Health Insurance Access and Disease Profile for Women in India

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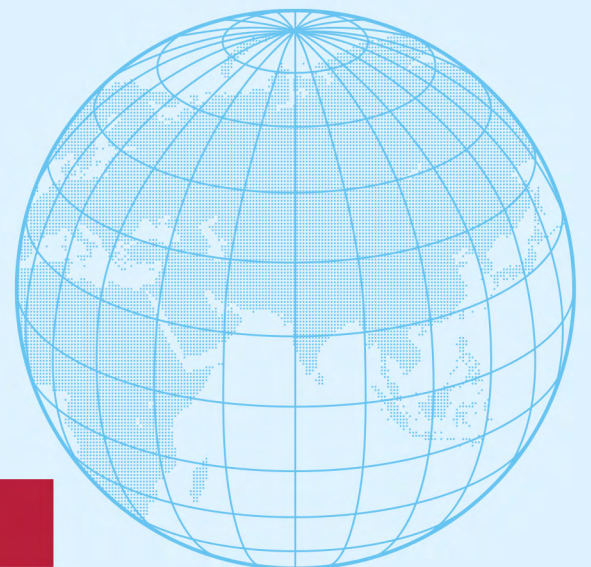
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Abbreviations

AOR	Adjusted Odds Ratio
CGHS	Central Government Health Scheme
CRD	Chronic respiratory diseases
CVD	Cardio-vascular diseases
DALY	Disability Adjusted Life Years
DHS	Demographic and Health Surveys
ESIS	Employees State Insurance Scheme
ICMR	Indian Council of Medical Research
IIPS	International Institute of Population Sciences
LMIC	Low-and Middle-Income Countries
LRT	Lower-respiratory tract
MHIS	Meghalaya Health Insurance Scheme
MoHFW	Ministry of Health and Family Welfare
MSBY	Mukhyamantri Swasthya Bima Yojana
NHM	National Health Mission
NCDs	Non-communicable Diseases
NFHS	National Family Health Survey
OOP	Out-of-Pocket
OOPE	Out-of-Pocket Expenditure
PFHI	Public Funded Health Insurance
PMJAY	Pradhan Mantri Jan Arogya Yojana
RSBY	Rashtriya Swasthya Bima Yojana
SHSRC	State Health Systems Research Centre
SHIS	State Health Insurance Scheme
SDGs	Sustainable Development Goals
TB	Tuberculosis
UHC	Universal Health Coverage

Abstract

Women's access to healthcare is an important public health and human rights issue. India has been at the forefront of efforts for Universal Health Coverage (UHC) via publicly funded health insurance (PFHI) programmes. However, the rapid rise of non-communicable diseases (NCDs) signals a need to re-examine and reorient health policy priorities. The paper examines the changing burden of NCDs which include cardiovascular diseases (CVDs), cancer, diabetes and kidney disorders, and chronic respiratory diseases for women in India, its determinants, particularly the role of women's agency, and compares the concordance between the burden of disease with health accessed via insurance using the case study of Meghalaya, India. Evidence from our research indicates the need for state specific policies to address the NCDs among women and secondly to understand the NCD burden based on risk profiles and its district wise variation.

Executive Summary

A recent UN Report in 2018, *"Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development,"* stated that addressing gender-based health inequities will be critical to achieving all Sustainable Development Goals (SDGs) and core to the 'transformative potential of 2030 agenda' (Women, 2018). India has been at the forefront of efforts towards the achievement of Universal Health Coverage (UHC). With rapid epidemiological transition and changing lifestyles, non-communicable diseases (NCDs) have grown steadily. Addressing the issue of the rising burden of NCDs in women, we analyse the changing burden of cardiovascular diseases (CVDs), cancer, diabetes and kidney disorders, and chronic respiratory diseases for women in India. We analysed data from the India State-level Burden of Disease Study and the National Family Health Surveys (NFHS), 2019–21 to examine the health burdens that women faced (2000–2018) and their access to publicly funded health insurance (PFHI) across states. Further, we used multinomial regression models to examine the association between measures of women's agency (education, financial and healthcare decision-making, mobility for health, and ownership of a phone) and the type of insurance accessed. We examined the case study of Meghalaya, which has implemented the Meghalaya Health Insurance Scheme (MHIS), to understand gender differences in healthcare claims and their amount between 2019–21. Additionally, we compared the healthcare that women used with the state-level burden of disease for women.

Estimates for mortality and morbidity in 2018 and over time showed high burdens of CVDs, chronic respiratory diseases, and cancer for women. There was also a falling, but high burden of diarrhoeal diseases, respiratory infections, tuberculosis, and nutritional deficiencies for women. This demonstrated evidence of the epidemiological transition for women is observed to be similar to that of men. However, there are notable differences in the disease profiles and risks. Comparisons across states showed wide variation in the disease patterns noted in the distribution of deaths and cases of NCDs across states. Our assessments demonstrated that prioritisation in addressing health risks for the big four NCDs needed further state-wise disaggregation and study.

In terms of women's reports of health insurance access, women in the NFHS sample in 2019–2021 reported the highest access in Rajasthan (84%), Andhra Pradesh (74%), and Goa (70%) and the lowest in Uttar Pradesh (8%), Jammu-Kashmir (2%), Manipur (9%), and Bihar (10%). Most states with high insurance access among women had existing state-based health insurance schemes and were called brownfield states, but this is changing as the National Health Programme rolls out.

Further, our examination of the role of women's agency demonstrated that women's higher education, their decision-making over their own money and healthcare, and their mobility are associated with greater access to health insurance, irrespective of the type of insurance. This greater access to health insurance can potentially enable healthcare access, especially given the rise in the use of private health care services. Rural residence is associated with a lower likelihood of employment-related insurance [AOR=0.84 (95% CI: 0.75, 0.93)W], but a higher likelihood of state/community insurance [AOR=1.35 (95% CI: 1.28, 1.42)]. A lack of drugs (43%) and of health providers (42%), especially female doctors, were reported as major barriers to seeking healthcare, with differences across urban and rural contexts.

These findings point to two immediate policy priority areas. One, we found significant heterogeneity across Indian states in the burden of NCDs among women, due to the diversity in the population profiles and the stage of the epidemiological transition. This points to the need to focus on state-specific policy prioritisation to ensure that the health system meets women's needs for healthcare across these contexts. To do this, we need to systematically understand state health system capacity for NCD service delivery, for instance, health workforce availability, drugs and diagnostics, and quality tertiary care, with a focus on gender and social inequalities. Health is a state subject in India, and while the insurance landscape is moving towards a centralised national scheme, access to health services can be state-driven and dependent on local factors. Understanding the intra-state disparities and regional challenges in this context will be critical. As a next step, we recommend that the state-focused health burden undergo further unpacking to understand trends in

NCDs by district, and the changing risk profile over time. Disaggregated analyses by age, socioeconomic status, residence, and other social determinants can point towards gap areas for prioritisation of health services.

Second, efforts to measure and understand the role of women's empowerment have been critical in health programmes for reproductive and maternal health. We need to extend this lens of women's empowerment to wider primary care services to understand the connections between women empowerment, self-care (which may be critical to NCDs), and other determinants of health access. We found diverse gendered interconnections that enable healthcare for women. In our study, women reported the lack of healthcare providers, in particular female healthcare providers, as one of the major deterrents to health-seeking. Our study also showed the role of markers of agency (education, financial and healthcare decision-making, mobility for health, and ownership of a phone) as being associated with access to health insurance. These markers of agency both measure the empowerment status of women and are enablers of their empowerment. Self-care can be an important aspect, and of value in the treatment of NCDs. Hence, integrating women's empowerment programmes and enhancing the value of self-care can help enable more women to seek healthcare early and regularly. On the systems side, understanding women's healthcare-seeking behaviour can inform policy interventions, such as providing female physicians or local transport to health centres, to reduce disparities.

Finally, in our study, the state of Meghalaya provided a unique context for us to understand gender patterns in the utilisation of health insurance. We focused our state analyses on Meghalaya for the following four reasons. Firstly, Meghalaya implemented health insurance in 2012, before the rollout of the Pradhan Mantri Jan Arogya Yojana (PMJAY) in 2018, and therefore has had sufficient time for the uptake of health insurance among its population. Secondly, Meghalaya has a universalised insurance model that does not identify beneficiaries using a narrow definition. This has two advantages: first, it allows us to examine whether gender inequities persist despite universal access to insurance and second the broad denominator of those offered insurance

reduces biases in access. Thirdly, Meghalaya has been incrementally increasing healthcare packages and coverage, thereby trying to reach the global goal of universal health coverage. Finally, in terms of data availability, it was possible to analyse the data from the state, available through the state government portal, after removing identifying information. Universalised insurance coverage for both women and men can overcome issues regarding affordability of healthcare, even as the state's topography poses challenges in access. Our findings did not show stark gender inequities in health access in this state. However, we observed a broad pattern similar to another state in India, where men tended to utilise high-end specialised healthcare packages more often, while women more frequently used routine medical procedures. These findings present some unanswered questions which we may explore in the context of Thaddeus and Maine's Three Delays Framework presenting gendered pathways to health-seeking. The first delay may relate to gender dynamics in the household for prioritisation of health-seeking and related decision-making, and whether intra-household gendered dynamics influence health-seeking for women and men. A second pathway and question relate to decision-making related to health providers, and the role of distance and choice of provider that may differ for women or men. The third pathway relates to whether women and men have differential access to insurance in terms of amount or prioritisation of use. Our research on barriers demonstrates that while all these barriers are determinants of women's health-seeking for themselves, in a universal health insurance context, it is likely that the first two barriers exert greater influence. These questions need further exploration.

We strongly recommend the need for similar analyses in other states where beneficiary categorisation may be more defined. Disaggregated patterns in coverage and use can help us match the patterns in disease burden with more optimum healthcare use to meet the health needs of women. Conducting more state-focused analyses like this can enable us to understand how beneficiary identification might be working and how to address gaps in policy. This may be enabled by understanding and instituting data eco-systems that allow the analyses of large datasets, incorporating health utilisation information along with beneficiary socio-demographics.

1. Introduction

Women's access to healthcare is an important public health and human rights issue. Across all countries, women's access to healthcare and their autonomy in making healthcare related decisions have been critical in achieving global development goals. Despite economic and technological progress, gender inequities in health continue to persist and hinder the development, progress, and well-being of women and girls. Globally as well as nationally, organisations have made systematic efforts to reduce gender inequalities in health (Shannon et al., 2019), and a recent UN Report in 2018, "*Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development,*" stated that addressing these inequities will be critical to achieving all SDGs and is core to the 'transformative potential of the 2030 agenda' (Women, 2018).

India has been at the forefront of efforts towards the achievement of Universal Health Coverage (UHC) and has led several women's empowerment initiatives. Both have been at the core of India's national policies and programs since independence, achieving significant milestones such as the Bhore Commission (Duggal, 1991) and the Towards Equality report (Guha, 1974). India has also participated in the Alma Ata (1978) and the International Conference on Population and Development (1994) (Cohen & Richards, 1994). While these initiatives proposed and supported a universally accessible primary healthcare system, the vision for UHC in recent decades has shifted to averting the high and rising costs of healthcare at the consumer end, particularly for the poorest households, through the delivery of Publicly Funded Health Insurance (PFHI) programmes (Rao et al., 2005; Selvaraj & Karan, 2009). These publicly funded programs were rolled out early in some states, called *brownfield states* (e.g., Andhra Pradesh, Rajasthan, Tamil Nadu). Since then, PFHI has been implemented in the remaining states, called *greenfield states* (e.g, Bihar, Haryana, Jharkhand). PFHI has a national mandate, though in several states, it is integrated with the recently launched national health insurance program, the *Pradhan Mantri Jan Arogya Yojana* (PMJAY), 2018 (Appendix Tables i–ii: details on insurance by state). Several evaluations are presently underway to understand the effectiveness of these programs in achieving their objectives, especially in reducing healthcare-related impoverishments and indebtedness for households (Dupas & Jain, 2021; Nandi et al., 2016). In some

contexts, like Andhra Pradesh, there is evidence that despite implementation challenges, PFHIs may have averted catastrophic effects on the out-of-pocket (OOP) spending on household finances (Karan et al., 2017; Parmar et al., 2023).

Simultaneously, India has been on an improvement trajectory for several indicators of health and growth of women and girls. Subsequent rounds of the NFHS show improvements in education for girls (though gains are greater at lower levels of education than higher), a reduction in child marriage and total fertility, a delay in childbearing, and improving access to better reproductive and maternal health services (IIPS, 2021). These successes, important as they are, have kept women's health research and programs disproportionately focused on maternal health and have neglected to count as well as understand the burden of non-communicable diseases (NCDs) among women in India. In the past two decades, research on NCDs has been growing in light of the *epidemiological transition* that is underway, denoting a tectonic shift from communicable to non-communicable diseases and risk factors, and auguring a need to reorient our emphasis on health policy (Omran, 1998). The epidemiological transition explains the change in mortality and morbidity from infectious to NCDs through three stages–the *Age of Pestilence and Famine*, the *Age of Receding Pandemics,* and the *Age of Degenerative and Manmade Diseases* (Omran, 1998). The theory proposes that this transition in disease profiles, along with a demographic shift, explains the shifts in mortality. Yadav and Arokiaswamy (2014) have argued that the epidemiological transition was proposed in light of the experiences of developed countries, while in low-and middle-income countries, the burden of infectious diseases and NCDs may have significant overlaps. Researchers have not studied this shift for women, nor have they interrogated the specific risk factors. At present, there is a limited understanding of how gender differences may operate, the pathways to women's healthcare and use, and what might be some determinants, particularly related to women's own empowerment that explain healthcare and its use.

NCDs are often chronic in nature, affecting the patients over long periods, and requiring both in-patient and out-patient consultation, drugs, and health services. The rise of these diseases has been associated with population ageing and the epidemiological transition (Omran, 1998). Often, NCDs also require significant family or caregiver support as well as

financial resources to meet the costs of treatment and care. There is some research, though the debate is still not settled, that NCDs may disproportionately affect the poorest and the most vulnerable populations (Kar et al., 2010). Acute and long-term NCDs also impact the economic resources of households and lead to impoverishment (Thakur et al., 2011). Within this context, understanding women's healthcare needs is critical, as their health needs can be undervalued or neglected within households. Research on intra-household allocation of resources, particularly in education and nutrition, has demonstrated the pernicious nature of gender discrimination and bias within households (Ghatak et al., 2023; Kaul, 2018). Few studies have investigated health-seeking behaviour among women and girls, which is complex and influenced by factors at multiple levels, including their own agency, family and community factors, and their experience with the health system, may influence. The lack of understanding of women's needs beyond maternal health fails to recognise the right to healthcare of women and girls as equal citizens. Given this context, there is a need to re-examine gender inequalities in health within the larger discourse of UHC, to understand the specific needs and burdens of women, as well as their health needs-service use gap.

1.1 Objectives of the Work

This study is an effort to understand the landscape of women's access and use of healthcare, particularly with respect to NCDs in India. It examines India's changing burden of disease for women and assesses the alignment between women's health needs and their use of healthcare via health insurance.

We use a gender lens to examine data from the burden of disease study to understand the health needs of women, specifically focusing on mortality and morbidity changes with respect to NCDs and identifying key health concerns that need policy focus. Simultaneously, we examine insurance access across Indian states by type. We specifically consider the role of women's empowerment measures on access to insurance while examining the barriers to their healthcare use. Finally, using the case study of one state, Meghalaya, we examine gender inequities in the healthcare usage via data on claims, to understand whether gender inequities persist even in a context where insurance access has been universalised.

We recognise that as we conduct the analysis, PMJAY enrolment has been growing, particularly in greenfield states. Our analyses do not evaluate the reach or effectiveness of the national or state programs, but attempt to understand *what women want and need* and match them with strategic areas for health policy investments.

This paper is divided into five sections. The first two outline the context and the specific research objectives. The third section summarises existing literature and identifies gaps in research to explain the basis for the research questions. Section 4 outlines the methodology. Section 5 presents the findings in the form of the changing and varied disease burden for women, their access to healthcare, and the barriers they face in using healthcare. Finally, Section 6 presents a summary and an analysis of the findings along with the identification of a set of questions that need to be interrogated in future research.

1.2 Current Research on Insurance and the Social Determinants of Health

Studies on health insurance and risk pooling demonstrate the potential benefits of financial risk protection from PFHI schemes for poor households (Dubey et al., 2023; Sood et al., 2014). There is wide acknowledgement that health insurance enables access to and utilisation of healthcare, which would otherwise be out of reach for the poor, thus enabling resilience against catastrophic health expenditures that push poor households further into poverty (Asfaw et al., 2007). Sriram & Khan (2020) found that poor and insured populations had a higher chance of being hospitalised than the non-poor and uninsured. In a recent evaluation study of PMJAY by Parmar and colleagues, it was observed that out-of-pocket expenditure (OOPE) was reduced by 13.0% and catastrophic health expenditure came down by 21.0% when private facilities were accessed (Parmar et al., 2023). However, an increase was also noted in the OOP spending for diagnostics and transport for households that accessed health insurance (Garg et al., 2022; Shaikh et al., 2018; Wagstaff & Lindelow, 2008). A cross-national analysis of 80 low-and middle-income countries (LMICs) found no major reduction in catastrophic health expenditure despite insurance coverage (Hooley et al., 2022).

In India, PFHI schemes have targeted poorer households by design, particularly vulnerable populations such as women, children, and the elderly (Devadasan et al., 2010; Mavalankar & Bhat, 2000; Ranson et al., 2006). However, early assessments of the Rashtriya Swasthya Bima Yojana (RSBY) and Mukhyamantri Swasthya Bima Yojana (MSBY) in

Chhattisgarh have shown that enrolment in an insurance scheme does not guarantee access to treatment (Nandi & Schneider, 2020). Women are more likely to face barriers to accessing healthcare, even when insured. These barriers may operate due to a lack of awareness about the avenues for healthcare or even the realisation that a health intervention is needed for a developing ailment. The lack of this realisation can occur due to the inability to articulate and/or subsequently seek support from the family to access health services, as well as structural barriers in accessing healthcare, including mobility, transport and poor quality of health infrastructure (e.g., lack of availability of health providers). These barriers have been investigated for maternal mortality in part by the *Three Delays* model (Thaddeus & Maine, 1994), but a more comprehensive understanding of the pathways to health access and use has been lacking. Understanding these barriers is of greater significance for NCDs that require frequent and repeated access to outpatient care services, regular monitoring and support via diagnostic services. Nearly two-third of women in Below Poverty Line (BPL) households were unable to access healthcare on account of implementation gaps such as lack of empanelment, expiry of card etc. (Nandi et al., 2016), whereas mistrust in public hospitals due to higher waiting times and lack of providers, diagnostics and drugs acted as other constraints. Distance, lack of transport, and needing support from a family member (usually a male member) to access healthcare were other key reported barriers to women's health seeking (Ratna Patel & Shekhar Chauhan, 2019). Within the health system, women often needed support in navigating the complex system, which often deterred them from accessing health services (Thomas Sivaram Shroff, 2022).

Research on women's hospitalisation use has also shown evidence for the inverse care law, where women report poorer health outcomes and higher needs of healthcare and hospitalisation but are less likely to receive medical treatments (Mahapatro et al., 2021; Pandey et al., 2018; Sengupta & Rooj, 2019; Shaikh et al., 2018; Sreerupa & Rajan, 2010; Yadav et al., 2022). Dupas & Jain (2021) also showed some evidence that women were more likely to receive secondary healthcare, while specialised tertiary care was more accessible to men. There is some evidence that when families had budgetary constraints, a household's willingness to utilise health financing depended on the sex of a child, and the gap was found to be more acute for poorer households (Asfaw et al., 2010). Research indicates the strong linkages between women's economic agency in the access to insurance and utilisation of healthcare (Gebremedhin et al., 2022), as well as the role of sociodemographic factors and exposure to the media. While research indicates the role of agency determinants, there is a need to understand what aspects of empowerment matter for women's healthcare and use.

There has been a growing understanding of women's healthcare use and the gendered inequities in access to insurance and the use of services. A study from southern India demonstrated that health insurance use was higher among men, and OOP spending was higher, even when using insurance, for additional health expenses made it challenging for women to access and utilise healthcare services (Shaikh et al., 2018). A study of the early implementation of the PMJAY claims revealed that more claims were filed and reimbursed for men than women (Kaur et al., 2021). Authors attributed this to lack of women's empowerment and the possibility that healthcare needs of women beyond reproductive ages were a lower priority. Analyses from Rajasthan showed that 60 of the non-maternal health claims were pro-male and 45 females benefitted from PFHI schemes (Dupas & Jain, 2021). Lower bargaining power, especially among older women, may explain the differential benefits of this scheme by gender. Studies on healthcare use have also indicated that women may also be rationing out of insurance schemes and foregoing treatment to allow their spouses and children benefit at their cost, as insurance schemes often cap the incurred expenditure (Gopalan & Durairaj, 2012; Iyer et al., 2007). In states that do not offer universal health insurance, understanding how women may be excluded due to stringent enrolment criteria may also be important, as it may lead to male bias in insurance access and use. Lack of access to providers and rude or indifferent behaviours of health providers (Iyer et al., 2007) may further deter women from seeking healthcare and may lead to them forgoing the healthcare that they need.

