Do Indian Households Facing Catastrophic Healthcare Expenditures Discriminate against Women for Treatment of Non-Communicable Diseases?

Insights from Oaxaca-Blinder Decomposition Analysis

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Abstract

The achievement of goals 3 and 5 of good health and well-being, along with gender equality under sustainable development goals, is not possible without achieving gender equality in health by 2030. Women incur the triple burden of reproductive, communicable, and non-communicable diseases (NCDs). Our study attempts to fill the gap through a comprehensive view of the burden of NCDs and its related healthcare expenditure (HCE) between genders. The study utilizes the 75th round of India's nationally representative large-scale survey data: 'National Sample Survey on Household Social Consumption: Health (2017-18)' for inpatient people hospitalized during the last 365 days for NCDs.

The study finds that women bear the excess burden of NCDs than men in India among diseases related to diabetes, eye, gastrointestinal, musculoskeletal, and genitourinary. Descriptive statistics summarise that the gender gap in average HCE amounts to Indian rupees (INR) 9754 at the country level. Average HCE gap in cardiovascular diseases is the highest (INR 17370), followed by cancers (INR 11580) and gastrointestinal (INR 7508). The O-B decomposition results indicate that the endowment effect contributes 70.5% of the gender gap in HCE in India. A major part of the endowment effect is attributable to the catastrophic health expenditures, more men being hospitalized of the age group 60^{+} and households with higher education and source of financing being borrowings. Gender discrimination results in the delay or avoidance of women's health. To break the gender asymmetries in healthcare access, Indian government should prioritize policy intervention focusing on specific diseases and their treatment-related difficulties.

Keywords: *Gender equality*, *Non-communicable diseases, Healthcare expenditure*

Introduction

As per the WHO progress monitor report 2022, Non-Communicable Diseases (NCDs) are accountable for 41 million fatalities annually, or 74 percent of all deaths worldwide. Most of these deaths (approximately 80 percent) occur in developing countries, mainly affecting people aged 30-69 years. Around 66 percent of fatalities in India occur due to NCDs (Non-Communicable Diseases Progress Monitor, WHO, 2022).

The perceived health issues for women are restricted to sexual and reproductive diseases. However, in reality, they incur a triple burden of diseases: Reproductive diseases, Communicable Diseases, and Non-Communicable Diseases(Ladusingh et al., 2018), along with many restrictions on them in the society. Though gender roles impose distinctive health outcomes for males and females, women and girls are the most vulnerable to negative health outcomes. Various studies recognize NCDs as male-dominant diseases and are limited to high-income countries. But, over time, NCDs became prominent in females and emerged rapidly in low and middle-income countries affecting the young population. According to the Global Burden of Disease Study, 2010; "NCDs have been the leading cause of death among women globally for the past three decades," and presently, two in every three deaths among women are due to NCDs each year(Bonita & Beaglehole, 2015). Several studies recently focussed on NCDs among females and found it is continuously rising with increasing economic costs in the case of India (Allarakha et al., 2022; Menon et al., 2022; Sahoo et al., 2021; Sharma et al., 2020; Yadav et al., 2021)

The hospitalization rate is also reported to be higher for men than women in the substantial NCDs such as Cancers and Cardiovascular diseases (Allarakha et al., 2022; Batra et al., 2014a). Furthermore, during self-reporting of at least one NCD, it is highlighted that reporting by women was higher than by men(Sharma et al., 2020). The irony holds that the reporting of cases by women is higher despite the fact that hospitalization is lower than by men. It is due to gender asymmetries in Indian households. As per the National Family Health Survey 5 (Ministry of Health and Family Welfare India, 2021), only 52 percent of women are allowed to seek healthcare services alone; others are still accompanied by a family member. Their inability to make decisions to visit health facilities or meet the health advisor alone restricts the necessary health care that they need.

