alternative strategies available at the time of any health shock.

In India, the Constitution assigns a predominant role to the State Governments for providing health infrastructure and delivering primary health services. Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttaranchal and Uttar Pradesh, referred to as the Empowered Action Group (EAG) states, are considered the focus states for health provisions and health outcomes. The National Health Policy, 2017, proposes that the States should increase their health spending to at least 8% of their budget and two-thirds

of such expenditure should be on primary care. Under the National Health Mission, the umbrella health programme in the country, state governments are required to increase their annual health budget by at least 10% annually. Interestingly, India has been highlighted as the country with one of the highest Out of Pocket health expenditures, lowest health insurance coverage and lowest universal coverage. WHO(World Health Organization) documents since 2020 and SDG (Sustainable Development Goals) Report 2022 show that India's health expenditure as a percent of GDP and investment in the health sector is one of the critical challenges among the suggested six strategic transformations for the progress towards SDG agenda 2030.

RESEARCH DESIGN

The research question for this study is: Covid-19 Pandemic led to a significant increase in health vulnerabilities and health consumption expenditure for the tribal households in Uttar Pradesh. It has been more than two years since the first wave of Covid-19 was experienced in India. Across households, health expenditures and health issues have widened along with the increased awareness about health care. The analysis in the paper is based on a survey of 75 selected tribal households. The survey work was conducted through personal interviews and a semi-structured questionnaire during the month of November 2021.

Exhibit-1 Sample Design: Selected State in India: Uttar Pradesh
Selected District and the survey area
District: **Lakhimpur Kheri**
This is the second largest district in Uttar Pradesh. It is located on the northern side and in the Terai Region of the foothills of the Himalayas on the Nepal Border. There is a dense Forest Area inside and around Dudhwa National Park, where the tribal population resides.
Selection of 1 Development Block and Village with highest Tribal concentration in rural areas and highest poverty ratio (both above 75 percent)
Development Block: **Nighasan,** Village: **Belapursua, Sample size:75**
Method for Data Analysis The paper uses the binary logistic model to measure the relationship between the categorical target variable i.e. probability of out of pocket health expenditure for the household being greater than 20 percent (as per the WHO definition of catastrophic health expenditure) and the selected independent (predictor) variables such as size of the family, types of ailment, availability of public health provisions, per capita income, nature of employment, migration status, educational status. This technique helps in identifying the important factors impacting the health burden for the tribal households who have incomplete access of public health provisions due to several established reasons.

LITERATURE REVIEW

Researchers have discussed tribal health and its vulnerabilities from different perspectives, including sociological, psychological, anthropological as well as economic perspectives. Health vulnerability (i.e. risk or probability of getting caught in an "adverse health-related event") and its dimensions for various population groups are based on physical, psychological, and social health[1]. According to the WHO, health has positive and negative dimensions measured through different variables, such as height, weight, nutrition, malnutrition, morbidity, and several others. Moreover, for vulnerable population groups, health needs and health-seeking behavior and their determinants are affected explicitly by social norms, resource availability, the higher significance of non-medical community services, and the benevolence of the policymakers. All the above factors lead to the accumulation of vulnerability measured through health indicators. A multi-weighted logistics regression model is used to investigate Kerala's and EAG states' health inequalities and vulnerabilities between tribal and non-tribal population groups [2; 7]. The vulnerabilities are measured through the prevalence of undernutrition, anaemia, goiter, tuberculosis, and hypertension. State-specific characteristics significantly affect the overall socio-economic development gaps along with the tribal health gaps in India. Two important reports in the context of the tribal population have analyzed a couple of critical questions [8]; [9]. Firstly, why are tribal people more health vulnerable (explained through health gaps between tribal and non-tribal populations)? Further, they are affected by the "triple burden of diseases" [described as a) acute levels of malnutrition; b) widespread infectious diseases and gradual increase in non-communicable diseases; c) mental illness]. Secondly, critical gaps in health infrastructure and health service provider personnel affect the access and quality of health care provision for tribal regions and thus worsen the marginalization of any emergency.