Based on these, we note three sets of gaps in existing literature–firstly, we have a limited understanding of what women consider as the barriers to their healthcare-seeking, secondly, a systematic examination is needed to understand gender differences in disease burden, access to insurance and utilisation of care by those covered by insurance, and thirdly, the role of the determinants of women's health access and use; particularly the role of women's empowerment in determining whether and how women use healthcare services.

2. Methodology

2.1 Data

Data: We used data from three sources. Firstly, the data on the health burden for women were acquired through the India State-Level Burden of Disease Study (Dandona et al., 2017) conducted by the Indian Council of Medical Research (ICMR) at the Ministry of Health and Family Welfare (MoHFW), the Public Health Foundation of India, Delhi, and the Institute of Health Metrics at the University of Washington in Seattle, USA. Secondly, we used the National Family Health Survey (NFHS) (2019–21) data that were available through the website of the International Institute of Population Sciences (IIPS), Mumbai. Lastly, we accessed the claims database of the Meghalaya Health Insurance Scheme (MHIS) from February 2019 to June 2022 through the State Health Systems Resource Centre (SHSRC) webpage.[1]

Data details: The India State-Level Burden of Disease data comprised of cause-specific mortality and morbidity statistics across all health conditions from 1990 to 2018–2019, for the nation as well as Indian states. This collaborative data source is an important public good available to health researchers to understand the causes of death and Disability Adjusted Life Years (DALYs) by sex. The methodology for the estimation of cause-specific mortality and morbidity has been published previously.[2] These estimates were generated using a range of data, from administrative sources, census, disease surveillance reports, and vital registration systems. We extracted data for women and men, specifically focusing on 2000, 2005, 2010, 2015, and 2018 for consistency. We used three key time periods, namely, 2000, 2010, and 2018 to understand the time trends in mortality and morbidity for women by cause over the last two decades. Within NCDs, we identified five disease categories that had shown the sharpest rises in mortality and morbidity between 2000–2018, which include CVDs, cancer, chronic respiratory diseases, diabetes, and kidney ailments.[3]

Data from the NFHS, 2019–21 were used to examine women's health insurance access and the type of insurance. These surveys are conducted by the IIPS in Mumbai, and the data are available through the Measure Demographic and Health Survey (DHS) website. Survey participants include women in the reproductive age of 15–49 years and men in the reproductive age of 15–54 years with a view to gaining insight into healthcare and its determinants related

to reproductive health, nutrition, child health, and women's empowerment. We used data from women to understand self-reported insurance access and key determinants of health including women's economic agency, their decision-making, mobility, and mobile phone use.

Data from the Meghalaya Health Insurance Scheme (MHIS) (2019–21) in the form of claim-amounts and type were accessed via the state health portal.[4] Meghalaya provides a unique scenario to study gender differences in insurance, as the scheme access is universalised and not targeted to specific beneficiaries. The state launched MHIS in 2012, subsuming a previous scheme 'RSBY' and later combined it with the PMJAY in 2018. We used de-identified claims data from February 1, 2019 to June 30, 2022 on insurance packages accessed with information on age, gender, district, hospital type, package of care, procedure details, and the amount claimed.

2.2 Research Questions

We examined **four** interrelated research questions.

a) *How are the burdens of disease distributed across women and men in India, particularly for NCDs, and how are patterns for key burdens of disease among women changing over time?*

b) *What are the barriers to women's healthcare use and do they vary with women's education and wealth status?*

c) *How does access to health insurance vary by state and socioeconomic markers and by women's empowerment determinants?*

d) *Finally, as a case study, where insurance access is universal, e.g., the state of Meghalaya, do we note gender differences in health admissions, insurance claims, and in the packages of care?*

These research questions investigate hypotheses based on the available literature to understand women's health burden and the distribution of mortality and morbidity as per the epidemiological transition, showing rising NCDs and falling communicable diseases over time. In addition, we investigated the barriers to women's healthcare use, specifically if those barriers were related to family vis-à-vis the health system, with the former indicated as barrier to women's health use in the literature. We also investigated the distribution and determinants of access

to health insurance for women, a key instrument to their access to health, especially geographic, socio-economic, and gendered determinants. Finally, using the case of Meghalaya, we tested the hypotheses of whether, in a setting with universal health insurance, we might note gender differences in health insurance claims made in terms of packages of insurance claimed as well as the insurance amounts.

2.3 Measures and Analysis

To examine the disease burden and its change over time among women, we focused on two indicators–cause-specific mortality (in per cent) as a proportion of total mortality and DALYs in the India State-Level Burden of Disease Study. Both indicators were available in the form of numbers, per cents, and the rate of cause of mortality and morbidity for all ages for women and men. In our analysis, we used estimates in per cent for mortality and rates for morbidity for women and men. Detailed information on the composition of the groups is available in Appendix Table (iii). To understand health insurance access among women, we used data from 724,115 women in the NFHS, 2019–21.[5] In the survey, women were asked: *"Are you covered by any health scheme or health insurance?"* and if yes, *"What type of health scheme or health insurance?"* Response options included: Employees' State Insurance Scheme (ESIS), Central Government Health Scheme (CGHS), State Health Insurance Scheme, Rashtriya Swasthya Bima Yojana (RSBY), Community Health Insurance Program, other health insurance through employer, medical reimbursement from employer, other privately purchased commercial health insurance, or other. We classified these into four categories: "none," "employment-related insurance," "state or community health insurance," and "other insurance types."

Further, we were interested in understanding the determinants of use, particularly the role of women's agency and their socioeconomic status. To measure socioeconomic status, we used data on women's schooling and household wealth status. Data on women's schooling were available in years of schooling and we classified it as: 'no education,' 'primary education,' 'secondary education,' and 'higher education' (13+ years of schooling). Survey data included data on wealth estimated as a score (IIPS, 2021) and we used wealth quintiles classifying populations from poorest to richest.

Questions about women's empowerment were asked to a sub-sample of the total women surveyed. We used four indicators to capture women's agency that have previously been associated with pathways to health-seeking and empowerment. These included: decision-making on own money, decision-making on health, mobility for health-seeking, and ownership of a phone.

Decision-making on own money: We assessed women's financial decision-making agency. In the NFHS, 108,785 women were asked: *"Do you have any money of your own that you alone can decide how to use?"* Responses were coded as "No" versus "Yes".

Decision-making on own healthcare: In the NFHS, 76,910 women were asked: *"Who is the person who usually decides on respondent's healthcare?"* Response options were "husband/other," "joint," and "respondent alone". We considered the husband /other as reference to understand the role of women's agency either singularly or jointly.

Mobility for Health: In the NFHS, 108,785 women were asked if they were usually allowed to go to the health facility, and responses were coded as "not at all", "alone", and "with someone else only."

Mobile phone ownership: In the NFHS, 108,785 women were asked if they owned a mobile phone, and responses were coded as "No" (reference) versus "Yes."

We used multinomial regression analysis to examine the association between women's agency measures and access to insurance, adjusted for socioeconomic factors, and reported odds ratios and 95% confidence intervals.

To understand barriers to seeking medical care for oneself, 724,115 women in the NFHS were asked: *"Now I would like to ask you some questions about medical care for yourself. Many different factors can prevent women from getting medical advice or treatment. When you are sick and want to get medical advice or treatment, is each of the following–a big problem, small problem, or no problem?"* Items included: getting permission to go, getting money for treatment, distance to the health facility, having to take transport, finding someone to go with you, concern that there may not be a female healthcare provider, or any health provider, and concern that there may be no drugs available. We examined the percent of women reporting each barrier, and stratified them by residence, education, and wealth to understand women's perception in the given context.

Finally, we used the case study of Meghalaya, a state in the northeast of India, to understand gender differences in claims (both the number of claims

and the amount in Rs) and examine the alignment between the disease burden and healthcare claims for use. De-identified claims data were available from the official website of the SHSRC with the procedure details available for female and male participants, along with category details (package details) and care type. Available data reported broadly 33 categories of disease packages and procedures. We excluded data on reproductive and maternal health-related areas as comparisons were not possible for these areas. To collate the volume of claims and amounts reimbursed, we assessed the top 15 categories for claims and amounts. We investigated each procedure category reported in detail, using additional details available in the data portal, through web searches to reduce any misclassification, and with the assistance of a medical professional, where required. Disease packages in the data were identified by the speciality they referred to. We further scrutinised packages according to each line item to check their match and for inclusion in the analyses. We excluded disease categories with under 100 cases or if the total sum was below Rs 1.25 Lakh. Further, for each claim made, the total amount claimed and amount paid were available. We used the total sum paid in the analysis (average differences in **Appendix Table 4**). For a subset of top 10 disease categories, we compared the claim amounts and numbers with the per cent of the burden of disease for the state through the India State-Level Burden of Disease Study. We examined these estimates by age, residence, district, and hospital type.

3. Findings

3.1 The Changing landscape of Women's Health Needs

India's disease burden has noted rapid shifts in the past two decades, from communicable to NCDs, with implications for healthcare service delivery (Quigley, 2006). This trend extends to the disease burden among women, noted in a sharp rise in mortality and morbidity due to CVDs, diabetes, cancers, and chronic respiratory diseases, among others. Mortality estimates show a high burden of CVDs, chronic respiratory diseases, and cancer among women, along with diarrhoeal diseases **(Figure 1a: Appendix Table 5a)**. In contrast to men, women reported higher mortality from cancer, neurological diseases, and diarrhoeal diseases, but reported equivalent rates of CVDs, chronic diseases, diabetes and kidney diseases, respiratory infections, and tuberculosis (TB), unintentional injuries, and HIV. For morbidity, measured in DALYs, women's burden was higher for cancer, nutritional deficiencies, musculoskeletal diseases, and diarrhoeal diseases **(Figure 1b: Appendix Table 5b)**. Women reported an equivalent burden for chronic respiratory diseases, unintentional injuries, self-harm, and respiratory diseases, and TB.

Figure 1a: Gender Differences in Cause-Specific Mortality for all age groups in 2018
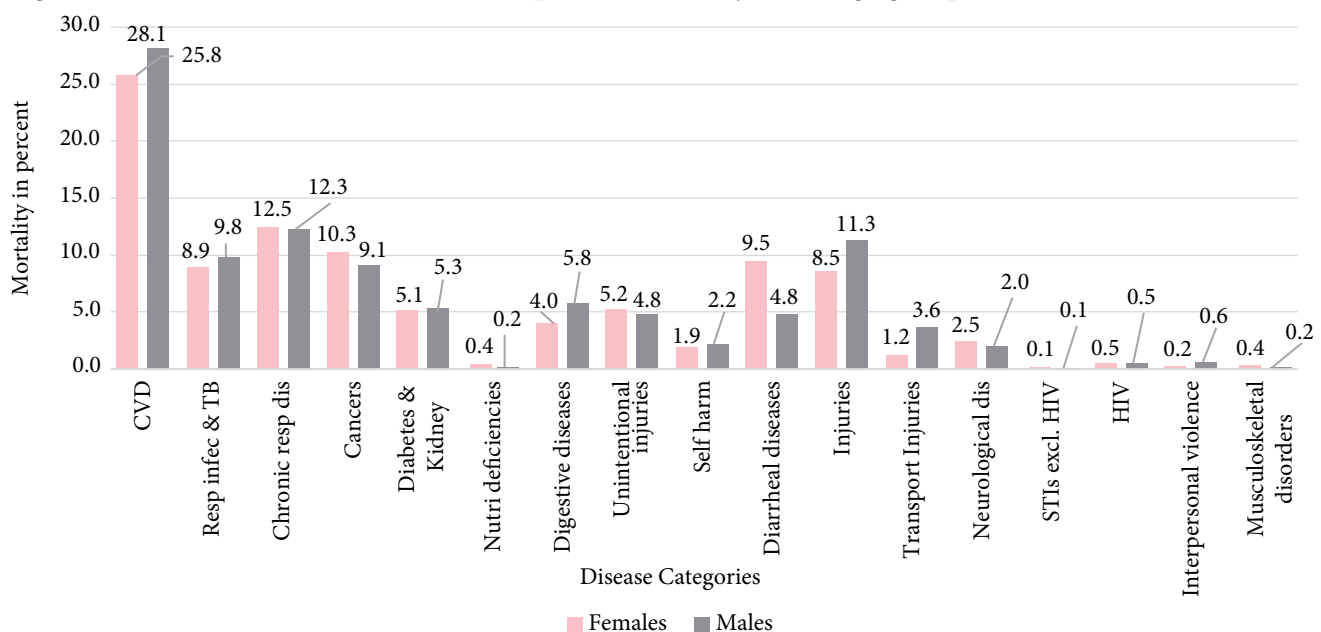
Source: Global Burden of Disease Study 2018.Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india https://vizhub.healthdata.org/gbd-results/ retrieved on June 26, 2023.

Note: Figures represent the percentage of mortality in proportion to total mortality.

Figure 1b: Gender Differences in Cause-Specific Morbidity (in Disability Adjusted Life Years-DALYs) for all age groups in 2018
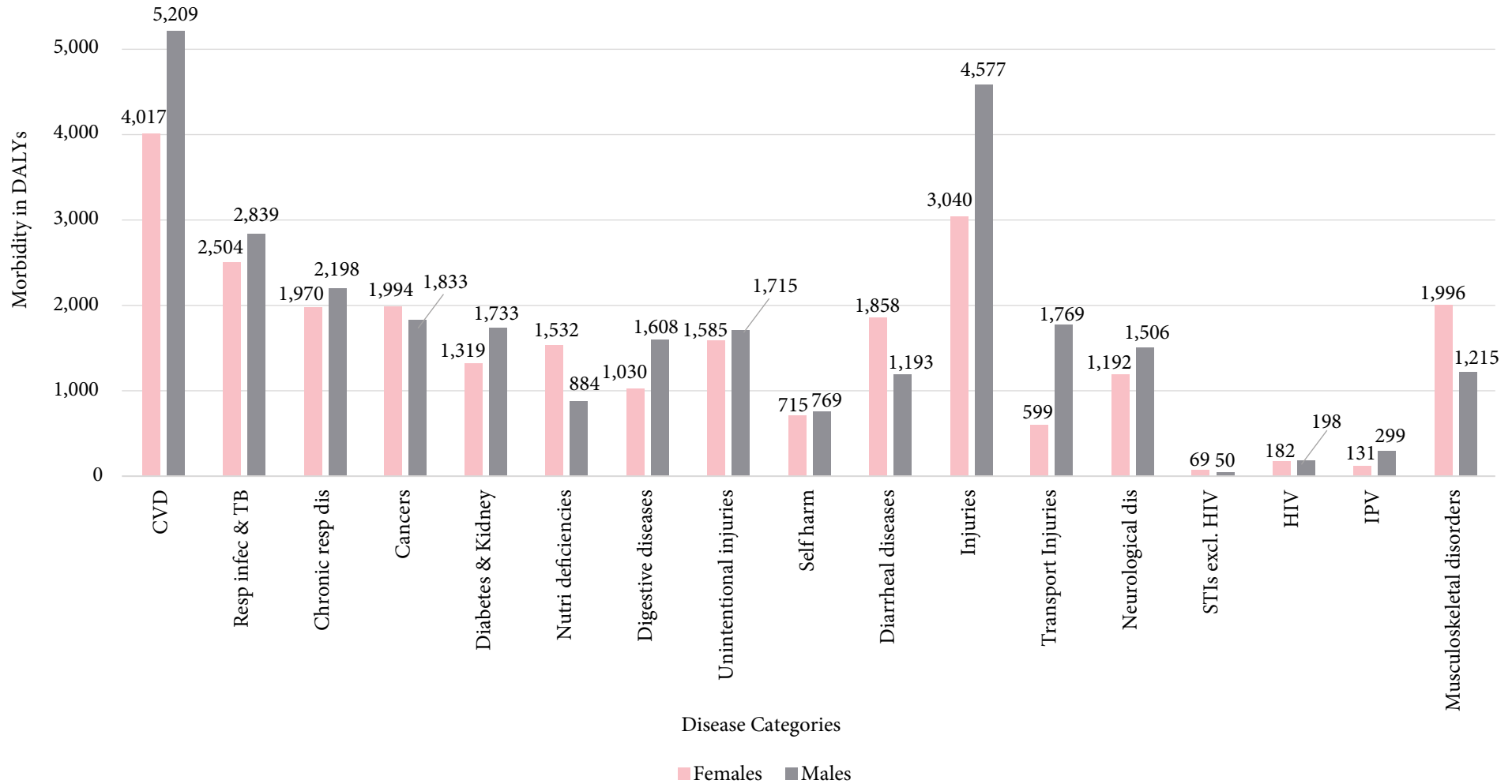
Source: Global Burden of Disease Study 2018.Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india https://vizhub.healthdata.org/gbd-results/ retrieved on June 26, 2023.

Note: Figures represent Disability-Adjusted Life Years (DALYs) caused due to diseases in proportion to total DALYs.

The past two decades (2000–2018) have demonstrated an epidemiological transition with notable changes in women's burden of disease. Several reasons may explain this increase in NCDs among women, including a sedentary lifestyle, lack of a balanced diet, consumption of alcohol and tobacco, and stress. With a rise in the elderly population in India, with higher longevity among women compared to men, the southern states of Kerala and Tamil Nadu are also showing notable rises in NCDs. Health policies in India, including the National Health Mission (NHM), launched in 2005, need to identify strategies to address these NCDs (Kapur, Indranil, Raj et al., 2024). Significant increases were notable among women for the *big four* of NCDs–CVDs, chronic respiratory diseases, cancers and diabetes and a decline in nutritional deficiency-related diseases, respiratory diseases and TB, and diarrhoeal diseases for women, even as the burden of the latter two disease groups remains high (Figure 2a). For morbidity, DALYs increased, but not as sharply as mortality for CVDs, cancer, diabetes and kidney conditions, and for musculoskeletal diseases, and stayed consistent for chronic respiratory diseases (Figure 2b). A decline was noted in DALYs, contrary to mortality for nutritional deficiency diseases, respiratory infections and TB, and diarrhoeal diseases along with small declines in unintentional injuries and self-harm. Cancer also noted higher growth in DALYs for women (22.8 percentage points) compared to 16 percentage points among men. The same was noted for CVDs, with women reporting higher growth in DALYs (13.7 percentage points) compared to 8.9 percentage points among men. However, the widest gender difference in the growth rate was noted for chronic respiratory diseases where the increase in DALYs among women was four times that of men.

Additionally, we examined states that needed priority attention (highest percentage of total state-level mortality) for the big four NCDs **(Figure 3a-d)**. In 2018, the states with highest mortality from CVDs included Punjab (40.6%), Kerala (39.7%), West Bengal (36.5%), Tamil Nadu (33.5%), and Maharashtra (31.9%). Barring Kerala, the other four states showed a sharp rising trend in CVD mortality [Punjab: 28.9% in 2000 to 40.6% in 2018, West Bengal: 26.1% in 2000 to 36.5% in 2018, Tamil Nadu: 24.3% in 2000 to 33.5% in 2018, and Maharashtra 20.8% in 2000 to 31.9% in 2018] **(Figure 3a)**. Kerala reported a stagnant yet higher proportion of CVD deaths among women (40% of all deaths were due to CVDs).

In terms of the percentage mortality as part of the total mortality in a state, cancer death percentage was highest in the northeastern states of Mizoram and Meghalaya in 2018, followed by Himachal Pradesh, Karnataka, and Haryana **(Figure 3b)**. The increase in cancer deaths rose from 13.3% in 2000 to 20.2% in Mizoram, from 8.1% to 14.2% in Meghalaya, from 9% to 12.5 % in Himachal Pradesh, from 8.4% to 12.4% in Karnataka, and from 7.3% to 12.4% in Haryana. These state patterns need further unpacking by type of cancer among women, which is critical in understanding their care needs.

Chronic respiratory diseases (CRDs) noted steep rises with Himachal Pradesh (21.6%), Rajasthan (20.3%), Uttarakhand (19%), J&K (17.5%), and Mizoram 19.7% reporting high proportions in 2018 **(Figure 3c)**. All the noted substantial increases took place over the last two decades. Sharp rises have also been noted in the mortality from diabetes and kidney diseases among women, from 6.9% in 2000 to 11.8% in 2018 in Tamil Nadu, from 7.4% in 2000 to 9.4% in Kerala, from 4.1% in 2000 to 7.1% in Sikkim, from 3.3% in 2000 to 6.2% in Arunachal Pradesh, and from 3.5% to 6.1% in Tripura **(Figure 3d)**.