Healthcare Expenses (HCE) play a major role in accessing Healthcare services. The constraints for women to access these services are related to social norms and practices, as they are not breadwinners. According to the Time Use Survey Report (MOSPI, 2019), 81 percent of females are engaged in different unpaid domestic service activities for household members compared to 26 percent of males in India. Consequentially, the health of women in Indian families is affected and given the least priority. Gender inequality in HCE is a major concern in India. Several studies in India calculated the gender gap in HCE and found significant differences. Saikia et al. (2016) studied HCE over two rounds of Indian Human Development Surveys (IHDS) and observed that the gender gap related to HCE increased from 1298 INR in round one to 4172 INR in round two.

Furthermore, it was discovered that women had a 10 percent lower probability than men of utilizing distressed financing related to selling assets or borrowing for hospitalization expenses(Kumar et al., 2020). Findings from NSS 71st round revealed a gap of 8397 INR between men and women for average HCE at the India level and consistently lower in women irrespective of disease type, age group, or duration of the stay (Moradhvaj & Saikia, 2019). Comparing two rounds of NSSO (55th and 64th), Maharana & Ladusingh (2014) noticed an extensive gender gap in HCE; however, they noticed that this gap is decreasing over time.

Although earlier research looked at the change in disease patterns over time and the gender gap in healthcare expenditure, very few or negligible studies focused on the background factors explaining the gender gap in HCE by type of disease in India. The present study addresses the question of which factors are responsible for explaining the gender gap in HCE. The study also explores how much each background factor contributes to this gap. Further, more specifically for major types of NCDs such as cancers, cardiovascular, psychiatric, neurological, and genitourinary diseases. This investigation of the gender gap in HCE will help to better treatment facilities for women by the type of diseases through evidence-based policies.

Data and Sample

The study utilizes the 75th round of India's nationally representative cross-sectional large-scale survey data of India: 'National Sample Survey on Household Social Consumption: Health (2017-18)'. The survey was conducted from July 2017 to June 2018. The NSS data collects information on various socio-economic and demographic factors focusing on the aspects of health. The survey collects data on morbidity, disease profiles, in-patient, and out-patient treatment, related healthcare expenses, health expenditure support schemes, the role of public and private medical institutions, financing sources, etc. The survey collected information from 5,55,115 persons and 1,13,823 households from rural and urban areas.

The present study focuses on the gender gap in HCE for NCDs. Therefore, we considered information from in-patient people hospitalized during the last 365 days for NCDs. In the study, out of 89 ailments under 15 categories listed in NSSO schedule 25.0 (75th round), we have utilized only the category of chronic ailments or NCDs. Therefore, the study includes disease categories such as cancers, endocrine, metabolic, nutritional, psychiatric, neurological, eye, ear, skin, cardiovascular, respiratory, gastrointestinal, musculoskeletal, and genitourinary under NCDs. Our study consists sample of 33,019 persons hospitalized as an in-patient for the NCDs in the last 365 days preceding the data collection. This comprises 16,662 males (50%) and 16,356 females (50%). For gender, only males and females are taken from the survey data. Additionally, hospitalization excludes any cases or expenses related to childbirth to avoid any gender bias.