Regarding Covid-19, the statistics show that the spread of infection and thereby fatal cases have remained concentrated to a more considerable extent in urban areas. Fortunately, backward regions and communities got a respite from a new burden or threat to their income and resources vulnerability for the first time. According to the United Nations Report, although "missing numbers" have remained a new agenda for the Indian economy, but for tribal people, the health crises have unfolded in a distinct manner It has been reemphasized that the inequalities existing before the Covid crisis have worsened for the tribal and indigenous population to the largest extent coupled with health, economic and environmental inequalities. The vulnerability in terms of infectious and non-communicable diseases remains the strongest for the tribal population in general and women and children in particular. In the case of India, ineffective public health infrastructure in the rural areas and social gradient (mainly water, sanitation, housing, and food) issues for the tribal population have deepened the pre-existing health gaps (as discussed in GOI 2018) for the tribal people. For instance, diversion of health professionals, diversion as well as the reduction in

budget allocation, shortage of medical supplies, and postponement of essential health services [10]; [11]; [12]; [13]. Authors have developed health and economic vulnerability indices for 22 major states and have found that Uttar Pradesh, Bihar, Madhya Pradesh, Assam, Haryana, Orissa, and Jharkhand are the most vulnerable states in pre and post-Covid scenarios [14]. Health vulnerabilities faced by the tribal women (multiple tribal communities, including nomadic in selected blocks of Nanded district Maharashtra are highlighted by using a case study approach [15]. The vulnerabilities are two-sided, led by a loss of forest-based livelihood and job loss push migration and further deterioration in health hazards on one side, whereas lower access to adequate monitoring of emerging emergencies and public safety net provisions. Social stigma, inadequate health infrastructure and personnel, and poor health standards are the most common features among the tribal population. For EAG states, the issue of health care access is the most critical [7] besides the availability and quality of public health provisions. The health outcomes for these states are the lowest and have huge disparities for the poor and disadvantaged sections of the population.

DATA ANALYSIS & DISCUSSION

The research question for this study is: Covid-19 Pandemic led to a significant increase in health vulnerabilities and health consumption expenditure for the tribal households in Uttar Pradesh. It has now been more than two years since the first wave of Covid-19 was experienced in India. Before the onset of the pandemic, tribal populations were the worst affected by the "triple disease burden" (GOI:2018). i.e., malnutrition, nutritional deficiencies, and communicable diseases. NFHS round 4 and 5 reports show that health vulnerabilities measured through various health outcomes are the highest among the ST population across states. Health vulnerabilities have been defined in the literature as a multidimensional concept including a) awareness about health problems, their causes, and possible remedial provisions by the government b) access to the public health system, c) health outcomes, morbidities, and risk, and d) socio-economic determinants of health vulnerability, such as income, education, household level amenities, and many others. Impact on livelihood, food security, market access for minimum sustenance needs, mobilization and migration, non-farm activities, and a few others were much more severe than infections and deaths. The spread of infection and illness due to the pandemic during the second wave of the pandemic was severe due to the overburdened and inadequate primary health care system in the tribal regions. For instance, in the Lakhimpur Kheri district, only 4.8 percent of villages have a Primary Health Centre or any Hospital. The availability of government hospital beds is 3.23 per lakh population in the entire district. There is no specific component for tribal health issues in the National Rural Health Mission and the central government-funded health schemes. Government initiatives and interventions for the health sector appear to be contributing, though at a slower pace, to improving health outcomes. The majority of the mortality parameters (Infant Mortality, Under 5 Mortality, Neo-Natal Mortality, Maternal Mortality, and communicable diseases)

have shown a decreasing pattern during the NFHS-V, and institutional coverage (childbirth, immunization, Integrated Child Development Service beneficiaries, Mother and Child health care, and hospitalization cases) has increased.