Figure 2a: Per cent Change in Cause-Specific Mortality between 2000 and 2018 for all age groups
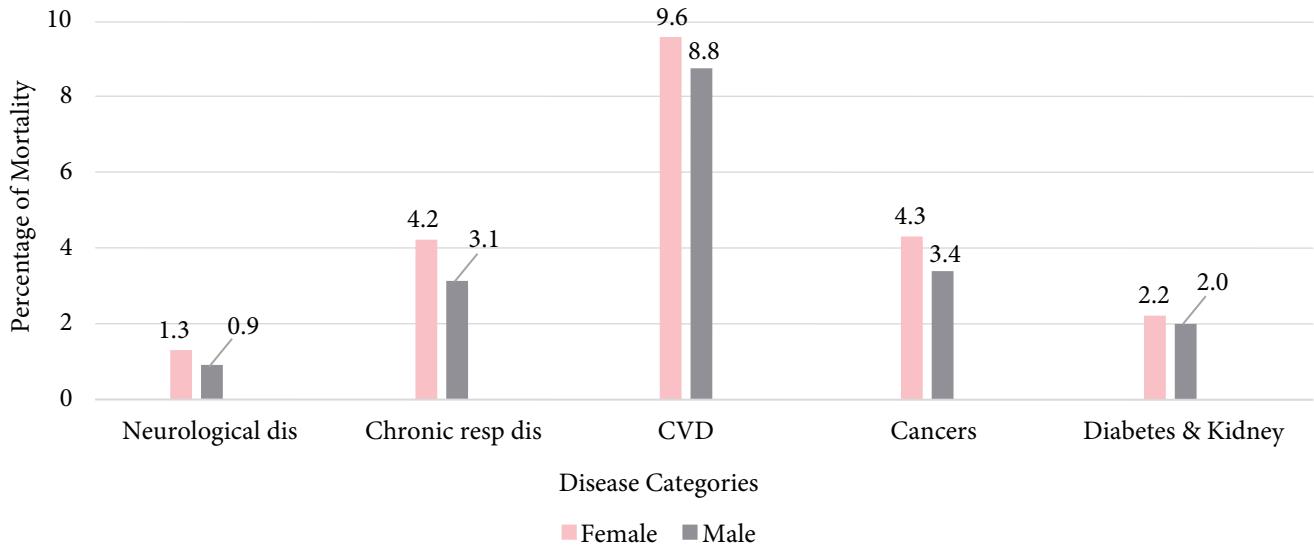
Source: Global Burden of Disease Study 2018. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india as accessed on June 30, 2023.

Note: All figures represent percentage point difference in propotion to total deaths.

Figure 2b: Per cent Change in Cause-Specific Morbidity in (in Disability Adjusted Life Years-DALYs) between 2000 and 2018 for all age groups
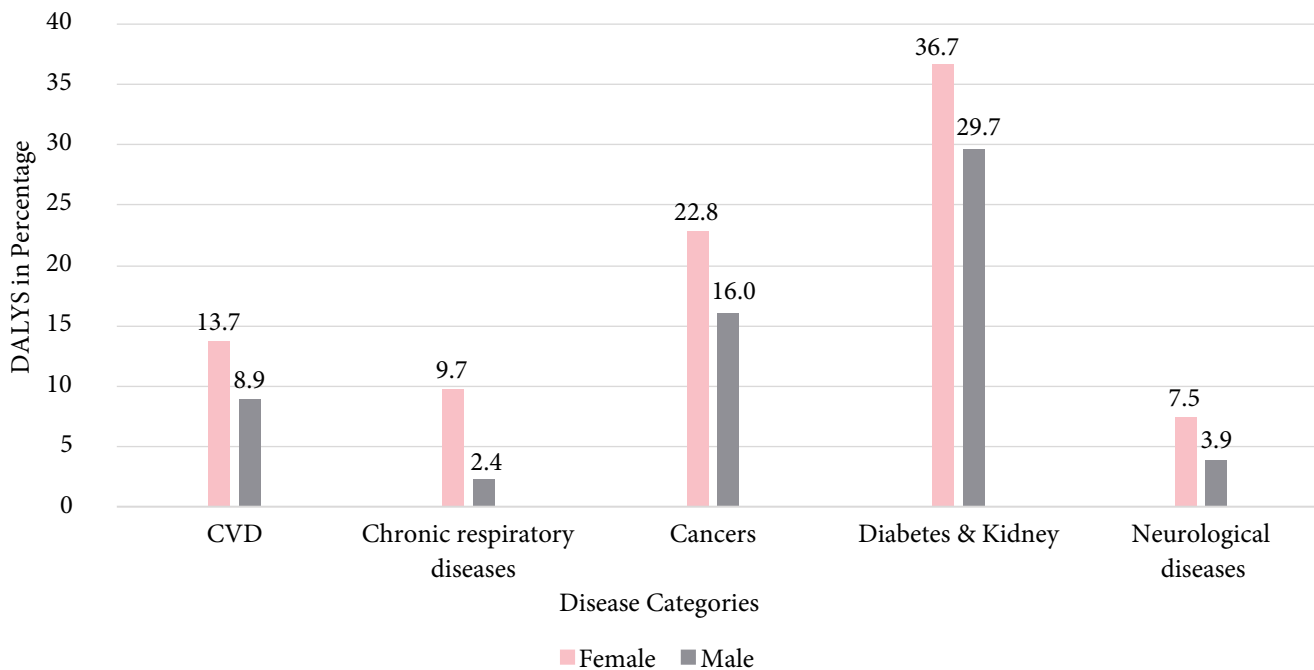
Source: Global Burden of Disease Study 2018. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india as accessed on June 30, 2023.

Note: All figures represent percentage point difference in propotion to total deaths.

Figure 3a-d: Change in Mortality Represented in Percentage Due to the Four Major Non-Communicable Diseases (NCDs) Among Women From 2000-2018: (a) Cardiovascular Diseases (CVDs) (b) Cancer (c) Chronic Respiratory Diseases & (d) Diabetes and Kidney Diseases

Figure 3a: Change in Mortality Among Women of All Ages Due to Cardiovascular Diseases in Proportion to Total Mortality Due to All Causes
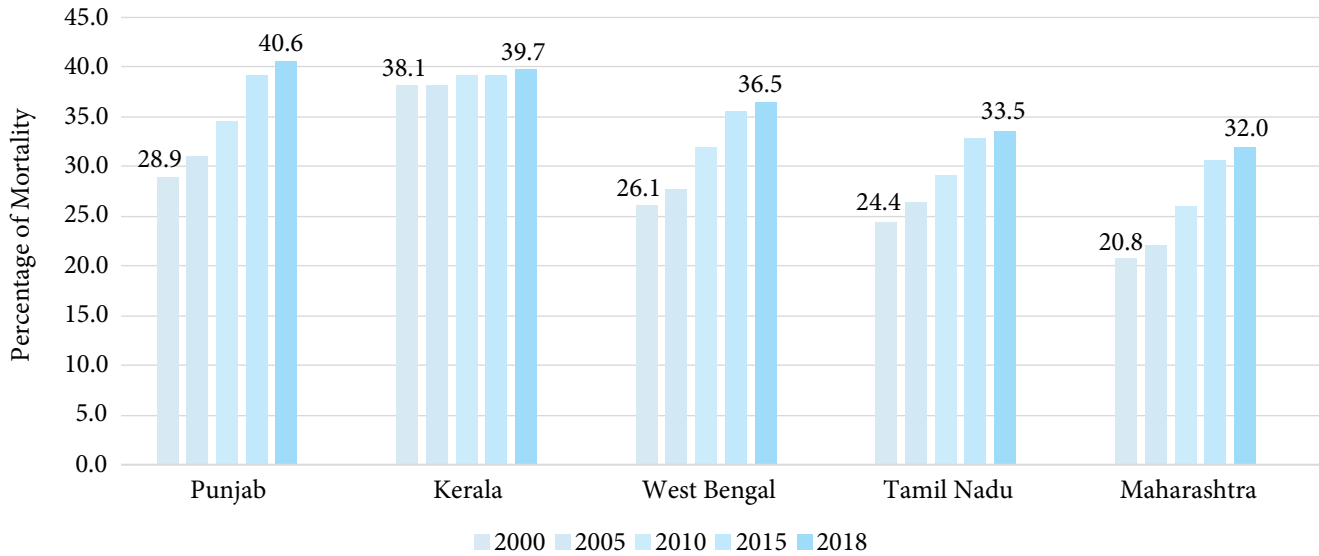
Figure 3b: Change in Mortality Among Women of All Ages Due to Cancer in Proportion to Total Mortality Due to All Causes
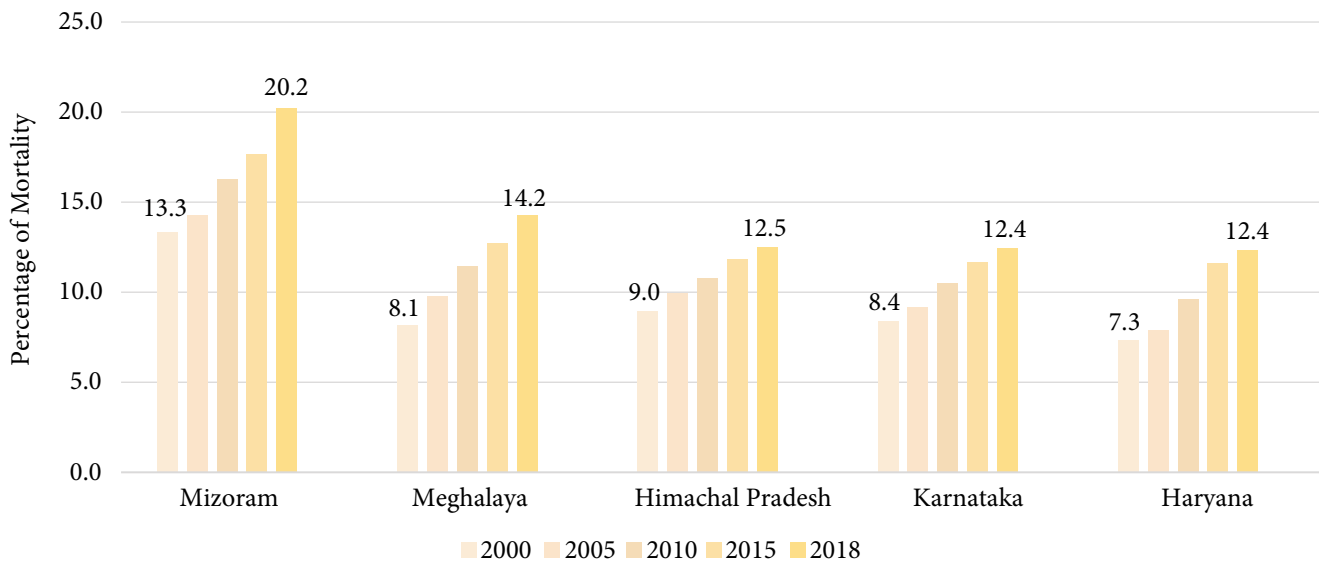
Figure 3c: Change in Mortality Among Women of All Ages Due to Chronic Respiratory Diseases in Proportion to Total Mortality Due to All Causes
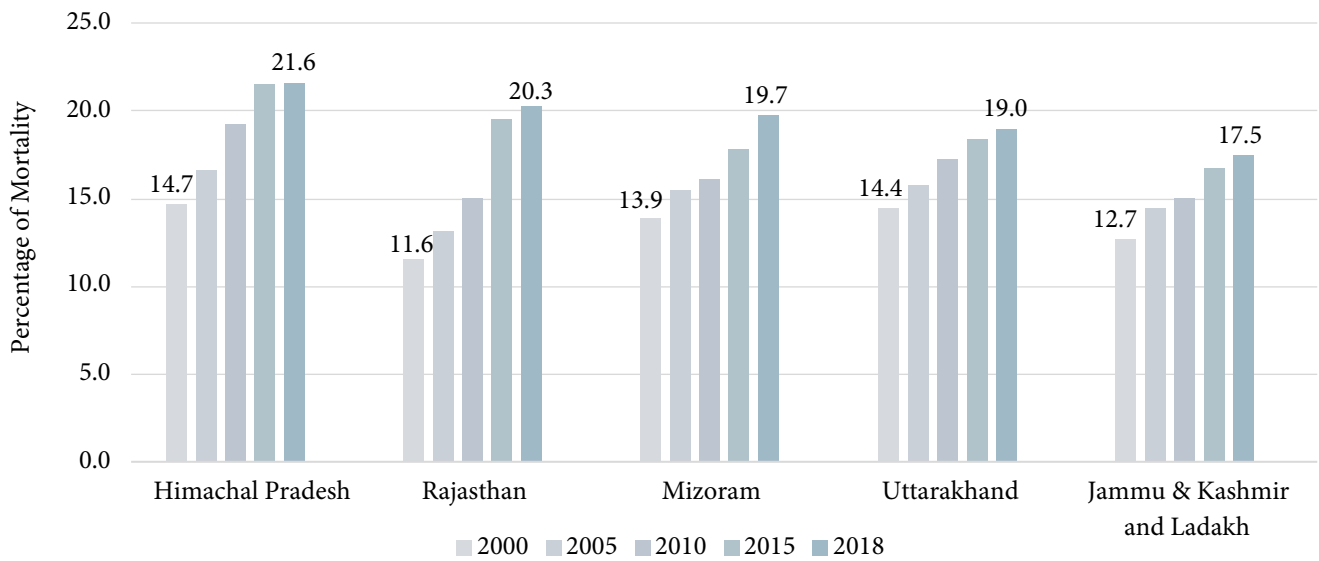
Figure 3d: Change in Mortality Among Women of All Ages Due to Diabetes and Kidney Disorders in Proportion to Total Mortality Due to All Causes
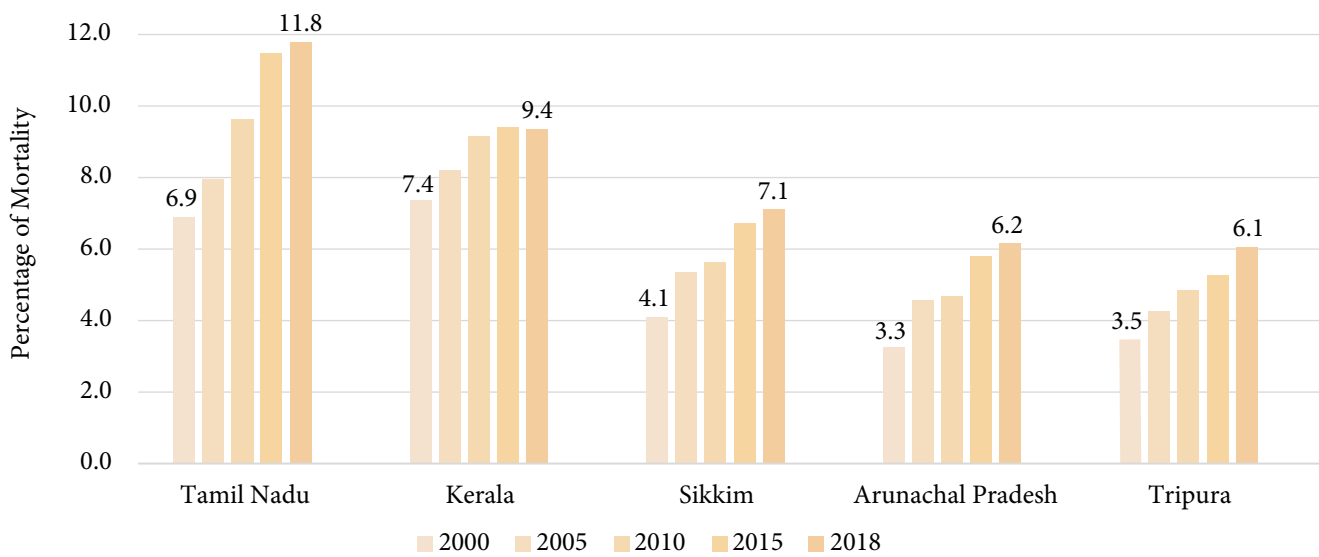
Source: Global Burden of Disease Study 2018.Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub. healthdata.org/gbd-compare/india https://vizhub.healthdata.org/gbd-results/ retrieved on June 26, 2023.

For morbidity, data from 2019 was used instead of 2018 for comparability and showed that DALYs related to cancer among women increased by 71% **(Figures 4a)**. Data for cancer, incorporate diverse cancer types (e.g., ovarian, breast, colon, stomach) and further disaggregation is needed to understand the patterns by type of cancer. States that noted the highest DALYs in cancer included Uttar Pradesh, Maharashtra, Karnataka, West Bengal, and Tamil Nadu.

For diabetes and kidney diseases, a rise of 93% (4,789,718 to 9,245,265 DALYs) was noted in the DALYs between 2000 to 2019 **(Figure 4c)**. These include DALYs for Types 1 and 2 diabetes mellitus and chronic kidney disease occurring due to diabetes and hypertension. The highest DALYs for diabetes and kidney diseases among women were noted in Uttar Pradesh, Maharashtra, Karnataka, and West Bengal.

DALYs for CVDs increased by 56%, which included data for rheumatic and ischemic heart disease, ischemic stroke, and cardiomyopathy **(Figures 4d)**. Women in Uttar Pradesh, Maharashtra, Rajasthan, Bihar, and West Bengal reported the highest DALYs for CVDs. DALYs for chronic respiratory diseases consisting of chronic obstructive pulmonary disor-ders, asthma, occupational diseases such as silicosis and asbestosis increased steeply among women by 51% (8,907,082 to 13,518,422 DALYs) in nearly two decades. The highest DALYs for chronic respiratory diseases were reported among women in Uttar Pradesh, Maharashtra, Rajasthan, Bihar, and West Bengal.

Figure 4a-d: Change in Morbidity Due to the Four Major Non-Communicable Diseases (NCDs) Among Women From 2000-2019: (a) Cardiovascular Diseases (CVDs) (b) Cancer (c) Chronic Respiratory Diseases & (d) Diabetes and Kidney Diseases