Variable Description

The healthcare expenses (HCE) in our study include both medical and non-medical expenses for treatment. The medical expenses are related to doctor's and diagnosis fees, room and attendant charges, medicines, etc. The non-medical expenses related to patient and attendant transportation, lodging, food, escorting, etc. The outcome variable is the gender gap in HCE. The explanatory variables include both individual and household-level variables. The literature and primary evaluation supported us in selecting the variables. In the model, we selected the socio-economic, demographic, and healthcare predictors, such as age group (0-14, 15-29, 30-44, 45-59, 60^{+} years), type of residence (rural, urban), social group (scheduled tribes, scheduled castes, other backward castes, others), marital status (unmarried, married, widowed/divorced/separated), education (illiterate/literate without formal schooling, primary/middle, secondary/higher secondary, graduate and above), healthcare expenditure support schemes (govt sponsored, PSU as an employer, employer-supported, insurance companies, not covered, others), type of medical institution (public, private), economic status of the household (poorest, poor, middle, rich, richest), the major source of finance (income/savings, borrowings, friends/relatives, other), household level of catastrophic health expenditure (CHE). It is defined as, firstly, out-of-pocket expenditure (OOPE) is calculated as the sum of the total medical expenditure and the amount of medical insurance paid minus the total reimbursed amount by the medical insurance company. Then, the ratio of OOPE to the household's usual consumption expenditure for 365 days is taken. Then, this share is divided into three categories, a) below 30%, b) between 30% to 40%, and c) 40% and above. If a household's OOPE on health exceeds 40% of its non-subsistence consumption expenses or 10% of its total consumption expenses, then it is considered as catastrophic health expenditure (Allarakha et al., 2022; Kastor & Mohanty, 2018; Xu et al., 2003).

Methodology

We used cross-tabulation and descriptive statistics to examine the differences in hospitalization cases and healthcare expenses of NCDs between genders. We consider various background factors to understand the level of diversity in health among gender. Further, we performed Oaxaca-Blinder (O-B) decomposition method (O'Donnell et al., 2007; Rahimi & Hashemi Nazari, 2021) to determine the role of socioeconomic, demographic, and healthcare factors in explaining the gender gap in HCE across NCDs. We decompose the gender gap in total healthcare expenditure. The outcome variable is the lnHCE of the NCDs. This method evaluates log-linear regressions and allows mean-based decomposition in the outcome variable of two mutually exclusive groups, i.e. men and women in our study.

For males: $lnHCE^{men} = \beta^{men} X^{men} + e^{w}$

For females: $lnHCE^{women} = \beta^{women} X^{women} + e^{w}$

Where lnHCE is the natural logarithm of total medical expenditure, X is the vector of explanatory variables such as sector, marital status, and others, as mentioned earlier. β is the vector of the corresponding coefficients and e is the error term.

Since OLS residuals with a constant component have a zero mean, the mean difference between the outcome variables, $lnHCE^{men}$ *and* $lnHCE^{women}$ can be written as:

$$lnHCE^{men} - lnHCE^{women} = \beta^{men}X^{men} - \beta^{women}X^{women}$$

$$= \beta^{women}X^{men} - \beta^{women}X^{women} + \beta^{men}X^{women} - \beta^{women}X^{women} + (\beta^{men}X^{men} - \beta^{women}X^{men} - \beta^{men}X^{women} + \beta^{women}X^{women})$$

$$= \beta^{women}(X^{men} - X^{women}) + X^{women}(\beta^{men} - \beta^{women}) + (X^{men} - X^{women})(\beta^{men} - \beta^{women})$$

$$= \beta^{women}\Delta X + X^{women}\Delta\beta + \Delta X\Delta\beta$$

$$= \mathbf{E} + \mathbf{C} + \mathbf{CE}$$

In the above equations, X^{men} and X^{Women} are the means of explanatory factors of men and women, respectively. Therefore, the gap is contributed by three factors: Endowment-E (due to difference in Xs), Coefficient - C (due to difference in βs), and Interaction of endowment and coefficients, i.e., CE. The detailed methodology can be accessed here (O'Donnell et al., 2007).

The explanatory factors in the model are considered in the dummy form. For the type of residence: rural is taken as the reference category. For social groups, Scheduled Tribes are taken as the reference category. Public is taken as the reference category for the type of medical institution. For marital status, unmarried is taken as the reference category. For education, illiterate/literate without formal schooling is taken as the reference category. For health expenditure support schemes, government-sponsored is taken as the reference category. For the wealth quintile, the poorest is taken as the reference category. For the major source of finance, household income/savings is taken as the reference category. For the age group, 0-14 years is taken as the reference category. These explanatory variables play an important role in detecting the gender difference in HCE (Kastor & Mohanty, 2018; Kumar et al., 2020; Mondal & Dubey, 2020; Moradhvaj & Saikia, 2019; Saikia et al., 2016; Sharma et al., 2020; Yadav et al., 2021)