Table 1. *Comparative Health Performance for EAG States*

EAG States	Total Fertility Rate		Child Sex Ratio		Below Normal BMI(Body Mass Index) Women		Anaemic women (age 15-49 years)		Under 5 Mortality rate		Prevalence of stunting	
NFHS Rounds	V	IV	V	IV	V	IV	V	IV	V	IV	V	IV
Bihar	3	3.4	908	934	25.6	30.4	63.5	60.3	56.4	58.1	49.6	50.0
Chhattis-garh	1.8	2.2	960	977	23.1	26.7	60.8	47	50.4	63.3	41.8	52.6
Jhar-khand	2.3	2.6	899	919	26.2	31.5	65.3	65.2	45.4	54.3	49.8	55.2
Madhya Pradesh	2	2.3	956	927	23	28.4	54.7	52.5	49.2	64.6	47.9	56.1
Odisha	1.8	2.1	894	932	20.8	26.5	64.3	51	41.1	48.1	46.0	56.8
Raja-sthan	2	2.4	891	887	19.6	27	54.4	46.8	37.6	50.7	49.1	49.0
Uttara-khand	1.9	2.1	984	888	13.9	18.4	42.6	45.2	45.6	46.5	33.3	47.9
Uttar Pradesh	2.4	2.7	941	903	19	25.3	50.4	52.4	59.1	78.1	52.2	69.9
India	2	2.2	929	919	18.7	22.9	57	53.1	41.9	49.7	43.9	54.2

Source: compiled by the author from NFHS IV and V rounds reports published by Ministry of Health and Family Welfare, Government of India.

The highlight of Table 1 is the increasing prevalence of anaemia in women in the age group of 15-49 years and unchanged stunting prevalence during the NFHS-V. A higher level of fertility rate (TFR) in Bihar and Uttar Pradesh should be seen along with the lowest prevalence of antenatal care visits in these states among their counterparts. Further, the Child Sex ratio is a bigger concern across these states, excluding Uttarakhand. With Janani Suraksha Yojana(JSY) coverage expansion, institutional childbirth has increased substantially in the EAG states, but immunization and supplement medicine intakes among pregnant mothers have remained unsatisfactory. Health status and health standards are one of the critical components of human development in developing regions. This is mainly due to the weak demand side forces for health provisions by various sections of the population. It has been proved that with the increase in per capita income levels, health status improves, and there is a higher demand for health provisions. In this context, public health provisions in developing regions become a challenging task for the government being the sole financing institution. Further, with decreasing fiscal space and constraints due to fiscal sustainability concerns, optimum allocation and efficient utilization of funds compound the challenge.

From the beneficiary side, i.e., sections of the population for whom dependence on public health provisions is mostly not a voluntary choice, the challenge is related to access and utilization of the public health system.

Table 2. *Descriptive Statistics from the field survey*

	N	Min	Max	Mean		Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error
Family size	75	2	35	10	1	7	44	1.89	0.28
Earning members	74	1	10	3	0	2	4	1.11	0.28
Annual income	75	6500	3200000	164727	42044	364114	1325787384 68	8.03	0.28
Per capita income	75	1176	246154	17393	3247	28119	790676060	7.47	0.28
Annual exp	75	7032	408000	97029	8926	77298	5974921049	1.95	0.28
Medical expenses	75	600	200000	18983	3384	29305	858760912	4.59	0.28
Lockdown medical expenses	75	0	150000	19865	3041	26332	693359323	2.70	0.28
Share of medical expenses	75	0	300	23	5	40	1580	5.13	0.28

Table 3. *Results from Binary Logit Regression*

		Odds Ratio	Wald	Sig.	Exp(B)
Step 1	Healthexp	.000	13.546	<.001	1.000
	Constant	-2.783	20.749	<.001	.062
Step 2	Familysize	-.264	8.804	.003	.768
	Healthexp	.000	14.314	<.001	1.000
	Constant	-1.585	4.289	.038	.205
Step 3	Familysize	-.303	9.576	.002	.739
	Healthexp	.000	12.855	<.001	1.000
	Communicable ailment	-2.265	5.696	.017	.104
	Constant	-.945	1.428	.232	.389

Table 2 and 3 shows the descriptive statistics and results from the binary logit model for the survey data. The dependent variable, i.e, the target variable, is the probability of out-of-pocket health expenditure being larger than 20 percent of the total household expenditure. Out of the 75 surveyed households, 28 percent of households reported this share as 5 percent, whereas 35 percent reported their health expenditure ranging up to 20 percent. 32 percent of the households fall