Figure 4a: Change in Morbidity (in DALYs) Among Women of All Ages Due to Cardiovascular diseases in Proportion to Total Morbidity Due to All Causes
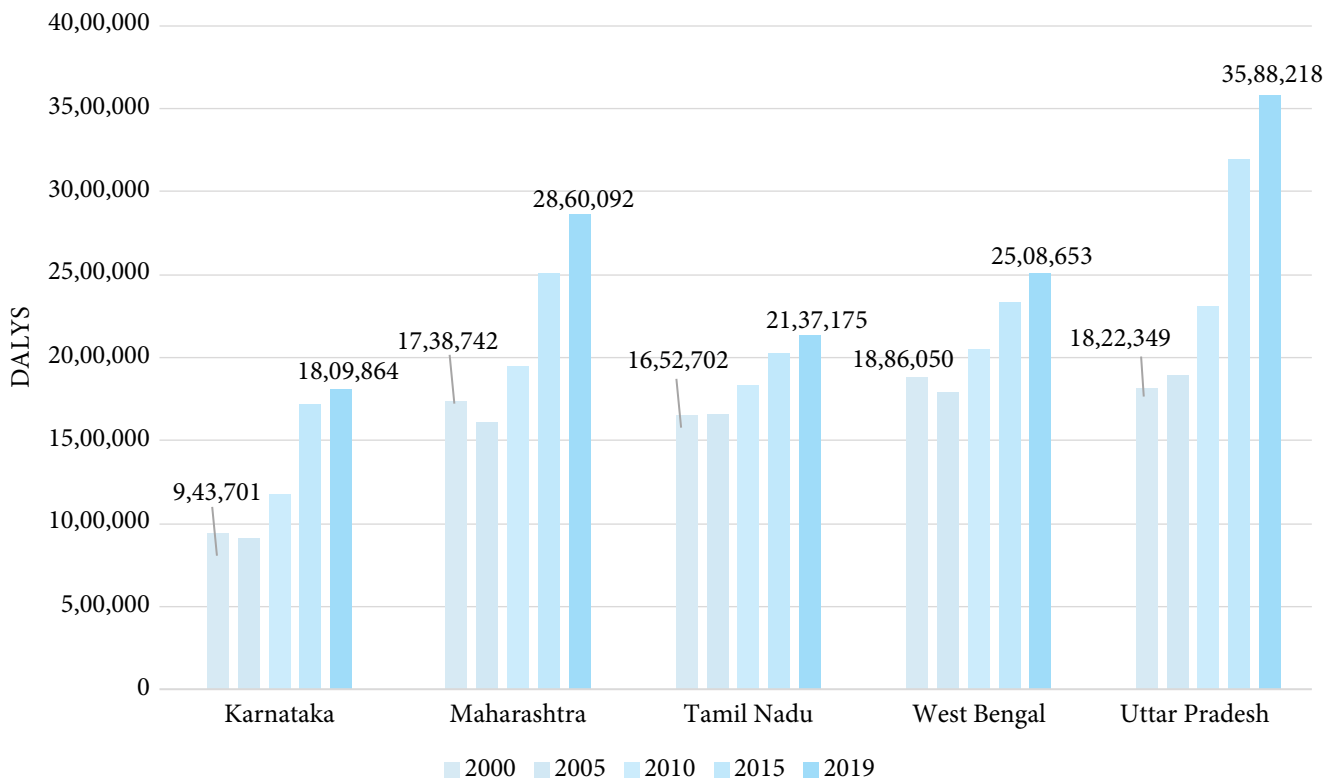
Figure 4b: Change in Morbidity (in DALYs) Among Women of All Ages Due to Cancer in Proportion to Total Morbidity Due to All Causes
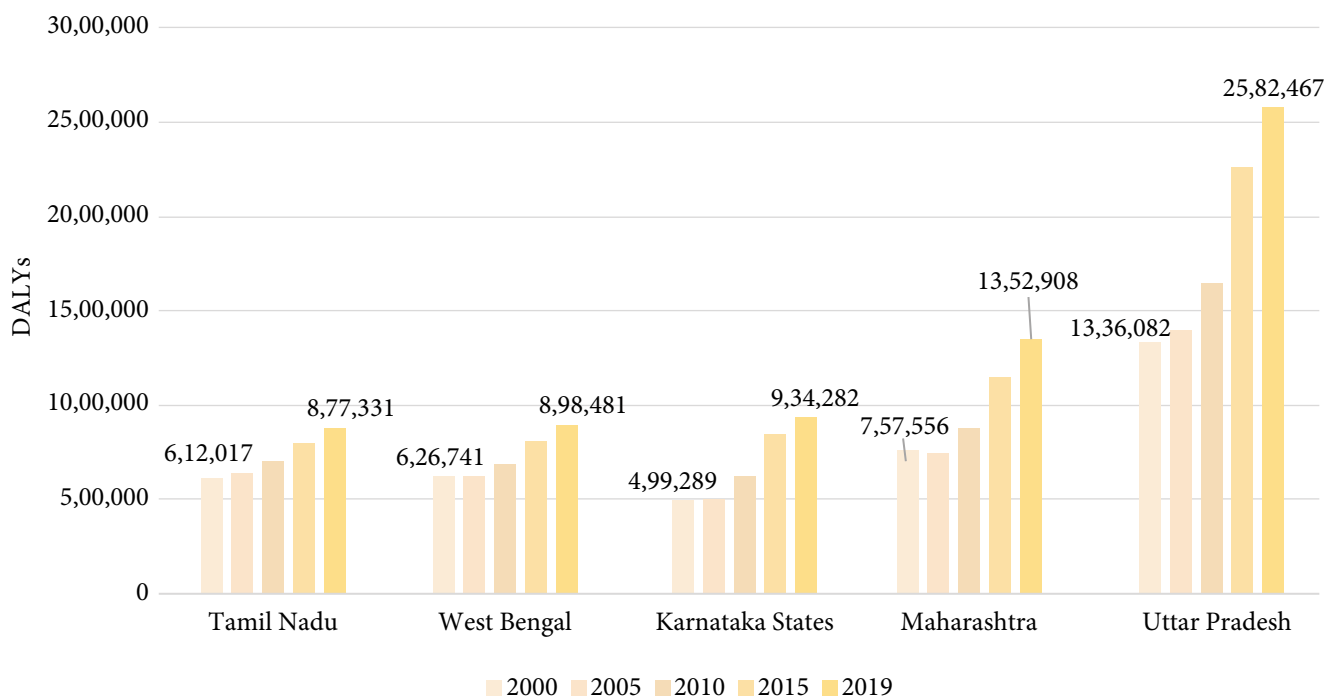
Figure 4c: Change in Morbidity (in DALYs) Among Women of All Ages Due to Chronic Respiratory Diseases in Proportion to Total Morbidity Due to All Causes
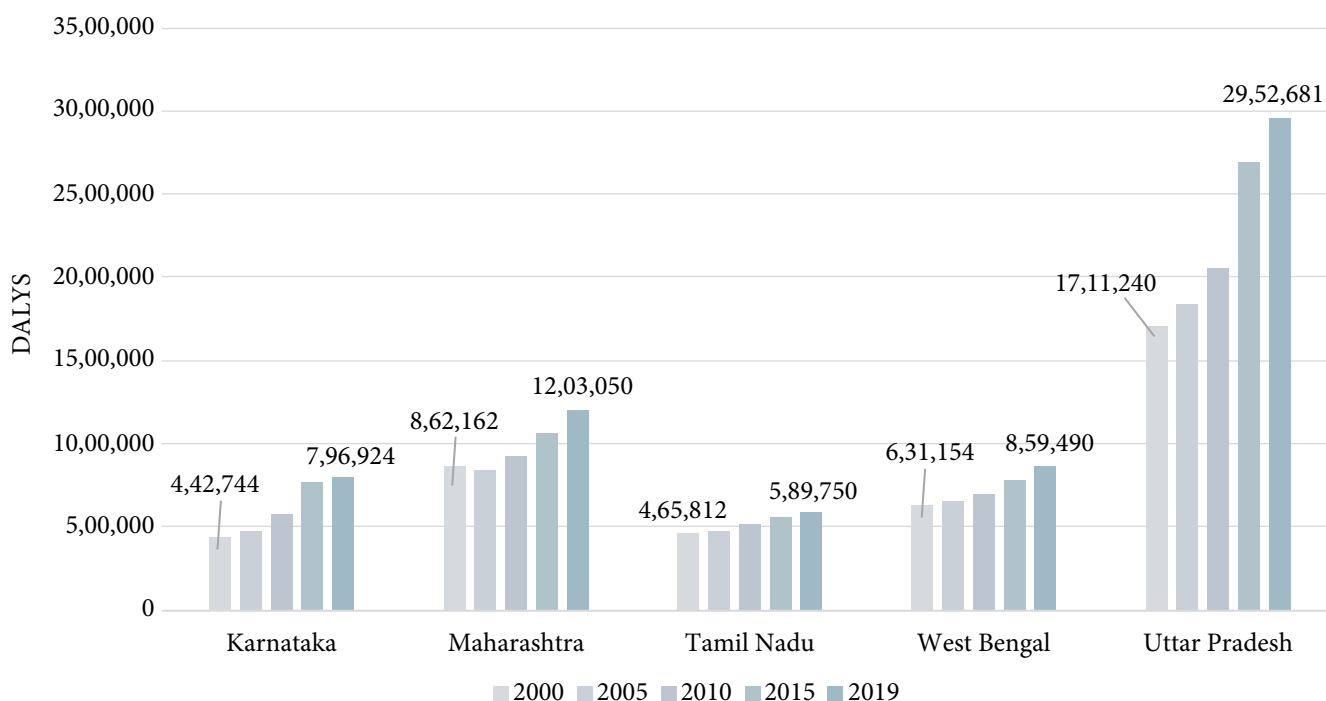
Figure 4d: Change in Morbidity (in DALYs) Among Women of All Ages Due to Diabetes and Kidney diseases in Proportion to Total Morbidity Due to All Causes
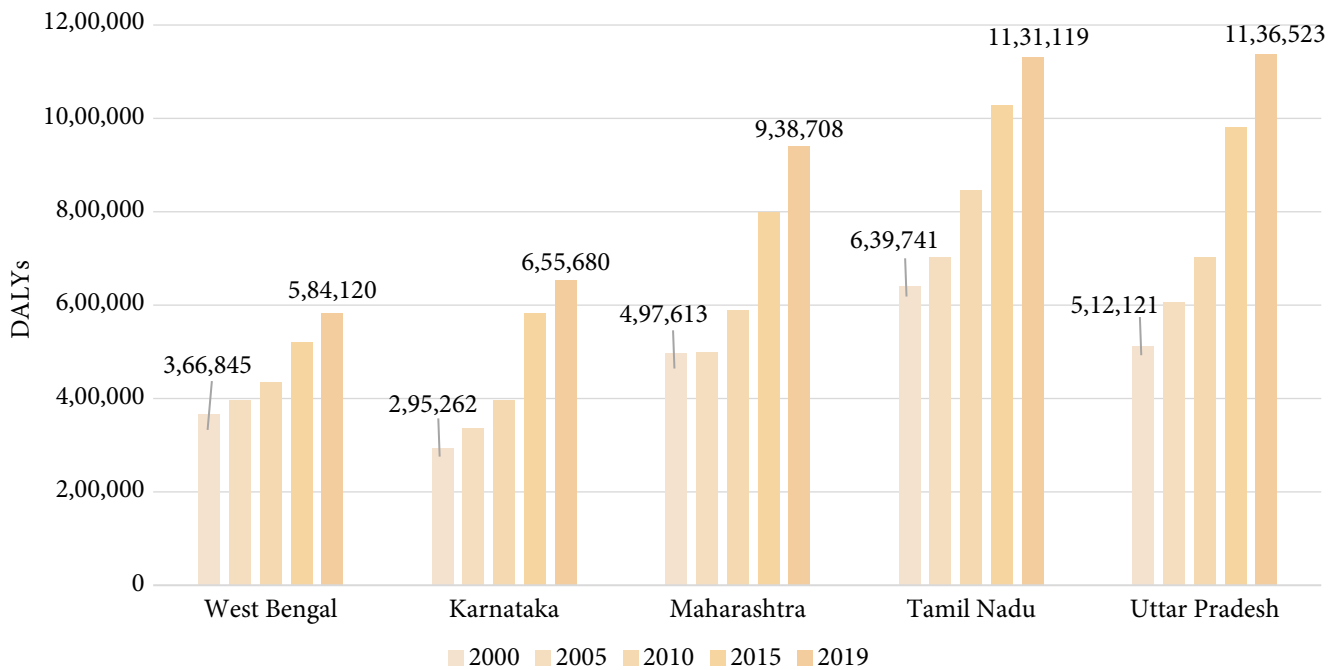
Source: Global Burden of Disease Study 2019. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india retrieved on June 26, 2023.

3.2 Barriers to Women's Healthcare Use

Women between the ages of 15–49 were asked to self-report factors that they considered as '*big barriers*' to healthcare seeking for themselves. Analyses of the data from these 724,115 women showed that women across strata of education and residence considered lack of drugs, health providers and specifically, lack of female health providers as big barriers to their healthcare (Figure 5a-b). These barriers could be stratified as barriers that are specific to the health system (e.g., health providers, supply of drugs, distance, etc.) versus those that relate to women's status and condition within the household (e.g. permission to access healthcare, transport, etc.). Over two in five women reported lack of drugs (43.7%) and lack of health providers (42.2%) as their biggest care barriers. As expected, this differed significantly across rural versus urban residence (Figure 5b). In rural settings, nearly one in two women (46%) reported lack of drugs and providers as big barriers compared to nearly one in three women in urban areas. Overall,

nearly one in three women (32.8%) described lack of female health providers as a problem in accessing healthcare for themselves. This varied between 35% in rural areas and 25.2% in urban areas.

Nearly one in four women between the ages of 15–49 years described distance and transport as other big barriers to their healthcare-seeking. Differences were stark across rural and urban areas for both transport (12.5% for urban and 28.9% for rural) and distance (14% for urban and 30% for rural) as barriers. Needing family permission (14%) and needing a person to accompany them (18%) were important agency-related barriers reported by a significant number of women. Needing someone to accompany them (11.5% in urban and 20.3% in rural) and needing permission (9.8% in urban and 15.4% in rural) also differed starkly among rural and urban areas. Lack of money for healthcare was perceived as a big barrier, and there were no differences across levels of insurance.

Figure 5a: Barriers to Women's Health-Seeking as Reported by Women (15–49 Years) in the NFHS, 2019–21
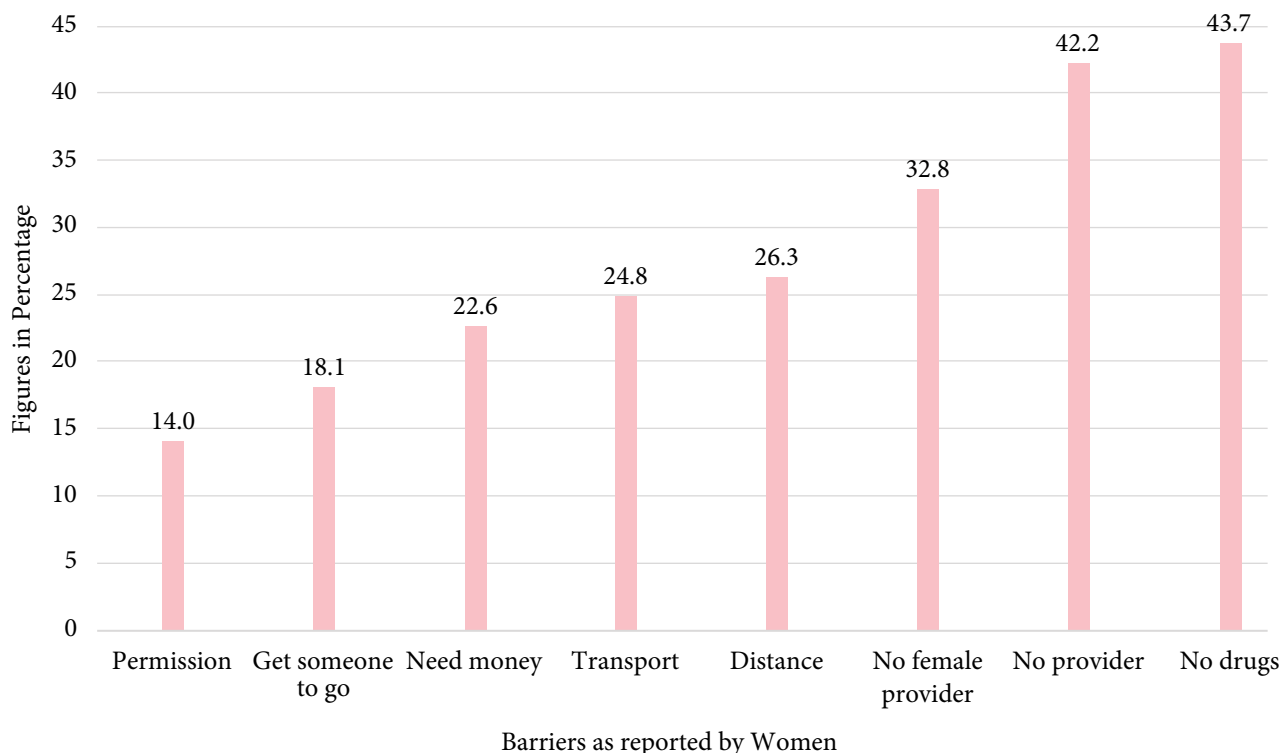
Source: National Family Health Survey, 2019–21.

Figure 5b: Barriers to Women's Health-Seeking Across Rural and Urban Areas as Reported by Women (15–49 Years) in the NFHS, 2019–21
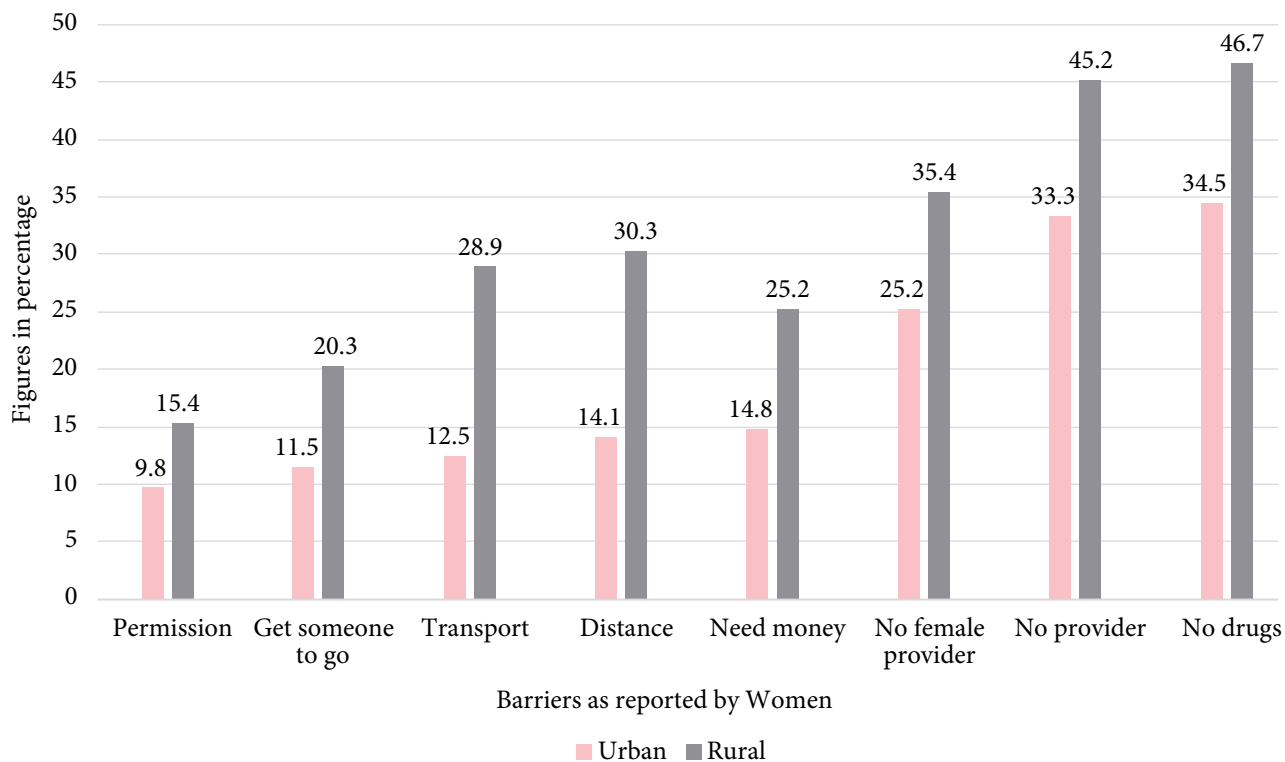
Source: National Family Health Survey, 2019–21.

3.3 Women's Agency and Social Determinants of Insurance Access

Data from 2019–20 on self-reported access (captured as enrolment) to insurance among women between the ages of 15–49 years showed wide variation across states. Women in Rajasthan reported the highest insurance access (84%) among women of this age **(Figure 6a)**. The Union Territory of Jammu and Kashmir reported the lowest insurance access (2%). States with coverage of over 60% in the NFHS included Telangana (65.7%), Meghalaya (66.8%), Chhattisgarh (69%), Goa (70%), Andhra Pradesh (74.7%), and Rajasthan (84.1%). Most of these states had ongoing state health insurance programs **(Appendix Table)**. States with insurance coverage lower than 30% included Jammu & Kashmir (1.99%), Uttar Pradesh (8.3%), Manipur (9.04%), Bihar (10.4%), Nagaland (10.8%), Punjab (10.9%), Chandigarh (13.8%), Haryana (15.4%), Maharashtra (15.9%), Sikkim (17.1%), NCT of Delhi (17.4%), Arunachal Pradesh (18.7%), Karnataka (22.1%), Madhya Pradesh (25.8%), West Bengal (26.6%), Tripura (28.9%), and Himachal Pradesh (29.6%).

State-level disaggregation of insurance accessed by type indicated that in high insurance-coverage states, most women reported having access to state or community insurance, with highest proportions in in Goa (56.%), Meghalaya (58.5%), Chhattisgarh (60.1%), Telangana (62.9%), Andhra Pradesh (70.7%), and Rajasthan (82.5%) **(Figure 6b)**. Most of these states had ongoing state health insurance programs, with the measurement year overlapping with the initiation of the PMJAY. Women in three states–Jharkhand (35.2%), Uttarakhand (41.1%), and Assam (53.1%) reported a high proportion of other types of insurance that excluded state or community insurance as well as employer-focused insurance including via medical reimbursement. State-specific analyses, that provide more granular data on these other types, can shed light on the specific sources of health financing for women. In 2019, in as many as 17 states, 70% or more married women in the age group of 15–49 years reported not having any insurance as per NFHS data. Many of these states have since implemented the PMJAY or state health insurance programs with high and growing enrolment numbers **(Figure 6c)**. The new round of NFHS will provide an update to this data, as a large number of women have since enrolled in the national insurance scheme. Current publicly available data on enrolment shows high growth in numbers of women and men in their access to PMJAY across states. These data relate not only to the married 15–49-year old women but cover all women. As of January 17, 2024, 148 million women and 153 million men were enrolled in PMJAY.

Figure 6a: Per cent of Women (15–49 Years) Reporting Access to Any Health Insurance Across Indian States as per NFHS-5 (2019–21)
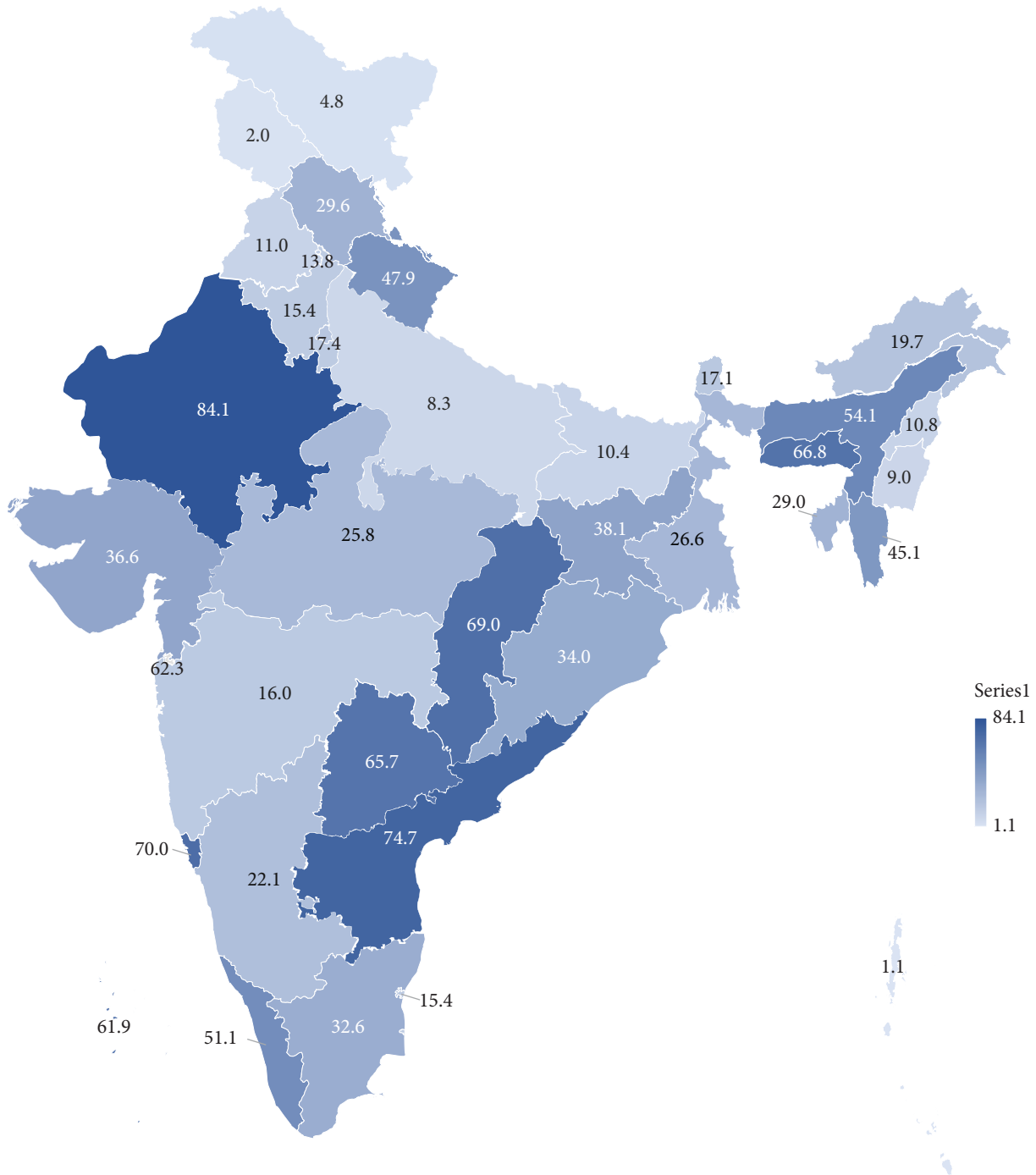
Source: NFHS-5, 2019–21.