Results

1. Socio-Economic and Demographic Status

Table 1 represents the gender-wise socio-economic and demographic status of the hospitalized sample population across NCDs. At an all-India level, the female hospitalization cases are higher than males for diseases such as endocrine, metabolic, nutritional, gastrointestinal, musculoskeletal, and genitourinary and eye. Similarly, as seen in Table 2, a higher hospitalization share among females was observed in rural and

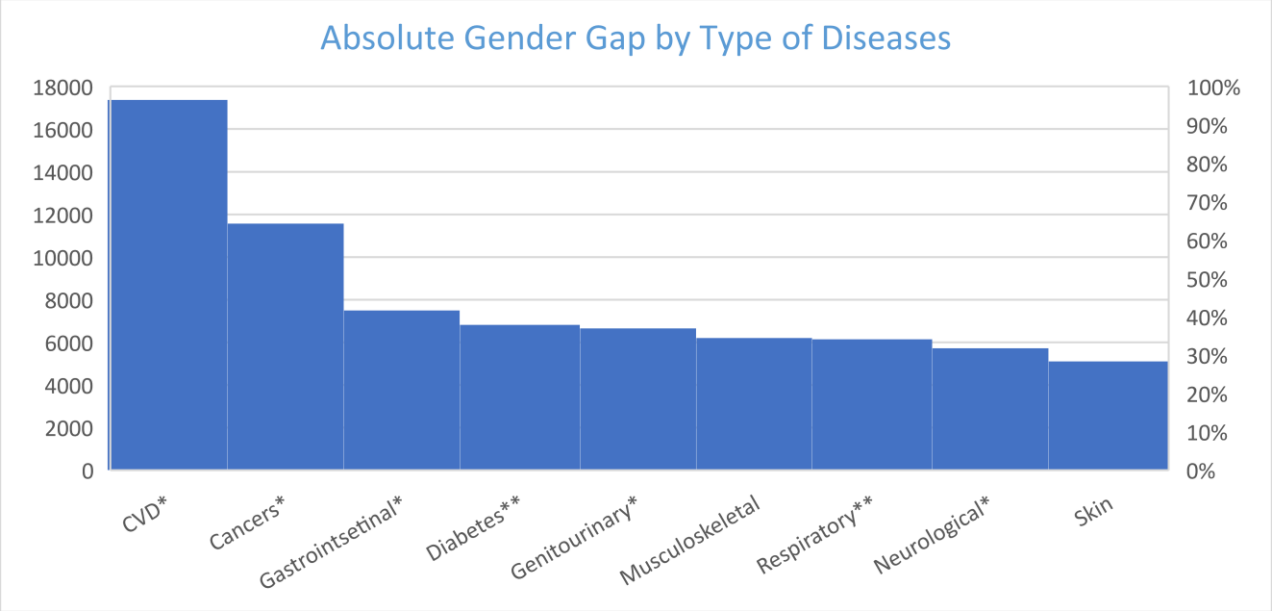
urban sectors, social groups such as scheduled castes, other backward classes, and others, education category of illiterates or literates without formal schooling, and households of every type of economic status. Furthermore, widowed/separated/divorced females were hospitalized in large numbers for all the referred NCDs compared to their male counterparts. Irrespective of the economic status of the household, higher hospitalization was seen in females than in males. Women seek higher hospitalization than men among all the NCDs collectively for the age group 15-29 years.