under the category of health expenditure burden with greater than 20 and up to 300 percent of their household expenditure being used up on their health problems. These households have been affected more by non-communicable diseases and ailments given their vulnerability in terms of lack of public infrastructure and access to public provisions and low education levels. 52 percent of the head of the households and respondents are illiterate, and only four percent of the households have education above class 10. 55 percent of the households are dependent on non-public health service providers (mainly, ojhas and unqualified doctors). Distance and lack of public transport are one of the major bottlenecks for these households in accessing public health provisions, besides the unavailability of permanent doctors and other nursing staff. This forces them to become non-receptive to the formal health care provisions. The logit model is based on the forward likelihood ratio method, which includes independent variables one by one in three stages and includes only those variables as predictors which are significant. This helps in explaining the impact as well as the variability of independent variables in the model. In the present case, with several iterations before the final model, income status, employment status, household total expenditure, and educational status gets omitted as they are not only insignificant but have no variation across the household. For instance, almost all households are dependent on farming and casual labor as their employment status. Further, as the dependent variable is the share of health expenditure and the independent variable is the amount of health expenditure; therefore there can be an autocorrelation issue leading to the odds ratio value coming to 0.000. The results show that households suffering from non-communicable diseases have a 2.26 times higher probability of experiencing catastrophic health expenditure. Similarly, smaller family size increases the probability of a higher health burden. It is important to highlight that 67 percent of the household resorted to borrowing or selling their land or food stock to cope with this health burden. The community-based health care in this community provides these households with a better coping mechanism, and therefore the public health provisions appear to be ineffective except for the child immunization program. The model is a good fit, as reflected by the high pseudo R^2 value for step 3 and the Hosmer Lemeshow test.

The selected village for the survey, i.e. Belapursua, the highest populated village of the THARU tribe, has one primary health center with two Bachelor of Ayurvedic Medicine and Surgery (BAMS) male doctors, two pharmacists, and 6 paramedical staff. Out of the 75 selected households, 25-35 households experienced larger health vulnerabilities. In the context of four important dimensions of health vulnerabilities, as mentioned earlier, households are equally affected by all. For more than 50 percent of the households, health-related expenditures became the biggest item of expenditure, even more, prominent than food and agriculture-related expenditure. It is important to note that irrespective of the corona infections, households were forced to spend more on health mainly due to two reasons. Firstly, doctors from Primary Health Centres (PHC) at the village level and Community Health Centres (CHC) at the district level were

assigned duties in some other parts of districts; therefore households must visit private sector health care providers even for delivery, accident, and some common ailments. Second, lack of awareness and public health support mechanisms within or near villages led to panic-driven reallocation of household expenditures. Although a majority of the households are dependent on the agricultural sector for their living, their cost of production increased in a larger proportion as compared to the decline in income from the pre-pandemic days. Further, it is important to note that the tribal households largely depend on the barter system for their day-to-day living and livelihood needs. In case of health problems or emergencies, they need cash, which makes them even more vulnerable as they are forced to either borrow money or sell their food stock. During the pandemic and lockdown, borrowings (predominantly informal sources) have increased, and on the other hand, their dependence on non-certified health service providers has increased considerably.

CONCLUSION

The paper analyses the state-level data from the NFHS-IV and V to highlight the health vulnerabilities of the tribal households. Further, the paper analyses the case study based on the Tharu Tribes' survey in Uttar Pradesh. Seventy-five households were surveyed using in-depth interviews and a semi-structured questionnaire to assess the impact of the Covid lockdown on the household health burden. Apart from the qualitative analysis, the survey data uses the binary logistic regression model to determine the factors causing vulnerabilities. The model analyses the relationship between out-of-pocket health expenditure and factors determining health status and outcomes in tribal households. The determinants considered are income status, nature of employment, education status, family size, vehicle ownership, non-public health providers, types of diseases, and prominent health issue in the tribal households. The data analysis indicates a significant correlation between health expenditures in pre-Covid times and Covid times. Family size, health expenditures, and prevalence of non-communicable diseases increase the probability of catastrophic out-of-pocket expenditures for tribal households. Per capita income, migration status, employment status, and private health provisions are correlated to health vulnerabilities. The data analysis also indicates that the Covid pandemic has widened the health vulnerabilities of tribal households in EAG states due to their increasing dependence on private health clinics and incomplete public health provisions. Public provisions, particularly health provisions, also suffer from improper utilization of funds and leakages [7]. The pandemic has led to a higher prevalence of malnutrition for mother and child as well as a higher health care burden for all tribal households as there was an irregularity in Integrated Child Development Services and postponement of non-Covid-based health care services. Therefore, the paper concludes that Covid-19 infection remained mild, but the vulnerabilities due to non-existent public health support mechanisms increased significantly among the tribal households.

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