Please note that 62.33% women in Dadra and Nagar Haveli, 15.43% women in Puducherry, 1.13% women in Andaman and Nicobar Islands and 61.91% women in Lakshadweep reported having atleast one type of insurance.

Figure 6b: Per cent of Women (15–49 Years) Reporting Access to State Health Insurance or Community Health Insurance Across India as per NFHS-5 (2019–21)
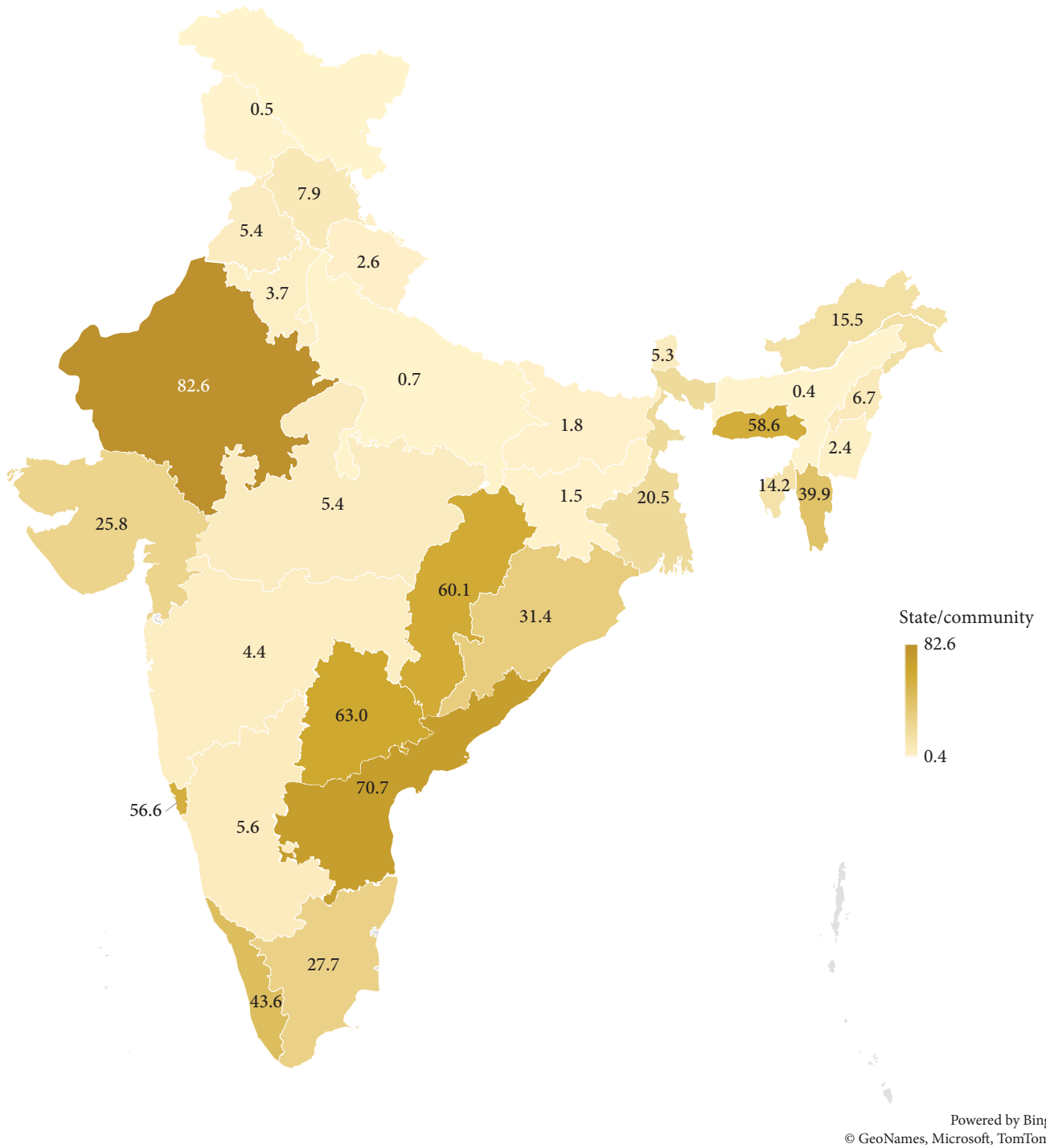
Source: NFHS-5, 2019–21.

Note: State health insurance includes coverage under various state health insurance schemes and RSBY. Please note, the figure for Jammu & Kashmir includes Leh and Kargil districts of Ladakh.The state was converted into two union territories–i. Jammu and Kashmir and ii. Ladakh since August 5th, 2019.

Figure 6c: Number of Women (In Millions) Enrolling in the National Health Insurance Scheme (Pradhan Mantri Jan Arogya Yojana (PMJAY)) as of November 2023
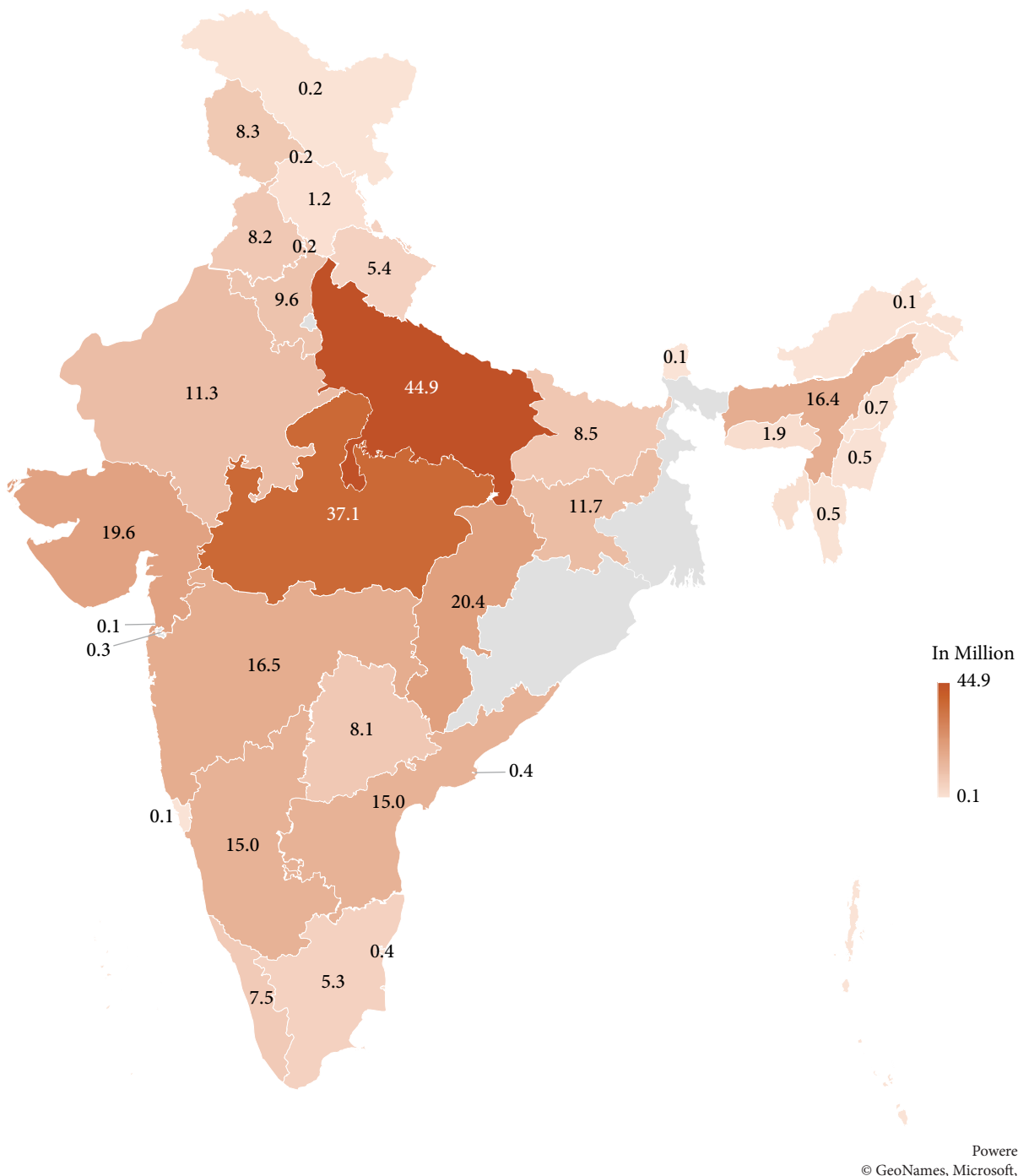
Source: https://dashboard.pmjay.gov.in/pmj/#/ as accessed on November 30, 2023.

Note: Uttar Pradesh has the highest number of enrolments in the PMJAY scheme as 44 million people enrolled, followed by Madhya Pradesh with 37 million population covered under PMJAY. Delhi, Odisha, and West Bengal have not joined PMJAY, and therefore the map indicates these states/UT in grey. This represents sharp increase in insurance coverage as compared to NFHS-5 (2019–21). In Lakshadweep and Andaman and Nicobar, 0.03 millions each were enrolled in the PMJAY.

We investigated the role of women's agency and their socioeconomic status in determining access to insurance by type. We modelled access to insurance as a function of women's agency (represented by women's control over their finances, movement, and health decision-making), their education, ownership of a phone, residence, and their household wealth status **(Table 1)**. Women's agency may be associated with their preferences for or access to insurance via two pathways. One, women's agency may be noted in the confidence and decision-making in exercising control over life choices, including decisions related to their own money, healthcare, and movement. Secondly, women's agency may also be influenced by their socioeconomic status (represented by education, wealth, phone, or residence) which may in turn represent an instrumental pathway to accessing health insurance. We examined both these pathways to health insurance.

Our findings show that women who demonstrated greater self-control in their life choices, including financial decision-making, health-related decision-making, and their movement reported higher access to insurance. However, within this pathway, having access to financial decision-making was associated with a greater likelihood of employment-related insurance, while healthcare decision-making and mobility were associated with access to state/community health insurance.

Women who reported control over their financial decision-making reported higher employment–related insurance [AOR=1.32, (95% CI: 1.20, 1.45)] and lower likelihood of state/community insurance [AOR=0.91, (95% CI: 0.87, 0.94)]. Control over healthcare decision-making, however, was associated with a greater likelihood of having state/community insurance [AOR=1.29, (95% CI: 1.19, 1.38)] and of other insurance [AOR=1.42, (95% CI: 1.29, 1.57)]. Having control over movement to go to a health facility (that is, allowed to go alone) was associated with having all insurance types, though marginally more with employment-based insurance [AOR=1.65, (95% CI: 1.29, 2.10)], compared to state/community insurance [AOR=1.53, (95% CI: 1.39, 1.68)] and other insurance types [AOR=1.47, (95% CI: 1.31, 1.65)].

The second pathway about the role of instrumental factors such as access to a mobile phone, education, and the role of residence also demonstrated association with employment-based insurance. Owning a mobile telephone was associated with a greater likelihood of employment-based insurance [AOR=1.17, (95% CI: 1.05, 1.31)].

In our multinomial regression models, rural residence was associated with a lower likelihood of employment related insurance [AOR=0.84, (95% CI: 0.75, 0.93)], but a higher likelihood of state/community insurance [AOR=1.35, (95% CI: 1.28, 1.42)] and other insurance [AOR=1.09, (95% CI: 1.02, 1.17)]. This may be due to lower employment of women in the formal organised sector and higher coverage of PFHI in rural areas. Women's higher education was associated with a greater likelihood of having employment-related insurance [AOR=1.64, (95% CI: 1.39, 1.93)]. However, the relationship between women's education and state/community insurance was inverse, where higher educated women reported a lower likelihood of having state/community insurance.

Overall, we found freedom of mobility to be associated with all insurance types, with greater associations for employment-focused insurance. Greater financial decision-making agency, higher education, and owning a telephone were associated with greater employment-focused insurance potentially, as this likely accrued due to a greater likelihood of workforce participation and asset ownership. Associations with employment-related health insurance signalled healthcare dynamics among poorer women and showed complex associations between higher healthcare decision-making, lower education, lower financing decision-making, and rural residence. It is possible that women who report access to employment-focused insurance already demonstrate greater agency on several other markers, while for poorer women, healthcare through state-focused insurance offers a pathway to greater agency. Localised studies that capture the health insurance dynamics may be better suited to understand these dynamics.

Enhancing women's empowerment as an instrument to improving their health has been an important policy instrument. But our findings also reflect the significant diversity within the larger framing of women's empowerment and highlight different strands based on the metric of empowerment used. Further, markers of women's empowerment can also be used to understand the levels of access that women have to insurance as a mechanism to pay for health. We found that women's access to employment-based insurance was limited and dependent on women's engagement in the formal organised sector. In this context, state and community insurance was an instrument for poorer women, and coverage of this instrument could be an important lever for enhancing access to health, especially for women in poorer households.

Table 1: Results from the Multinomial Regression Analyses to Understand the Role of Women's Agency and Socioeconomic Status with Access to Insurance in the NFHS-5 (2019–21)

	Employment related Insurance	State/community insurance	Private insurance
Urban	1.00	1.00	1.00
Rural	0.84* (0.75,0.93)	1.35* (1.28,1.42)	1.09* (1.02,1.17)
Education: None	1.00	1.00	1.00
Primary	1.08 (0.91,1.29)	0.92* (0.86,0.97)	1.13* (1.04,1.21)
Secondary	1.18* (1.03,1.34)	0.67* (0.64,0.70	1.11* (1.05,1.18)
Higher (13+)	1.64* (1.39,1.93)	0.52* (0.48,0.56)	1.16* (1.05,1.27)
Wealth Quintile_1	1.00	1.00	1.00
Wealth Quintile_2	1.11 (0.92,1.32)	1.34* (1.26,1.42)	0.90* (0.84,0.96)
Wealth Quintile_3	1.41* (1.19,1.68)	1.75* (1.65,1.86)	0.64* (0.59,0.69)
Wealth Quintile_4	1.56* (1.31,1.87)	1.85* (1.73,1.97)	0.52* (0.48,0.57)
Wealth Quintile_5	2.49* (2.07,2.98)	1.46* (1.35,1.57)	0.46* (0.42,0.51)
Have any money of your own that you alone can decide how to use: No	1.00	1.00	1.00
Yes	1.32* (1.20,1.45)	0.91* (0.87,0.94)	0.96 (0.91,1.01)
Person who usually decides on respondent's healthcare: Husband/Other	1.00	1.00	1.00
Joint	0.92 (0.81,1.03)	1.03 (0.98,1.08)	1.41* (1.31,1.50)
Respondent alone	1.10 (0.93,1.31)	1.29* (1.19,1.38)	1.42* (1.29,1.57)
Usually allowed to go to the health facility: Not at all	1.00	1.00	1.00
Alone	1.65* (1.29,2.10)	1.53* (1.39,1.68)	1.47* (1.31,1.65)
With someone else only	1.16 (0.90,1.49)	1.35* (1.23,1.48)	1.26* (1.12,1.41)
Owns a mobile telephone: No	1.00	1.00	1.00
Yes	1.17* (1.05,1.31)	0.97 (0.93,1.01)	1.04 (0.98,1.09)

Source: Author's own calculation, data retrieved from NFHS, 2019–21.

(*) represents statistical significance at the 0.05 level of significance.

3.4 Case Study of Meghalaya: Gender Differences in Health Utilisation With Insurance

The Meghalaya Health Insurance Scheme (MHIS) was launched in 2012 and has recently been integrated with the national health insurance scheme, PMJAY. MHIS facilitates secondary and tertiary healthcare access to all women in the state (excluding those under the ESIS and CGHS schemes), instead of targeting a defined beneficiary group. The scheme has been implemented in five phases: Phase 1 (2013–2015)–where beneficiaries were offered insurance coverage of Rs 1.6 Lakh per household, Phase 2 (2015–16)–where the coverage amount was increased to Rs 2 Lakh, and Phase 3 (2017)–where

coverage was increased to Rs 2.8 Lakh with an additional coverage of Rs 30,000 for senior citizens. Phase 4 (2018) of the scheme enabled health coverage of Rs 5 Lakh, which was further upgraded to Rs 5.3 Lakh in Phase 5 (2022).[6] Enrolment has continued through these five phases. Integration into the PMJAY has also broadened the scope of treatments, disease packages, and insurance cover. Unlike other publicly funded schemes, MHIS provides some coverage for out-patient services and includes maternity benefits, childcare benefits, cardiac and diabetes preventive care benefits, as well as OPD diagnostics. The number of women covered under the MHIS across the phases has doubled between 2012 and 2023. Across districts, the percentage of women covered ranged from 65–78%, with enrolment continuing to go higher.

Figures 7a-b: Gender Differences in Claim Volumes and Amounts in the Utilisation of the Meghalaya Health Insurance Scheme (MHIS) 2019–2022

Figure 7a: Package-wise Claims Denoted in Volumes by Gender
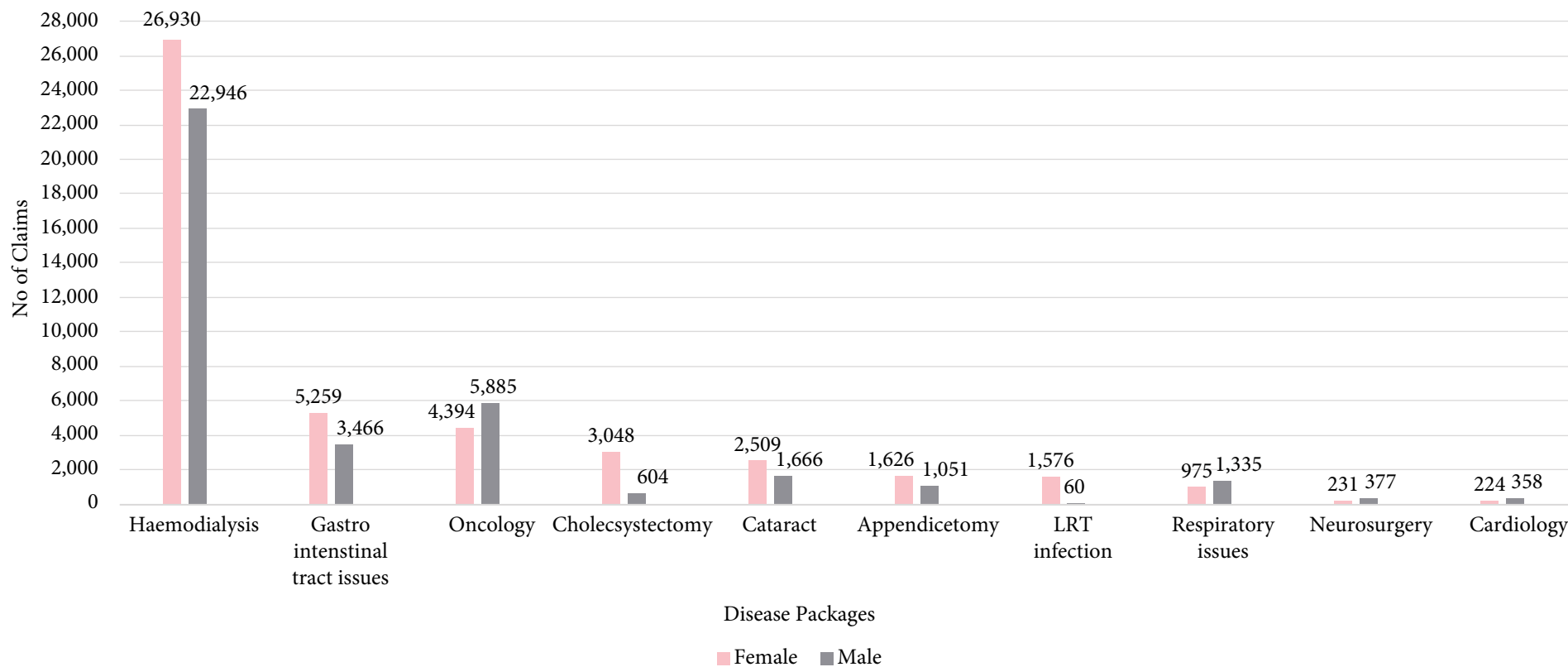
Source: Meghalaya Health Insurance Scheme https://mhis.org.in/ as accessed on September 10, 2023.