2. Gender Gap in Healthcare Expenditure

Table 3 represents the gender gap in average total healthcare expenditure for hospitalization as in-patients for the NCDs. At an all-India level, HCE for males (34874 INR[1]) is considerably higher than for females (25120 INR), leaving a gender gap of 9754 INR. It is observed that irrespective of the sector, religion, social groups, type of medical institutions, marital status, nature of the treatment, health expenditure support schemes, and household's economic status, the gender gap is quite extensive and noticeable. However, the gap for each variable varies from the others. The gap increases as the sample population moves from rural to urban sector and public to private hospitals. This implies more spending by both men and women as the living standard improves. Further, with an increase in the education and age of individuals, the gap also widens.

Fig 1 reveals that the gender gap in HCE is enormous and positive across all the referred NCDs. The gender disparity in the HCE is highest for cardiovascular diseases (17,370 INR). Treating such diseases is majorly expensive, and women are given the least priority for treatment in Indian Households. The second highest gender gap is observed in Cancers (11,539 INR), followed by gastrointestinal diseases (7508 INR) and genitourinary diseases (6656 INR). The present study focuses on the background factors that play an important role in explaining the gender gap in HCE across NCDs.

[1] INR stands for Indian Rupee



*p<0.01, **p<0.05, ***p<0.10

Fig 1: Gender gap in healthcare expenditure by type of non-communicable diseases

3. Decomposition Analysis

Box 1 displays the summary of decomposition results. The raw difference between men and women is positive and significant (R=0.31, CI (95%)- 0.19, 0.42). Further, it indicates the decomposition of the raw differential into explained and unexplained parts. This implies that 70.5 percent of the gender gap in the model is due to differences in the endowment of explanatory variables of men and women, and 29.5 percent of this gap remains unexplained.

Table 4 represents the Oaxaca- Blinder (O-B) decomposition results. The gender gap in HCE is decomposed into three effects: endowment effect (due to differences in endowments), coefficient effect (due to discrimination), and interaction effect (due to interaction of endowment and coefficient effect).

The analysis indicates that households having catastrophic healthcare expenditures above 40 percent contribute majorly to the explained part of the gender gap in HCE in NCDs (41.93%). It is followed by age group 60 and above (15.57%). An interesting finding is that factors contributing positively to the gap include women not being covered under any healthcare expenditure support scheme (3.54%) and borrowings being a major source of finance for healthcare expenses (4.58%), and place of hospitalisation being other state (3.45%).

Table 1: Gender-wise disease profile of the sample population

Diseases	Male	Female	Total
Cancers	837 (52%)	769(48%)	1606
Diabetes	671(47%)	763(53%)	1434
Neurological	1415(59%)	963(41%)	2378
Eye	577(49%)	595(51%)	1172
CVD	3496(56%)	2647(43%)	6143
Respiratory	1244(55%)	1006(45%)	2250
Gastrointestinal	2823(44%)	3578 (56%)	6401
Skin	338(53%)	298(47%)	636
Musculoskeletal	1361(46%)	1558(54%)	2919
Genitourinary	1859 (47%)	2099(53%)	3958
All Diseases	14644 (51%)	14253(49%)	28897

Table 2: Socioeconomic and demographic profile of hospitalization cases for non-communicable diseases in the last 365 days

	Male	Female	Total
Age-group			
0-14 years	9.59	4.88	7.23
15-59 years	54.72	68.86	61.81
60+ years	35.69	26.26	30.96
Social Group			
ST	5.03	4.39	4.71
SC	19.20	18.19	18.7
OBC	43.22	42.46	42.83
Others	32.55	34.97	33.76
Marital Status			
Unmarried	17.23	10.32	13.76
Married	76.42	67.02	71.7
Widowed/Divorced/Separated	6.35	22.66	14.54
Education			
No schooling	26.42	43.06	34.77
Up to Primary	40.83	34.87	37.84
Up to Secondary	23.50	17.03	20.26
Graduate and above	9.25	5.04	7.13
Type of Residence			
Rural	62.59	62.52	62.56
Urban	37.41	37.48	37.44
Economic Status			
Poor	37.99	39.35	38.67
Middle	30.19	30.81	30.5
Rich	31.83	29.84	30.83