Note: We have presented the top eight claims from 35 categories created to understand medical insurance reimbursement. However, we excluded claims and accrued amounts related to general ward unspecified packages and general medicine because details regarding the treated ailments were missing. We also excluded COVID-19 diagnostics and treatments because it is a novel disease.

Figure 7b: Amount Reimbursed for Disease Package Utilisation by Gender (Amount in Crores (Rs))
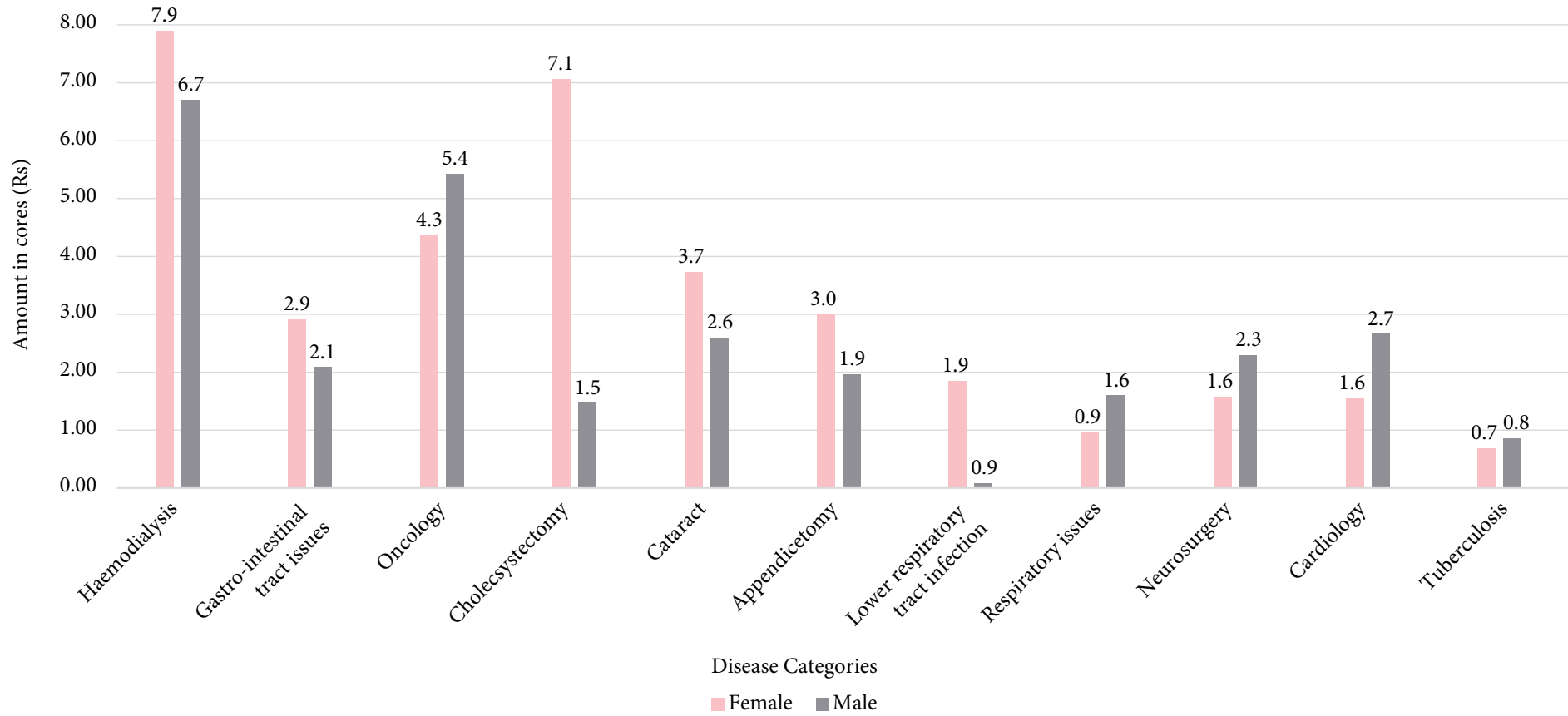
Source: Meghalaya Health Insurance Scheme https://mhis.org.in/ as accessed on September 10, 2023.

Our analyses of claims in the MHIS between February 2019 and June 2022 shows higher volumes and amounts accrued for claims for women for the treatment packages of haemodialysis (26,930 vs 22,946 for men), gastrointestinal tract diseases (5,259 vs. 3466 for men), cholecystectomy (gallbladder removal), lower respiratory infections, and appendicectomy **(Figures 7a-b)**. However, women reported a lower number of claims for oncology–related treatment packages (4,394 vs 5885 for men), respiratory issues, neurosurgery, and cardiology–related procedures. This pattern was also noted for reimbursements received by females compared to males. Sex-distribution of reimbursements showed more reimbursements paid out to women for haemodialysis, gastrointestinal issues, and lower-respiratory tract infection. However, males were more likely to report reimbursements related to oncology-related procedures, respiratory issues, neurosurgery, cardiology, and even TB. We noted the main health issues for women and men by the percentage of mortality and DALYs in the state based on 2000-2018 data from the State Burden of Disease Study **(Figures 8a-b)**. Ironically, the disease burden data showed that while women's share of mortality due to CVDs and neurological diseases was higher, men reported more claims and reimbursements. These data indicate a pattern also seen in other contexts (Dupas & Jain, 2021), where generalist procedures (e.g., appendicectomy or gallbladder removal) may be more available to women, and men are more likely to undergo specialist procedures related to neurosurgery and cardiology.

Figures 8a-b: Gender Differences in Mortality and Morbidity (In DALYs) for Meghalaya as per the India State Level Burden of Disease Study 2018

Figure 8a: Cause Specific Mortality as a Proportion of Total Mortality in Meghalaya in 2018
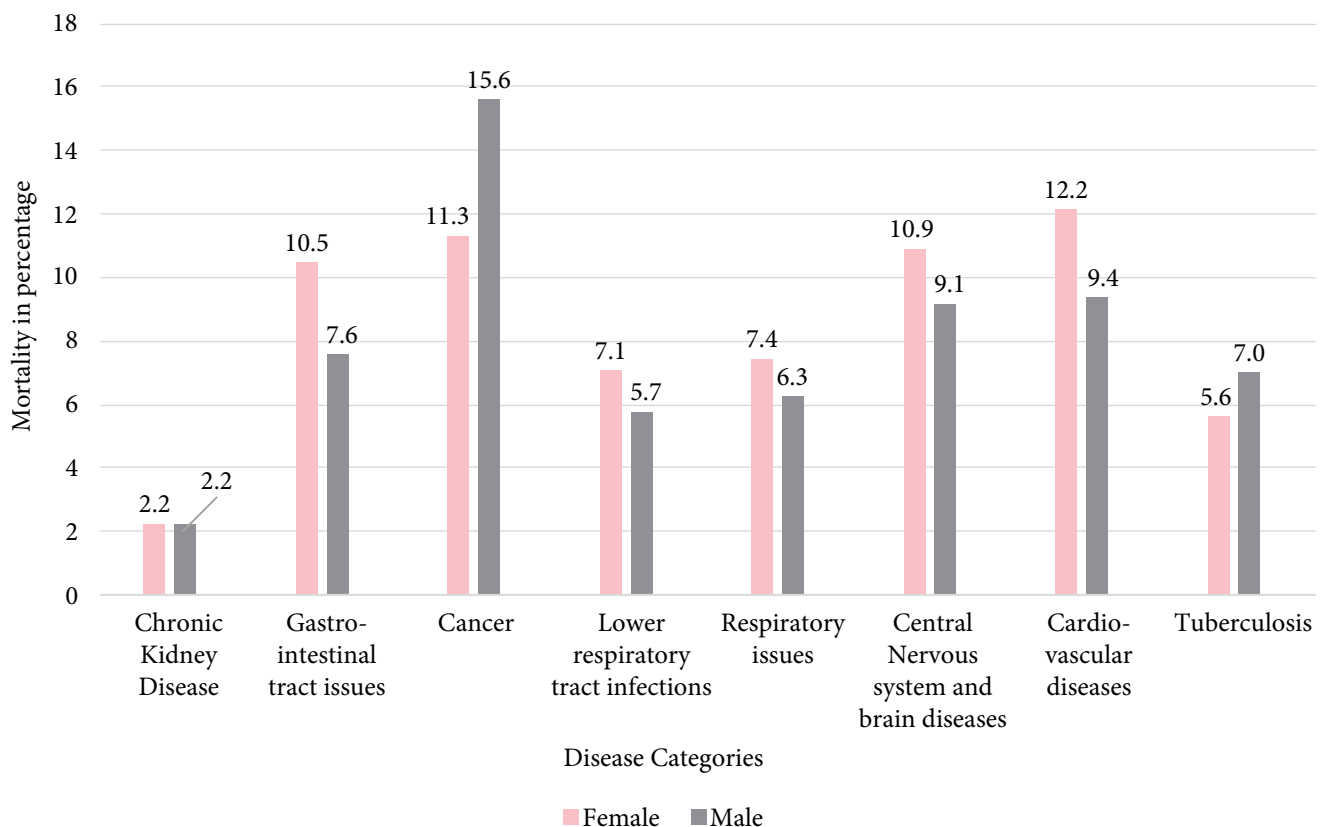
Source: Global Burden of Disease Study 2018. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india as accessed on October 29, 2023.

Figure 8b: Cause specific Morbidity in Meghalaya in proportion to total Morbidity in 2019
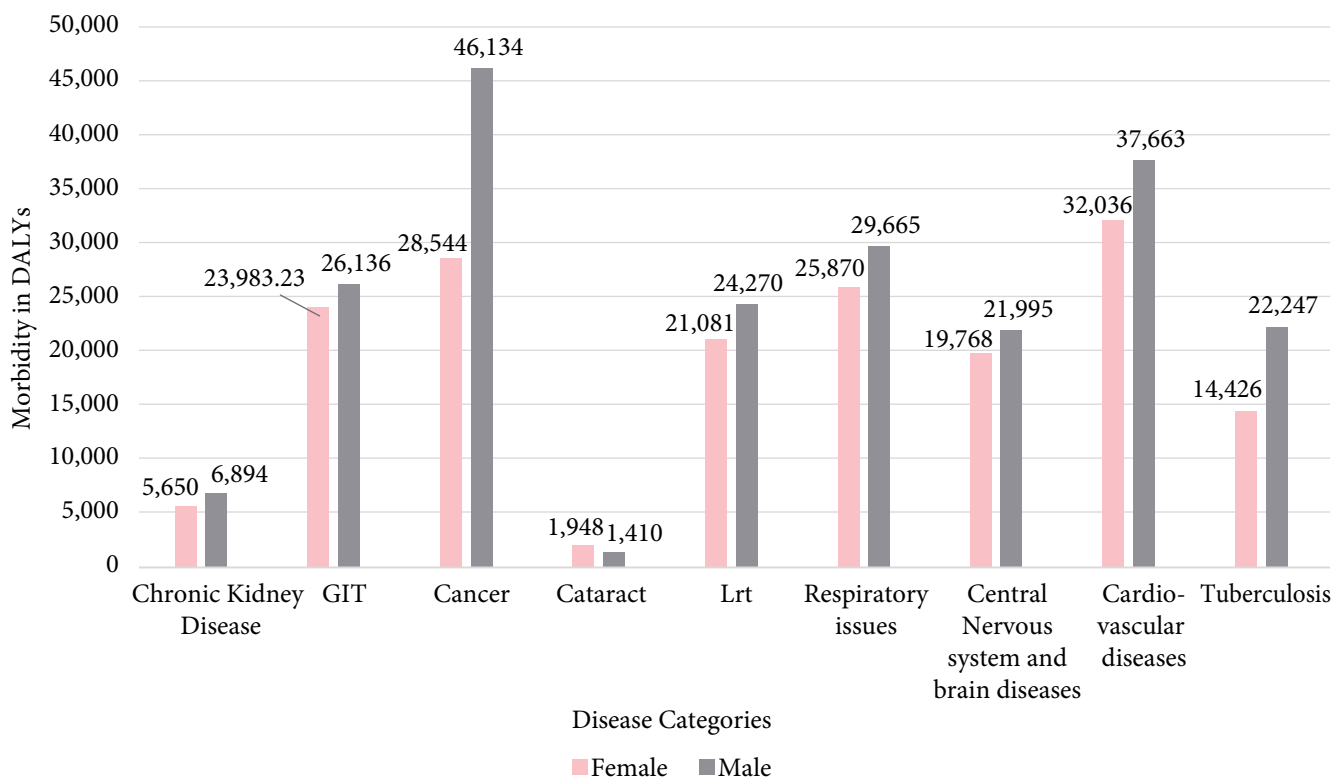
Source: Global Burden of Disease Study 2018. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india as accessed on October 29, 2023.

4. Discussion

This study shows five salient findings and identifies six key questions for future research.

Firstly, we found a substantial shifting pattern in the burden of diseases among women from communicable to non-communicable diseases in terms of mortality and morbidity, even as the burden of a select few communicable diseases and undernutrition among women remained high. We found a high burden of mortality among women from CVDs, chronic respiratory diseases, and cancer, as well as from diarrhoeal diseases. Compared to men, women reported higher mortality burden from cancer, neurological diseases, and diarrhoeal diseases, while also reporting equivalent rates for CVDs, chronic diseases, diabetes, kidney diseases, respiratory infections, and unintentional injuries. These trends demonstrate the rapid progression of the epidemiological transition for women, similar to men, though the patterns and progression differ in the burden of disease experienced.

While the data on mortality and morbidity are not directly comparable in magnitude due to differences in units and scale, the contrasting patterns and

trajectories raise important questions that warrant further exploration. A primary concern is whether women face obstacles in accessing timely and quality treatment for NCDs, which could potentially explain the observed rise in mortality rates.

Thaddeus and Maine (1994) provide a Three-Delays Framework to understand the barriers to women's health-seeking. The first delay relates to barriers within the household that prevent decision-making related to appropriate healthcare. This may relate to intra-household dynamics that lead to de-prioritisation of women's needs and delays in discussion or action related to health-seeking. In the case of NCDs, knowledge and understanding of symptoms or lack of self-care may play a role in accurately identifying symptoms of a developing health condition that needs addressing. The second delay relates to the time lost or barriers in reaching the appropriate health facility to receive health services. Distance and the need for male support and accompaniment have often been cited as barriers to health-seeking and may further lead to a delay in receiving healthcare. In the case of NCDs, where multiple visits are needed for consultation, drugs, and diagnostic testing, women may need ongoing support to ensure that

Learning question #1:

How do the delays in healthcare, that is, delay in seeking care, delay in reaching a care provider, and delay in receiving care once at the health provider influence women's health status and outcomes for NCDs? Additionally what is the role of factors at individual, family, community and systems level influencing these delays, and the explanation for the rise of NCDs?

they seek timely care. The third delay relates to receiving adequate care at a facility, and this is often enabled through health financing mechanisms as well as finding the needed health services (including human resources). Universal and publicly funded health insurance that provides comprehensive coverage for a wide range of diseases could help mitigate this third delay by removing financial barriers to accessing care and reducing gender disparities in household investments toward women's health expenditures. However, this needs to be coupled with a health infrastructure with available human resources, diagnostics, and drugs, all of which are essential for quality health services. This shift in disease burden among women in India, characterised by a rising prevalence of NCDs akin to men, while also exhibiting a persistent mortality burden from conditions like diarrhoeal diseases, exemplifies the epidemiological transition underway. The Three Delays model can be an insightful theoretical framework to understand our findings and guide us towards research gaps in this field. **Our first proposed question for future analyses relates to understanding how these three delays—delay in seeking care, delay in reaching a care provider, and delay in receiving care once at the health provider—influence women's health status and outcomes for NCDs. In addition, what is the role of factors at the individual, family, community, and system level that influence these delays, and that explain the rise of these NCDs?**

The shifting burden also varies by state in India, indicating that the state context (e.g., population composition, socio-environmental circumstances, ageing, and risk profiles) matters with differing implications for health prioritisation and policy in terms of health services, personnel, and managing the costs of care. Significant diversity is notable in state patterns for chronic diseases, and one question moving forward will be to understand the diversity across states and identify pathways that explain the burden. **Our second question for future research**

pertains to examining the influence of state context in the rise of NCDs for women and the changing social determinants in this period that explain the rise in mortality and morbidity from NCDs among women across states.

Learning question #2:

What is the influence of state context in the rise of NCDs for women, and what are the changing social determinants in this period that explain the rise in mortality and morbidity for NCDs among women across states?

For instance, regarding CVDs, Punjab, Maharashtra, Tamil Nadu, and West Bengal are exhibiting a pattern of catching up to Kerala in terms of epidemiological transition. This is indicated by the high growth of CVD mortality as a proportion of total mortality in these states. While Kerala still carries a high CVD burden, its growth rate is less pronounced. Similarly, cancer patterns show diversity by state, including high burdens observed in the northeastern states of India. Studies utilising data from India's cancer registries can help unpack region-specific patterns and risks, as well as those related to particular types of cancers.

Another prominent pattern is the gender disparity in chronic respiratory diseases, with high burdens evident in Himachal Pradesh, Uttarakhand, Jammu and Kashmir, and Ladakh. Unequal access to clean energy sources for cooking and heating in these regions likely contribute to these patterns. Women, often tasked with domestic duties such as cooking, experience greater exposure to polluting energy sources, increasing their susceptibility to respiratory diseases. Understanding regional and district-level patterns in the distribution of clean energy might help mitigate or reduce this burden.

Similarly, the overall burden of morbidity differed for women, showing higher DALYs for cancer, nutritional deficiencies, musculoskeletal diseases, and diarrhoeal diseases. This represents a mixed profile of conditions affecting quality of life for women, with a high burden of chronic conditions, particularly cancer. With health being a state subject, the responsibility for service provision naturally falls on the states, regardless of whether payment mechanisms, such as insurance programs, are national or state-focused. **While we presented a national picture of disease burden by categorisation, there is a need to consider state-specific trajectories.** We recommend

sub-regional analyses to provide a regional and district-level understanding of the burden and intra-state inequalities. Further analyses are also needed to understand the regional availability of state health services to address corresponding needs. Our framework of matching the health needs to health service use provides an important reference point for exploring this question in other contexts as well.

The burden of diseases, particularly NCDs, offers an opportunity to understand the role of state context, economic status, and social determinants at the state level. Several new indices allow us to map progress on socioeconomic development and health indicators for these states. **Our third question for future research on gender and health pertains to the role of key SDG indicators and social determinants of health specific to women's health and development. How has the burden of disease progressed over the last decade vis-à-vis these indicators?** The Indian policy landscape has mapped state performance and capacity for these SDG target indicators and other social determinants of health. Identifying specific indicators that provide an overview of the status and progress over time for women across states is crucial. This can help unpack enablers and barriers to healthcare access for women. There is a need to identify specific indicators that can provide an overview of the current status as well as progress over time for women across states and help in unpacking some enablers and barriers to health access for states**.** For instance, despite the progression of NCDs across all states, women still report a significant burden of diarrheal diseases and nutrition. While India has made tremendous progress in accessing water and sanitation services, there is a need to understand and examine the unfinished agenda with respect to these health issues.

Learning question #3:

What is the role of key SDG indicators and social determinants of health, and how has the burden of disease progressed over the past decade vis-à-vis these indicators?

State-level patterns in health burden and progression over time may be attributed to the epidemiological and population profiles of the states, as well as resources committed to managing the disease burden. Examining risk factors related to specific diseases also needs to be examined to have a better understanding of the emerging state patterns.

Secondly, as the burden of disease is changing, there is a need to understand and address the need for health insurance access for women across states in India. Data from 2019–20 among married women that in 17 states 7 out of 10 women reported having no insurance as per the previous NFHS. However, this situation may have changed with the rollout of the national insurance program that reports high enrolment numbers. Specific vulnerable categories of women, especially single, homeless, disabled, poor, marginalised caste/community members, may face barriers to accessing health insurance (RamPrakash & Lingam, 2021). Disaggregation by insurance type revealed that state/community insurance was the main form of insurance available, and this was more often available to women from poorer households and rural contexts. We believe that these patterns are rapidly changing now as an expanding national insurance program and a progressive increase in coverage over the last few years has led to rapidly increasing enrolment numbers. Our findings suggest that employment-based insurance access was limited due to the low participation of women in organised employment offering insurance safety nets. We observed a social gradient, with education associated with employment-based insurance and state/community insurance perceived as an instrument for the poor. Our findings align with previous research (Sengupta & Rooj, 2019) demonstrating that compared to men with NCDs in India, women had a lower chance of hospitalisation and a lower likelihood of being insured in public or private sector facilities. Few studies have investigated how women pay for their healthcare, including the role of personal savings and borrowing from social networks (Kumar et al., 2020).

There is inadequate understanding of how women pay for hospitalisation in the absence of insurance or when coverage is insufficient. Does the absence of insurance coverage imply forgoing necessary healthcare, potentially explaining the rising mortality? Sen and Iyer (2019) indicated that in joint family settings, women were more likely to lose out on insurance coverage when schemes capped the number of covered members. Assessing gender coverage under RSBY, Ziegler and et al. (2024) demonstrated that although spouses were enrolled under RSBY as mandated by the scheme, other female family members were not. **Our fourth question relates to a deeper understanding of how women pay for healthcare, with or without insurance, and whether lack of health financing reduces women's healthcare utilisation.** More qualitative studies are needed to under-

stand the exclusions women face in obtaining insurance. Studies suggest that the process of being insured, and women who were elderly, ailing, or single were more likely to experience discrimination in seeking healthcare (Karpagam et al., 2016). Similarly, women with chronic illnesses had the greatest hospitalisation need but reported lower likelihood of being covered by any insurance, private or public (Sengupta & Rooj, 2019). Aligning beneficiary criteria and extending coverage categories for insurance, previously left to individual states, requires greater consideration for universalisation.

Learning question #4:

How do women pay for healthcare, with or without insurance, and how does health financing relate to women's use of healthcare services?

Thirdly, while growing attention surrounds the role of women's agency and its determinants for health, our analysis highlights the complex nature of this agency. The associations with insurance type may be dependent on the specific measure of agency used. Women's financial autonomy was associated with higher employer-focused insurance and lower state/community insurance; women with lower financial autonomy may rely on state/community insurance for healthcare. Mobility for health services was associated with all insurance types. Ownership of a phone and women's education were likely instrumental pathways enabling insurance.

Our fifth question relates to understanding how women's agency and access to resources influence their healthcare-seeking for NCDs. In the context of NCDs, does women's capacity for self-care mediate the relationship between agency and healthcare utilisation? How are markers of women's agency (e.g., mobility, financial decision-making) changing over time, and how does this influence women's healthcare access and use?

Recent studies have investigated the role of numerous women's agency determinants, including maternal empowerment (Gebremedhin et al., 2022), digital literacy, and contextual factors (Thomas et al., 2022), distance and structural determinants, social bias, undervaluation of women's paid work (Kumar et al., 2020), low education, and poor communication with health providers as influencers of health-seeking and access to insurance. Several agency determinants have enabled greater insurance access and use of

maternal and child health services (Gebremedhin et al., 2022). Similarly, digital literacy has proven valuable in these analyses. However, these studies also highlight unpaid care work, financial dependence, mobility constraints, and gender norms as major barriers to women's access to insurance and healthcare use (RamPrakash & Lingam, 2021). Lack of access to and support for insurance among women also led them to forgo or delay necessary health-seeking or to pay out-of-pocket through savings or loans, burdening their households with steep financial burdens. Iyer and colleagues (2007) have shown evidence for gender-biased household rationing, where women and girls forgo treatment so that males in the household can receive care. This was also noted in the use of 'distress financing' for men rather than women in the household (Kumar et al., 2020).

Learning question #5:

How do women's agency and access to resources influence their health-seeking to NCDs and the use of healthcare services?

Additionally, factors related to women's agency within the household, such as needing permission, requiring transport, being unable to attend appointments alone, were other constraints expressed by women, reflecting inequitable gender power dynamics and a dependency on male family members. More research, especially qualitative work, is needed to understand these dynamic pathways and the complex nature of women's engagement with the health system, including interactions within the household.

In the NFHS, 2019–21, married women reported that a lack of a quality health system was a significant barrier to their health-seeking. This included concerns about health services, personnel, and drugs, reflecting an "unmet need" for healthcare among women. Our data showed that married women identified a paucity of health providers, particularly female health providers, as a major quality gap. One area of future exploration is gender differences (or similarities) in the perception of barriers to health-seeking. While prior work in this area is limited, existing studies show that even insured women faced indifferent, non-responsive, or rude health providers, especially if they were less educated (Iyer et al., 2007; Nandi et al., 2016).

While our work provides the perspective of women, investigating the question of healthcare quality is also crucial. This includes examining the health

system constraints, such as the role of disrespect in health seeking, which may deter women from seeking care. A study from Uttar Pradesh provided the health worker perspective, where providers reported acute shortages and high workloads, hindering their ability to offer services with a higher degree of care (Bhattacharyya et al., 2018). These narratives reveal a need to understand the systemic barriers impeding women's healthcare access, including structural factors such as the number of providers and the quality of interaction during service delivery. **Our sixth proposed question for future research involves identifying and understanding how gendered markers in health system quality (e.g., female providers, equitable gender ratio of doctors) influence women's uptake of health services, potentially explaining the gap between morbidity and mortality from NCDs among women in India.**

Learning question #6:

How do gendered markers of health system quality influence the uptake of health services ?

Finally, in Meghalaya, a state with universal health coverage, our analyses revealed gender differences in the types of healthcare accessed. Compared to men, women utilised packages for treatments such as cataracts, lower respiratory infections, tuberculosis, oral and maxillofacial care, ophthalmology, gastrointestinal issues, and haemodialysis and acute renal failure. Conversely, men sought treatments for more expensive and complicated health issues such as neurosurgery, oncology, urology, central nervous system issues, and cardiovascular diseases. The treatment packages for haemodialysis, gastrointestinal issues, and lower respiratory tract infections were utilised more by women (differential between 17%–54%). These findings demonstrate that even with universal health insurance, gender differences in healthcare access persist.

Similar to the national analysis of the burden of disease, understanding the factors at the household, community, and health system level that explain these gendered differences is crucial. The male-female differential for orthopaedics, oncology, urology, and respiratory treatments was 25%–52% higher for

men. Comparing this usage with the burden of the disease data showed alignment between the health need and service use gap for women for chronic kidney disease, gastrointestinal issues, and lower respiratory tract infections for women in Meghalaya. However, for cardiovascular diseases, neurological disorders, and respiratory issues, women's health use was significantly lower (26–37%) compared to men. Similar analyses are needed for other states, detailing the health services used by women and men and examining whether these patterns remain consistent or change by region, age, and other socioeconomic determinants.

Our findings should be reviewed in the light of emerging research on healthcare use across states, especially in the context of studies and evaluations of publicly funded health insurance schemes. We acknowledge two limitations to our work.

First, the data ecosystem for understanding gender, insurance access, and healthcare use was fragmented, posing a significant challenge to answering our research questions. While several state-focused studies have shed light on the effect of insurance coverage, for our analytical research question, we attempted to develop a framework to match health needs with healthcare access/use. This framework, tested in Meghalaya, needs to be extended to other states as data permits. Insurance and health use data are often not easily accessible to researchers in the public domain. Greater investment in this area is needed to answer more nuanced questions about the patterns of healthcare utilisation for women within states.

Second, health categories varied between the available data on the health burden, which focused on classifications of disease conditions, and the data on health insurance used, which focused on procedures and packages. Matching the two required meticulous analysis, which we endeavoured to do to the best of our ability. As state portals collect and state agencies analyse the data on use, it may be useful to consider the packages used by health burden categorisation. This could provide an overview of whether health needs are being met and identify key gaps for health service redressal.

5. Conclusion

This study presents a comprehensive overview of the health burdens faced by women in India and its change over time. It also investigates the role of women's agency in accessing health insurance to counter this burden. Additionally, it uses data from Meghalaya, a state with universal health insurance, to understand whether gender inequities persist in access to care, despite insurance coverage.

We found that the burden of NCDs in India among women, has been rising and is comparable to men, with complex patterns of mortality and morbidity that vary across Indian states. This highlights the importance of prioritising health initiatives at the state level to address the burden, as access to economic resources for healthcare varies across different regions. We also examined geographic heterogeneity in the access to insurance among women aged 15–49 years, reflecting a picture that is changing with the rapid implementation of national and state insurance coverage schemes. We examined the barriers to healthcare-seeking among women, which could be noted as those relating to the health systems (e.g., health providers, drugs) versus barriers relating to family factors (e.g., permission, needing accompaniment).

Finally, using the case study of Meghalaya, we examined data from claims and claim amounts to find that there is complexity in use, based on specialties and some patterning by secondary versus tertiary care. The non-availability of insurance claims data pre-vented an analysis of what women are utilising insurance for and the extent to which insurance use links with the changing pattern of health needs. These findings and the questions raised by our analyses point to the need for state-level analyses and in-depth investigations, including qualitative research, to comprehend the challenges and the trade-offs women encounter when accessing healthcare.

Endnotes

[1] Weblink: (https://mhis.org.in/accessed on 10th May, 2023).

[2] Data on the Global Burden of Disease available at: https://www.healthdata.org/.

[3] Diabetes and Kidney diseases represent all kidney ailments occurring due to diabetes Type 1 and Type 2.

[4] MHIS Portal: https://mhis.org.in/, accessed in May 2023.

[5] Among the surveyed women in NFHS-5, women below 18 consisted of 10.12%, women between 18–25 years were 27.11%, women between 26–35 years were 30.22 %, and women above 36 were 32.55%.

[6] Phase 6 (November 2023) has recently been initiated with a further expansion in the mandate.

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Appendix

Table i: A Listing of States Classified as Greenfield and Brownfield Based on Coverage of Insured Populations and Existing State Programs for Health Insurance Access

Greenfield states	Brownfield states
States which previously did not have state government sponsored health insurance schemes.	States with existing state government sponsored health insurance schemes.
Jharkhand, Madhya Pradesh, Uttar Pradesh, Bihar, Haryana, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Tripura, and Nagaland.	Punjab, Rajasthan, Gujarat, Maharashtra, Karnataka, Goa, Kerala, Tamil Nadu, Andhra Pradesh, Chhattisgarh, Assam, Meghalaya, Mizoram, and Arunachal Pradesh.

Source: https://nha.gov.in/PM-JAY

Table ii: A Listing of States Classified as Greenfield and Brownfield Based on Coverage of Insured Populations and Existing State Programs for Health Insurance Access Along with Listing of Available Health Insurance Schemes by State, and Details of Insurance Type and Integration With the PMJAY

State	Schemes	Sum Insured	Target Beneficiary	Integration with the PMJAY
Andhra Pradesh	Rajiv Aarogyasri (2007)	Rs 1.5 Lakh/family (on floater basis) plus sum of Rs 50,000 is provided as buffer	BPL Families (with income up to Rs 2 Lakh per annum)	Merged in PMJAY 'Ayushman Bharat-Dr. YSR Arogyasri Healthcare Scheme'
Telangana	Aarogyasri Scheme (2007)	Rs 1.5 Lakh/family (on floater basis) plus sum of Rs 50,000 is provided as buffer	BPL Families (with income up to Rs 2 Lakh per annum)	Ayushman Bharat scheme has been integrated with the existing state scheme 'Aarogyasri' and this converged scheme is being called Ayushman Bharat PM-JAY Aarogyasri (May, 2021)
Gujarat	Mukhyamantari Amrutam (2012)	Up to Rs 2 Lakh	BPL and lower middle class (MAV)	MA and MA Vatsalya merged with PMJAY in 2020
Tamil Nadu	Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) (2012)	Rs 1 Lakh/Year for 4 years (4 Lakh)	1.57 Crore families	Pradhan Mantri Jan Arogya Yojana-Chief Minister's Comprehensive Health Insurance Scheme (PMJAY-CMCHIS)
Rajasthan	Bhamashah Swasthya Bima Yojana (2015)	Rs 30,000 for general illness and Rs. 3 Lakh for critical illness (both IPD)	BPL+APL under NSA	Mahatma Gandhi Rajasthan Swasthya Bima Yojana (2019) after merging with PMJAY
Goa	Deen Dayal Swasthaya Seva Yojana (2016)	Rs 2.50 Lakh per annum for a family of three or less members and cover of up to Rs. 4.00 Lakh for a family of four and more members	For the residents of Goa and people who have been living in the state for five or more years (Rs 200-300 premium)	PMJAY integrated with the state's Deen Dayal Swasthya Seva Yojana called as 'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY) Deen Dayal Swasthaya Seva Yojana'

State	Schemes	Sum Insured	Target Beneficiary	Integration with the PMJAY
Karnataka	Arogya Karnataka (2018)	Universal Health Coverage	Co-payment system for General Patient and cashless for eligible households	Integrated under a co-branded name called "Ayushman Bharat-Arogya Karnataka" and is being implemented in an Assurance Mode from October 30, 2018.
Maharashtra	Rajiv Gandhi Jeevandayee Arogya Yojana (2012) renamed to Mahatma Jyotirao Phule Jan Arogya Yojana (MJPJAY)	Rs 1.5-2 Lakh/policy year per family	Beneficiary targeted through ration card and agriculturally distressed district	Integrated Mahatma Jyotirao Phule Jan Arogya Yojana (MJPJAY) and Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) was launched in the state on 1st April, 2020
Haryana	Mukhymantri Muft Ilaaj Yojana	Free services to all the residents of Haryana	All the citizens (OPD included)	'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY); Haryana Health Protection Mission'
Punjab	Sarbat Sehat Bima Yojana (2019)	Rs 5 Lakh/family per year.	Non SECC, NFSA beneficiaries such as farmers, journalist, small traders etc.	Ayushman Bharat - Mukh Mantri Sehat Bima Yojana (AB-MMSBY) was launched on 20 August 2019
Himachal Pradesh	Mukhya Mantri Sahara Yojana (2020)	Financial assistance of Rs 3,000 per month under some diseases	EWS family	Separate scheme
Himachal Pradesh	Mukhya Mantri Himachal Health Care Scheme (HIMCARE) (2019)	Rs 5.0 Lakh/year per family	BPL not covered under AB/ Co-payment system with differential premiums	HIMCARE is in addition with PMJAY
Himachal Pradesh	Mukhya Mantri Chikitsa Sahayata Kosh (2018)	Annual income up to Rs 1.50 Lakh and having serious ailments such as cancer	Low-income group	Separate scheme
Himachal Pradesh	–	–	Same as PMJAY benefits	Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY)
Uttarakhand	Mukhyamatri Swasthya Bima Yojana (2016)	Rs 50,000 (1st phase) to Rs 1.25 Lakh (2nd Phase)	BPL and APL both	Merged in Atal Ayushman Uttarakhand Yojana (AB-PMJAY) (2018) - 'Atal Ayushman Uttarakhand Yojana'
Jharkhand	Mukhyamantri Swasthya Bima Yojana and Mukhyamantri Gambhir Bimari Upachar Yojana	Rs 1.5 Lakh, further Rs 2 Lakh/family	BPL	Merged in PM-JAY 'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY) Mukhyamantri Swasthya Bima Yojana (MSBY)'
Chhattisgarh	Dr Khubchand Baghel Health Assistance Scheme (2019)	Rs 5 Lakh/family	90% of population covered	Incorporate PM-JAY 'Ayushman Bharat PM-JAY Dr. Khubchand Baghel Swasthya Bima Yojana'
Madhya Pradesh	Deendayal Upchar Yojana (2004 to 2019)	Rs 20,000/year per family	BPL	Ayushman Bharat – Niramayam Yojana (2018)
UP	RSBY	Rs 30,000/family per annum	SECC and other poor population identified by DC	Mukhya Mantri Jan Arogya Abhiyan additional to PMJAY, 100% state funded.

State	Schemes	Sum Insured	Target Beneficiary	Integration with the PMJAY
Kerala	Karunya Health Insurance Scheme	Rs 2–3 Lakh/year	BPL/APL	Karunya Arogya Suraksha Padhathi (KASP) (2020) incorporated AB-PMJAY
Bihar	RSBY	Rs 30,000/family per annum	SECC+NFSA	Ayushman Bharat-Bihar/Mukhyamantri Jan Arogya Yojana
Jammu and Kashmir	RSBY	Rs 30,000/family per annum	SECC+NFSA	AB-PMJAY Sehat Scheme -merged
Assam	Atal Amrit Abhiyan (2016)	Rs 2 Lakh/year per family	BPL/APL	Along with Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY); Atal Amrit Abhiyan
Mizoram	Mizoram State Health Care Scheme (2008)	Rs 2 Lakh/year per family	–	Along with AB-PMJAY, 'Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY)'
Meghalaya	Megha Health Insurance Scheme (2012)	Rs 2.8 Lakh/year per family	Rs 5 Lakh/year per family.	Megha Health Insurance Scheme (AB-PMJAY + Universal Health Insurance Scheme).
Arunachal Pradesh	Chief minister's Universal Health Insurance Scheme	*Same as PMJAY for people excluded from PMJAY	All AP residents except for employees of GOI, PSU and ABPMJAY beneficiaries	Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) & Chief Minister Arogya Arunachal Yojana (CMAAY), Additional to PMJAY
Sikkim	Sikkim Manipal Swasthya Suraksha Scheme (2014)	Rs 1.50 Lakh/year	Paid subscription (Rs 500 and 800)	PM-JAY launched in 2018 collaborating with Mukhya Mantri Jeevan Raksha Kosh (2009)
Nagaland	Chief Minister Health Insurance Scheme (CMHIS) from October 1, 2022 for all residents	Rs 5 Lakh/family	SECC+RSBY card holders	Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)
Manipur	Chief Minister Hakshelgi Tengbang (CMHT)	Rs 2 Lakh/year/family	To poor and disabled	CMHT in addition to PM-JAY to support beneficiaries not listed in SECC

Source: Compiled from policy documents of states.

Note: As of 2023, Delhi, West Bengal and Odisha are not part of the PM-JAY.

Table iii: Alignment of Disease Groups and Treatment Categories between the Burden of Disease (GBD) and Meghalaya Health Insurance Scheme (MHIS)

	Disease Group	Detail of Disease	Description	Remarks on Categorisation
1	General Ward Unspecified and Unspecified Surgeries	–	–	Medical treatments and surgeries that are not further categorised based on disease packages or procedures and had no further details are included here.
2	General Medicine	–	–	Medicines for common ailments such as malaria, seizures, chicken pox, heatstroke, etc.
3	General Medicine	Fever	Fever is a condition where body temperature rises often due to infections.	Includes dengue fever, typhoid fever, enteric fever, viral fever, fever of unknown origin, etc.
4	General Surgery	–	–	Surgical treatment of accidental injuries: includes surgical removal of abscess, gallbladder removal, etc. (not classified elsewhere).
5	Diagnostics	–	–	Includes diagnosis such as ultrasound sonography, M.R.I, CT scan, endoscopy, etc.
6	Emergency care	Animal Bites	Animal Bites includes bites by dog, cat, and insects.	Snake bites are excluded due to low number of instances.
7	Ophthalmology		Deals with diagnosis and treatment of eye disorders.	Includes glaucoma surgery, retinopathy, vitrectomy i.e., removal of gel-like fluid from the eye, etc.
8	Ophthalmology	Cataract	Cataract surgery is the removal of the natural lens of the human eye that has developed a cataract, an opaque or cloudy area. The eye's natural lens is usually replaced with an artificial intraocular lens.	–
9	Urology	Acute Renal Failure	Acute kidney failure or Acute Renal failure occurs when kidneys are unable to filter waste products from blood.	–
10	Urology		Urology consists of disorders related to urinary systems excluding Acute Kidney failure.	Includes procedures related to kidney, bladder, etc which may include removal of stones, stents etc.
11	Urology	Haemodialysis	Haemodialysis is a process of purifying the blood of a person whose kidneys are not working normally.	–
12	Cardiology	–	Cardiology includes diagnosing and treating diseases of the heart, blood vessels, and circulatory system.	Health treatment includes implant of stent, pacemakers, valves, and treatment such as angioplasty, coronary artery bypass grafting etc.
13	Oncology	–	Oncology deals with the study, treatment, diagnosis, and prevention of tumours.	In the oncology category, removal of tumours, radiotherapy, etc. is included.
14	Orthopaedic	–	The orthopaedics category includes disorder or injuries that affect muscles, joints, bones, ligaments and tendons, and nerves.	The treatments include hip replacement, knee replacement, fractures, etc.
15	ENT	–	ENT includes diagnosis and treatment related to ear, nose, and throat.	The ENT category includes diagnosis and treatment of infections, blockade etc., in ENT area.
16	Oral and Maxillofacial Surgery	–	Consists of diagnosis and treatment of diseases in jaw, mouth, or face.	Jaw fracture fixations, extraction of tooth, metal capping, etc.
17	COVID Treatment	–	–	–
18	COVID Test	–	–	CB-NAT, TRU-NAT, Rapid Antigen
19	Neurosurgery	–	Neurosurgery is the surgery of the Nervous system.	Consisting of treatment to spine, lumbar disc, brain etc.