Table 3: Average total Healthcare Expenditure (in INR) for in-patients during the last 365 days for NCDs

Variables	N	Male	C.I. (95%)	Female	C.I. (95%)	Absolute Gap
Age-group						
0-14 years	1994	16236	(14695-17777)	18530	(15313-21747)	-2294
15-59 years	16959	32602	(31106-34098)	22908	(22052-23765)	9694*
60+ years	8304	39838	(37364-42312)	28304	(26602-30005)	11534*
Social Group						
Scheduled Tribes	2430	31747	(27404-36090)	18105	(16049-20162)	13642**
Scheduled Castes	4441	29209	(26655-31763)	20185	(18612-21758)	9024*
Other Backward Classes	10908	28351	(26939-29763)	21213	(20252-22174)	7138*
Others	9458	43493	(40778-46207)	30437	(28813-32061)	13056*
Marital Status						
Unmarried	3924	19687	(17963-21411)	20024	(17908-22140)	-337
Married	19234	37024	(35532-38516)	24505	(23592-25419)	12519*
Widowed/Divorced/Separated	3971	27305	(24344-30267)	24599	(22883-26316)	2706***
Education						
No schooling	8910	19122	(18001-20243)	20576	(19611-21542)	-1454
Up to Primary	9830	28929	(27166-30692)	22578	(21258-23898)	6351*
Up to Secondary	5950	41421	(38727-44114)	29590	((27542-31638)	11831*
Graduate and above	2567	75881	(69774-81988)	46421	(42195-50649)	29460*
Health Insurance						
Govt Scheme	5069	26276	(24014-28539)	23614	(21737-25492)	2662*
Non-govt scheme	1467	71669	(64079-79259)	57552	(51680-63425)	14117*
Not covered	20721	33072	(31678-34466)	22384	(21595-23173)	10688*
Economic Status						
Poor	9491	23810	(22295-25325)	16956	(16107-17804)	6854*
Middle	8218	29664	(27960-31369)	20893	(19688-22098)	8771*
Rich	9548	49072	(46295-51849)	36873	(35107-38640)	12199*
Type of Residence						
Rural	15411	28998	(27761-30335)	20729	19849-21609)	8269*
Urban	13460	44706	(42414-46999)	32444	31016-33872)	12262*
India	28871	34874	(33636-36111)	25120	(24331-25909)	9754*
Type of Medical Institution						
Govt/Public Hospital	12126	9321	(8702-9940)	7117	(6582-7651)	2204*
Private Hospital	15790	52070	(50044-54096)	36785	(35543-38027)	15285*
Source of finance						
HH income/savings	23644	31934	(30655-33213)	22721	(21921-23520)	9213*
Borrowings	3186	46846	(42304-51388)	33358	(30812-35905)	13488*
Others	2024	41673	(36622-46724)	38106	(33413-42800)	3567
Level of CHE						
less than 10%	9477	20607	(19542-21672)	16546	(15725-17367)	4061*
Between 10% to 30%	583	56561	(49149-63973)	45179	(40728-49631)	11382
Between 30% to 40%	1586	115147	(105490-124804)	95823	(88651-102995)	19324*

*p<0.01, **p<0.05, ***p<0.10

Notes: Average total expenditure includes medical and non-medical expenditures. The data represents healthcare expenditure only for non-communicable diseases. All the HCE units are in Indian Rupees (INR). Any type of expenditure related to childbirth is controlled to remove gender bias.

Box1: Summary of Decomposition Results

	Coefficient	Confidence Interval (95%)	
Men	9.53*	9.44	9.61
Women	9.22*	9.15	9.29
Raw Difference{R}	0.31*	0.19	0.42
Endowments {E}	0.22*	0.11	0.32
Coefficients {C}	0.07***	-0.01	0.14
Interaction {CE}	0.02	-0.03	0.07
Unexplained (U){C+(1-D) CE}:	0.09		
Explained (V) {E+D*CE}:	0.216		
% unexplained {U/R}:	29.5		
% explained (V/R):	70.5		

*p<0.01, **p<0.05, ***p<0.10

Table 4: Oaxaca blinder Decomposition Results

	Endowment Effect		Coefficient Effect		Interaction Effect	
Explanatory Variables	**Coefficient**	**%**	**Coefficient**	**%**	**Coefficient**	**%**
Age Group (0-14 years®)						
15-59 years	-0.02	-8.49	-0.16	-243.29	0.03	141.37
60+ years	0.03**	15.57	-0.05	-80.82	-0.02	-92.20
Social Group (Scheduled Tribes ®)						
Scheduled Castes	0.00	0.93	-0.01	-8.54	0.00	-1.84
Other Backward Classes	0.00	0.06	0.02	26.80	0.00	1.45
Others	0.00	-1.71	0.02	25.85	0.00	-5.23
Marital Status (Unmarried ®)						
Married	0.01	6.03	-0.02	-37.27	0.00	-12.55
Widowed/Divorced/Separated	-0.01	-3.04	0.00	5.79	0.00	-11.44
Education (No schooling ®)						
Up to Primary	0.00	1.79	0.00	-3.28	0.00	-1.12
Up to Secondary	0.00	0.40	0.07*	97.56	0.01**	61.23
Graduate and above	0.02*	7.07	0.01**	21.44	0.01**	56.15
Health Insurance (Govt Scheme ®)						
Non-govt scheme	0.01	2.33	0.00	-4.55	0.00	-1.51
Not covered	0.01***	3.54	-0.02	-23.60	0.00	4.96
Economic Status (Poor ®)						
Middle	0.00	0.47	0.03	43.38	0.00	1.67
Rich	0.00	1.11	0.02	27.79	0.00	1.10
Sector (Rural ®)						
Urban	0.00	0.24	0.00	-1.36	0.00	-0.10
Type of Medical Institution (Public Hospital)						
Private Hospital	0.04	18.22	-0.11**	-161.49	0.00	-20.10
Source of finance (HH income/savings ®)						
Borrowings	0.01**	4.58	-0.01	-15.51	0.00	-13.26
Others	0.00	0.88	-0.01	-18.01	0.00	-14.95
Level of CHE (Less than 10% ®)						
Between 10% to 30%	0.00	-1.06	0.00	4.66	0.00	-0.60
Between 30% to 40%	0.09*	41.93	-0.01	-10.42	0.00	-13.05

Place of Hospitalisation (Same district ®)						
Within state, different district	0.01	5.68	0.02	29.08	0.00	13.56
Other state	0.01**	3.45	0.00	5.92	0.00	6.48

*p<0.01, **p<0.05, ***p<0.10

Discussion

The gender gap in healthcare expenses has been thoroughly studied in India (Kumar et al., 2020; Ladusingh et al., 2018; Mondal & Dubey, 2020; Moradhvaj & Saikia, 2019; Sahoo et al., 2021; Saikia et al., 2016). However, the previous studies in the case of non-communicable diseases and the gender gap in the HCE are scattered or sporadic or focus on a particular type of disease or population (Allarakha et al., 2022; Batra et al., 2014a; Kastor & Mohanty, 2018; Maharana & Ladusingh, 2014; Menon et al., 2022). The present study attempts to provide a comprehensive perspective on the gender gap in bearing the burden and related healthcare costs by type of non-communicable diseases. Furthermore, the study focuses on decomposing the effect of the background factors responsible for reducing or widening the gap. The study utilizes the latest nationally representative survey data (NSS-75th round) on 'Social Consumption: Health' (2017-18). An Oaxaca-Blinder decomposition method is adopted to determine how much of the gender gap is attributed to background factors. The advantage of this method is that it helps to identify the sources of the gap and provides insights into the variables as well as how much they contribute to these gaps.