	Disease Group	Detail of Disease	Description	Remarks on Categorisation
20	Mental disorders	–	Mental disorders (or mental illnesses) are conditions that affect your thinking, feelings, mood, and behaviour.	Mental and behavioural disorders, mood disorders, schizophrenia, neurotic stress, etc., are included.
21	Central Nervous System/Brain	–	Brain related disorders are categorised in central nervous system.	Meningitis, stroke syndrome, viral encephalitis etc., are included.
22	Gastrointestinal tract issues	–	They are the most common problems affecting the gastro-intestinal tract including colon and rectum.	The category includes gastritis, gastro-enteritis, dehydration, diarrhoea, cirrhosis of liver etc.
23	Neonatal care	–	Neonatal care refers to the care given to the new-born infant from the time of delivery to the first month of life.	This includes basic, chronic, critical, and advanced neonatal care packages designed under MHIS.
24	Paediatric	–	Paediatrics is the branch of medicine dealing with the health and medical care of infants, children, and adolescents.	Wide range of treatments are included in paediatrics ranging from malnutrition, leukaemia, seizures, surgeries etc.
25	Diabetes	–	–	Includes insulin and non-insulin dependent diabetes treatment.
26	Appendicectomy	–	Appendicectomy is a surgical operation to remove the appendix.	Appendicectomy includes surgical and laparoscopic removal of appendix and other related procedures.
27	Cholecystectomy	–	Removal of gallbladder	–
28	Respiratory issues	–	Respiratory disorders are disorders related to lungs and other parts of the respiratory system.	Includes asthma, bronchitis, chronic obstructive pulmonary diseases etc.
29	Acute respiratory distress syndrome	–	Acute respiratory distress syndrome (ARDS) occurs when fluid builds up in the tiny, elastic air sacs (alveoli) in lungs.	–
30	Lower respiratory infection	–	Lower respiratory tract infections are any infections in the lungs or below the voice box. These include pneumonia, bronchitis, and tuberculosis.	LRTI includes pneumonia and bronchitis. TB is also included, however categorised here separately.
31	Tuberculosis	–	Tuberculosis is caused by a bacterium called *Mycobacterium tuberculosis* affecting lungs and, in some instances, other parts of the body as well.	–
32	Hernia	–	A hernia typically occurs in the abdomen or groin when an organ pushes through the muscle or tissue that normally contains it.	All surgeries related to removal and repair of hernia are included in this category.
33	Hepatitis	–	Hepatitis is an inflammation of the liver, which may be caused by viral infection, alcohol consumption, several health conditions, or medications.	Acute, chronic, and viral hepatitis are included under the category 'Hepatitis.'
34	Anaemia	–	Anaemia is a medical condition in which there are not enough red cells in the blood.	Anaemia that requires blood transfusion, which causes fever, and severe anaemia are included.
35	Other	–		This category includes treatment to health conditions that are not categorised elsewhere.

Source: https://mhis.org.in/ and https://vizhub.healthdata.org/gbd-compare/india.

Note: Obstetrics, gynaecological treatment, and surgeries specific to men are not included in the analysis.

Table iv: Average Per Capita Claims for Men and Women (Amount in Rs). Reimbursed Under MHIS-PMJAY

Disease Procedure	Female	Male
Haemodialysis	2925.71	2916.21
Gastrointestinal tract issues	5510.58	6021.57
Oncology	9888.48	9194.17
Cataract	14848.72	15571.67
Appendicectomy	18408.35	18479.88
LRT infection	11741.33	14230.67
Ophthalmology	6609.85	6891.49
Urology	24171.95	20473.01
Oral and Maxillofacial Surgery	674.61	1079.18
Respiratory issues	9690.23	11855.30
Orthopaedic	22435.57	19973.02
Tuberculosis	14332.63	31056.22
Acute renal failure	19302.66	42092.50
Central Nervous system (brain-related)	47127.06	40003.05
Neurosurgery	68019.16	60777.26
Cardiology	69470.26	74230.18
Hernia	16380.93	15281.22
Hepatitis	8526.09	10807.63

Source: Based on the calculation of the authors, where disease wise total amount disbursed was divided by number of claims, data accessed from https://mhis.org.in/.

Table v(a): Gender Differences in Cause-Specific Mortality as a Proportion of Total Mortality for All India

Mortality for all Diseases	Females (%)	Males (%)
Cardiovascular diseases	25.75	28.14
Chronic respiratory diseases	12.45	12.3
Cancers	10.26	9.11
Diarrhoeal diseases	9.45	4.77
Respiratory infections & Tuberculosis	8.9	9.78
Injuries	8.52	11.27
Unintentional injuries	5.16	4.79
Diabetes & Kidney diseases	5.07	5.26
Digestive diseases	3.96	5.77
Neurological disorders	2.49	1.99
Self-harm	1.94	2.17
Transport Injuries	1.18	3.64
HIV	0.49	0.51
Nutritional deficiencies	0.43	0.19
Interpersonal violence	0.22	0.62
STIs excl. HIV	0.13	0.07

Source: Global Burden of Disease Study 2019.Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub.healthdata.org/gbd-compare/india.

Note: Figures represent all age groups.

Table v(b): Gender Differences in Cause-Specific Morbidity in Disability-Adjusted Life Years (DALYs) for All India

DALYs for diseases	Females	Males
Cardio-vascular diseases	4016.54	5208.59
Respiratory infections & Tuberculosis	2503.56	2838.64
Chronic respiratory diseases	1969.54	2197.88
Cancers	1993.70	1833.41
Diabetes & Kidney diseases	1319.43	1733.39
Nutritional deficiencies	1532.17	884.47
Digestive diseases	1029.98	1608.14
Unintentional injuries	1584.80	1714.70
Self-harm	715.44	769.43
Diarrheal diseases	1858.34	1193.06
Injuries	3040.42	4576.53
Transport Injuries	598.88	1769.38
Neurological disorders	1191.59	1505.83
STIs excl. HIV	69.11	50.42
HIV	182.07	197.75
Interpersonal violence	130.54	298.66

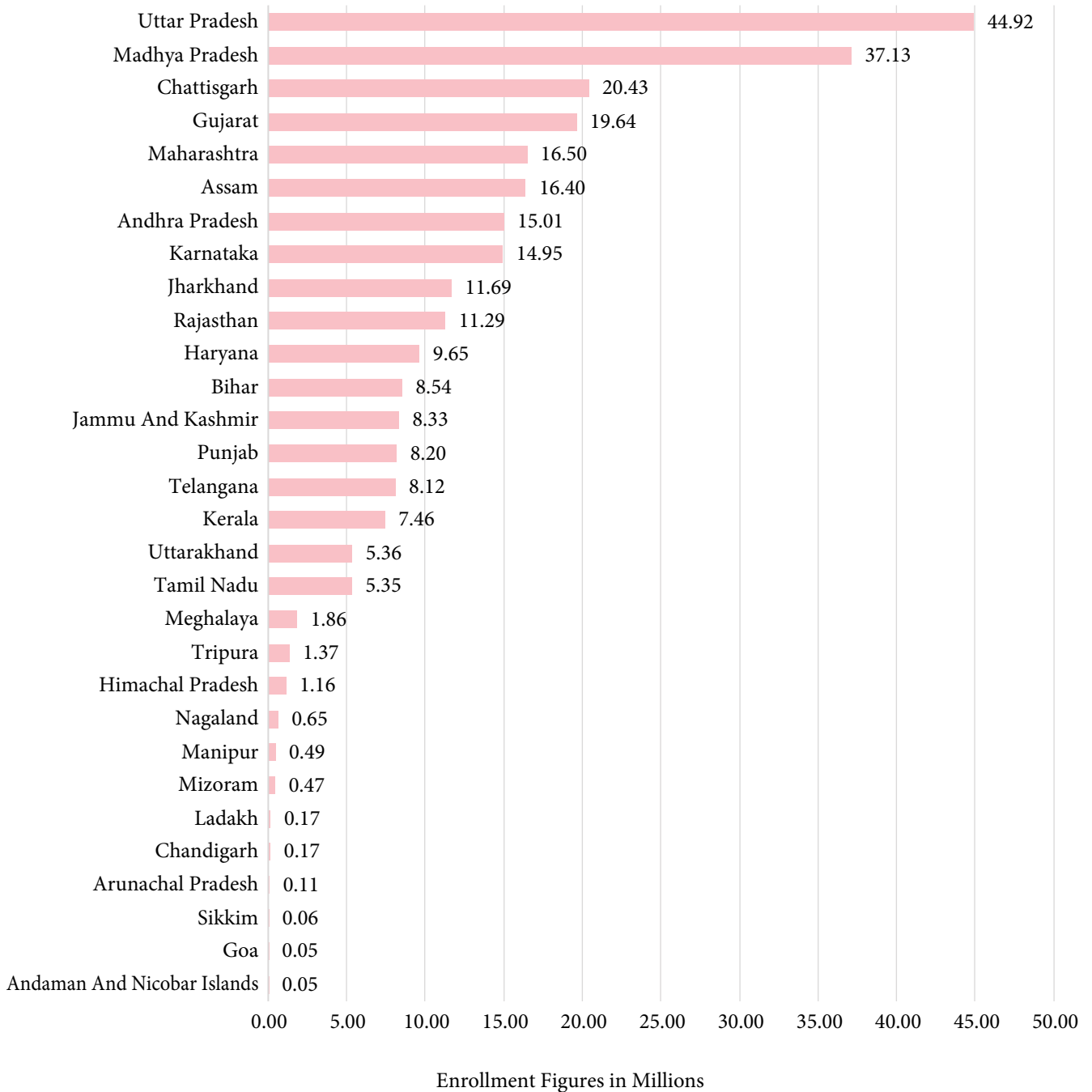*Source: Global Burden of Disease Study 2019.Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. https://vizhub. healthdata.org/gbd-compare/india.*

Note: Figures represent all age groups.

Figure i: Number of Women Enrolled in PMJAY (In Million) as of November 2023

State	Enrollment (Million)
Uttar Pradesh	44.92
Madhya Pradesh	37.13
Chattisgarh	20.43
Gujarat	19.64
Maharashtra	16.50
Assam	16.40
Andhra Pradesh	15.01
Karnataka	14.95
Jharkhand	11.69
Rajasthan	11.29
Haryana	9.65
Bihar	8.54
Jammu And Kashmir	8.33
Punjab	8.20
Telangana	8.12
Kerala	7.46
Uttarakhand	5.36
Tamil Nadu	5.35
Meghalaya	1.86
Tripura	1.37
Himachal Pradesh	1.16
Nagaland	0.65
Manipur	0.49
Mizoram	0.47
Ladakh	0.17
Chandigarh	0.17
Arunachal Pradesh	0.11
Sikkim	0.06
Goa	0.05
Andaman And Nicobar Islands	0.05

Enrollment Figures in Millions

Source: https://dashboard.pmjay.gov.in/.

Table vi: Treatment Categories Included to Understand Gender Differences in Claim Volumes and Amounts in the Meghalaya Health Insurance Scheme

Consolidated Health Packages	Description	Remarks
Haemodialysis	Process of purifying the blood of a person whose kidneys are not functioning normally.	–
Urology	Includes procedures related to kidney and bladder, which may include removal of stones, stents etc. Due to the high volume of claims, Haemodialysis is categorised separately.	–
Cardiology	Includes diagnosing and treating diseases of the heart, blood vessels, and circulatory system.	Treatment includes: • implanting stents, pacemakers, and valves. • angioplasty, coronary artery bypass grafting, etc.
Oncology	Deals with the study, treatment, diagnosis, and prevention of tumours.	Treatment includes removal of tumours, radiotherapy, etc.
Orthopaedic	Includes disorder or injuries affecting muscles, joints, bones, ligaments, tendons, and nerves.	Treatments include hip replacement, knee replacement, fractures, etc.
Neurosurgery	Surgery of the nervous system.	Consisting of treatment for the spine, lumbar disc, brain, etc.
Central Nervous System/ Brain	Brain related disorders are categorised within the central nervous system.	Includes meningitis, stroke syndrome, viral encephalitis, etc.
Gastrointestinal tract issues	Common problems affecting the colon, rectum, and other parts of the digestive system.	Includes gastritis, gastroenteritis, dehydration, diarrhoea, cirrhosis of the liver, etc.
Diabetes	–	Includes insulin-dependent and non-insulin-dependent diabetes treatment.
Appendicectomy	Surgical operation to remove the appendix.	Includes surgical and laparoscopic removal of the appendix, as well as other related procedures.
Cholecystectomy	Removal of the gallbladder.	–
Respiratory issues	Disorders related to the lungs and other parts of the respiratory system.	Includes asthma, bronchitis, chronic obstructive pulmonary diseases, etc. Acute respiratory distress syndrome is also included in this category.
Lower respiratory infection	Any infections in the lungs or below the voice box. These include pneumonia, bronchitis, and tuberculosis.	Includes pneumonia and bronchitis. TB is also included but is categorised separately.
Tuberculosis	Caused by *Mycobacterium tuberculosis*, and affects the lungs and, in some instances, other parts of the body as well.	–
Exclusion: Reproductive health and childcare (e.g.: neonatal care) is excluded. Package with claims less than 100 and accruing amount less than 1.25 lac are also excluded.		

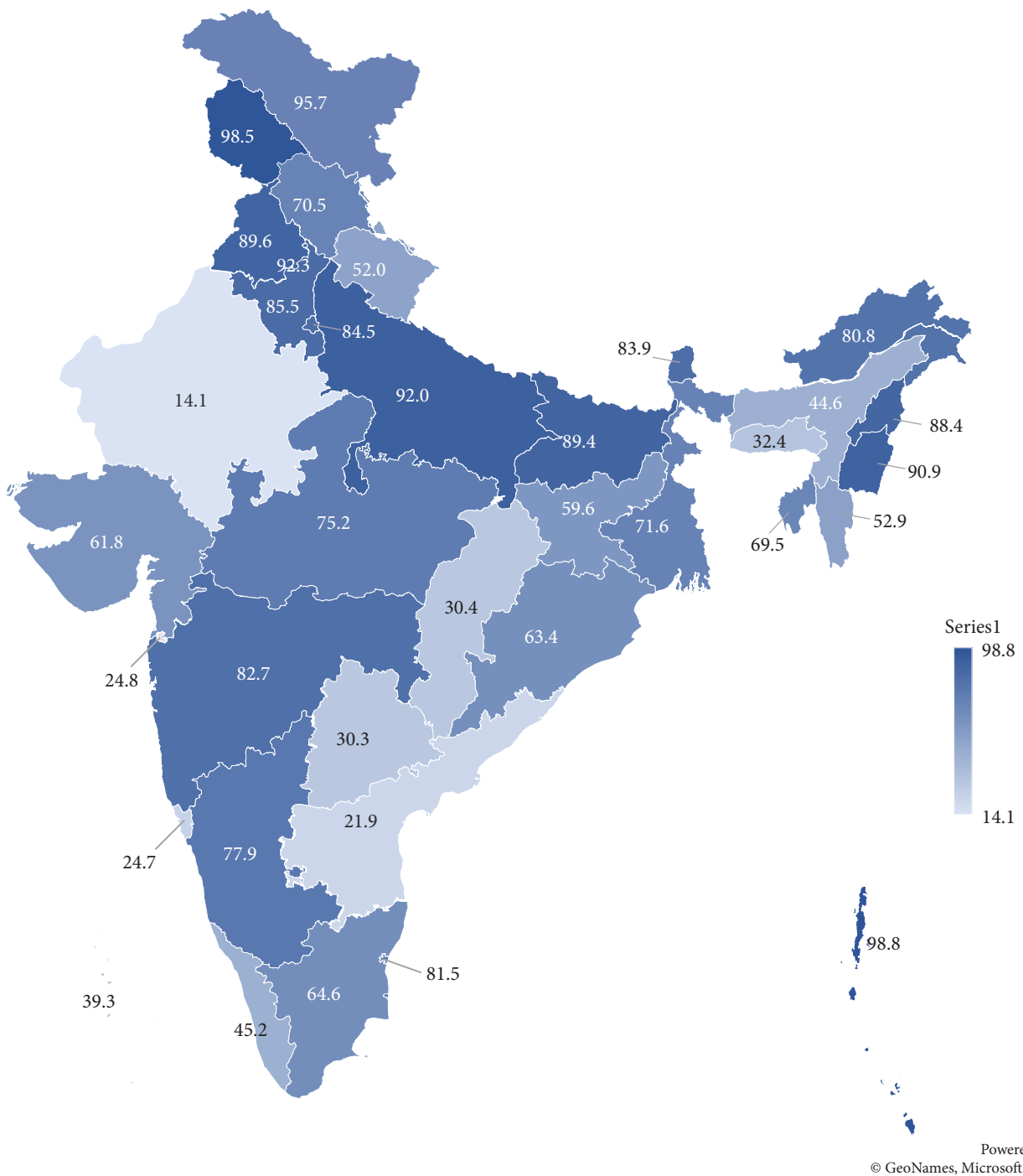*Source: https://mhis.org.in/ and https://vizhub.healthdata.org/gbd-compare/india. Categorisation of disease packages by authors.*

Figure ii (a): Access to Any Health insurance Across Indian States In Rural Areas as per NFHS-5 for 2019–21
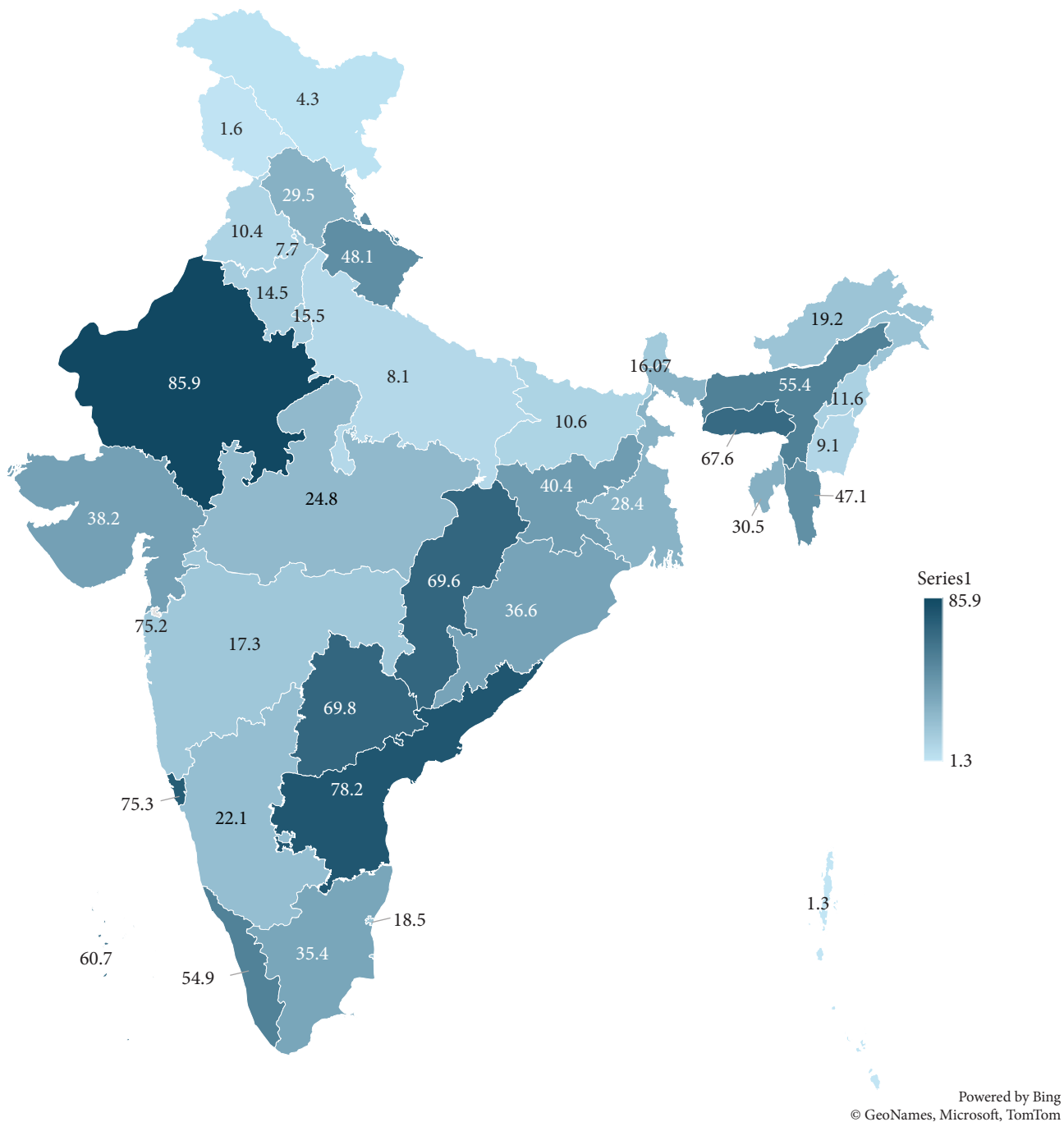
Source: NFHS, 2019–2021.

Figure ii (b): Access to Any Insurance Across Indian States in Urban Areas as per NFHS-5 for 2019–21

Source: NFHS, 2019–2021.

About the authors

Nandita Bhan currently works as Professor at the Jindal School of Public Health and Human Development (JSPH) at O.P. Jindal Global University (JGU). She is a Visiting Fellow with CSEP. She is a social epidemiologist by training with degrees in Public Health and Social & Behavioral Sciences from Harvard University, University College London and Delhi University. She has previously worked with the Center on Gender Equity and Health (GEH) at UC San Diego and the Public Health Foundation of India (PHFI).

Nandita's work focuses on social inequalities, particularly the role of gender equality and the social, behavioral and structural determinants of health and well-being. Her research and teaching emphasise on utilising both quantitative and qualitative methodologies to improve the measurement of health and wellbeing, of urbanisation and behavior change interventions in low and middle-income countries.

Prajakta Pradip Shukla is a health researcher, working as a Research Associate with CSEP. With a Ph.D. in Maternal Health, she has keen interest in issues such as gender and health, universal health coverage, reproductive health, community health workers as well as in understanding the functioning of health systems.

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Compensating for the Fiscal Loss in India's Energy Transition

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