The results indicate that the female-to-male hospitalization ratio at an all-India level is higher in diseases such as endocrine, metabolic, nutritional, gastrointestinal, musculoskeletal, genitourinary, eye, and skin. This implies a twofold interpretation: first, women suffer more than males in the above-stated diseases, and second, they are restrained from being admitted to hospitals where the treatment is expensive for diseases like CVDs, cancers, psychiatric and neurological diseases, and respiratory diseases. This is consistent with earlier studies (Allarakha et al., 2022; Kastor & Mohanty, 2018; Mohanty et al., 2019) and contradicting Patra & Bhise (2016), where women are suffering more than men in cases of respiratory and CVDs along with other diseases as an out-patient. An interesting finding is that widowed, divorced, or separated women have manifold hospitalization cases compared to their male counterparts for all the NCDs. This also accords with earlier studies (Mondal & Dubey, 2020; Ranjan & Muraleedharan, 2020; Sharma et al., 2020).

The expenditure by males on healthcare is higher than that of females, irrespective of the sector, religion, social group, type of medical institutions, marital status, nature of the treatment, health expenditure support schemes, and household economic status. This was captured in earlier studies also (Kastor & Mohanty, 2018; Menon et al., 2022; Mondal & Dubey, 2020; Moradhvaj & Saikia, 2019; Saikia et al., 2016). Several studies focused on gender discrimination in healthcare expenditure for diseases like cardiovascular diseases and cancers as they are well-known and require exhaustive treatment (Allarakha et al.,

2022; Batra et al., 2014b). However, the present study comprehensively reviewed the type of diseases and discovered that the highest gender gap in the HCE accounted for cardiovascular diseases, followed by cancers, psychiatric, neurological, and genitourinary diseases. The difference in the healthcare expenses among gender in the NCDs focuses on inherent social, economic, and health-related factors. To identify the root cause of the discrimination, the study investigates the background factors responsible for this gap.

The decomposition analysis reveals that almost 70 percent of the gender gap in the HCE is explained by the endowment effect of the background factors considered for the study. The remaining 30 percent is due to discrimination against women. Several studies have noted that most Indian households bear the burden of NCD treatment with distress financing and are forced to below the poverty line (Joe, 2015; Kastor & Mohanty, 2018; Menon et al., 2022; Sangar et al., 2019). Our research also highlighted this as a major constraint towards widening the gender gap. Women face increased gender discrimination in Indian households where catastrophic health expenditures exceed 40 percent of the household consumption expenditure. Compared to their male counterparts, women separated by their partners for any reason experiences a high risk of NCDs and suffer more in terms of treatment and healthcare costs (Maharana & Ladusingh, 2014; Mondal & Dubey, 2020; Patra & Bhise, 2016b; Saikia et al., 2016; Sharma et al., 2020). Furthermore, the analysis showed that the gender gap widens with a higher education level, the major source of financing HCE are borrowings and among the elderly. The reason behind the huge gap is the existence of deep-rooted gender roles, patriarchal structure, and lack of ownership of property in Indian societies. Women often prioritize the health of their spouses or male members who are directly involved in earning for the family and ignore their own health issues (Akter & Chindarkar, 2020; Saikia et al., 2016).

Conclusion and Policy Suggestions

More males were hospitalized for well-known/expensive treatment diseases such as cancers, cardiovascular, neurological, and respiratory. That clearly indicates women are lagging in the expensive treatment of diseases. Unfortunately, women bear more burden for diseases like genitourinary, musculoskeletal, and gastrointestinal diseases; however, they still face gender discrimination in the HCE. Gender discrimination in endowment results in the delay or avoidance of women's healthcare requirements for NCDs. Women's health is given the least priority in Indian households. To break the gender asymmetries in health and healthcare access, the government should prioritize policy intervention focusing on specific diseases and their treatment-related difficulties. So that women can come forward and the gap may be removed to achieve health equity.

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