

# The Magnitude of Outpatient Visits for Non-Communicable Diseases in Karnataka: A District-level Analysis

Manjula G. Hadagalimath<sup>1</sup>, Ragini K. Itagi<sup>2</sup>

<sup>1</sup>Research Investigator, Population Research Centre, JSS Institute of Economic Research Centre, Dharwad-580004, Karnataka

<sup>2</sup>Field Investigator, Population Research Centre, JSS Institute of Economic Research Centre, Dharwad-580004, Karnataka

Corresponding Author: Manjula G. Hadagalimath

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## ABSTRACT

Noncommunicable Diseases (NCDs) are the leading causes of premature deaths globally. Seven out of 10 deaths attributed to NCDs. Cardiovascular diseases, Cancer, Respiratory and Diabetes account for 82% of total NCD deaths and 54% loss in disability-adjusted life years. Additionally, the onset of NCDs declined to  $\geq 45$  years. Globally, several strategies adopted to reduce the burden of NCDs. In India, all public health facilities provide free screening, diagnosis, and treatment services under NPCDCS programme. The present study explores, proportion of outpatients visited across districts in different levels of public health facilities for NCDs in Karnataka. The magnitude of outpatients for NCDs tremendously increased in the state. A greater proportion of patients for hypertension, diabetes and epilepsy visited to PHCs. A majority of patients for oncology, acute heart disease, mental illness, and epilepsy services visited either DH/Medical Colleges or SDHs. However, previous studies show, health facilities are not well equipped to confirm healthcare services for NCD cases. Hence, the present study suggests, there is urgent need to strengthen infrastructure, appoint specialists, and regular supply of ample medicine and diagnostics to manage critical NCD patients at all health facilities.

**Keywords:** Hypertension, Diabetes, Oncology, Mental Illness, Public Facilities

## INTRODUCTION

Universally, noncommunicable diseases (NCDs) have been a significant public health challenge of the 21<sup>st</sup> century. These have emerged as the foremost reason for morbidity and mortality (1). Until the middle of the 20th century, communicable diseases were prevalent all across the world. Till 1960, smallpox, plague, and malaria continued as "top killer" ailments all over Africa and Asia including India. Smallpox had been eradicated in India by the late 1970s, as a result of continuous initiation of vaccination, improved hygiene and housing facility had lowered the global problem of

infectious illnesses (2). Nonetheless, by the middle of-1990s, other communicable diseases for instance pulmonary tuberculosis (5.3%), gastroenteritis/dysentery (3%), and pneumonia (4.7%) were causing a considerable number of deaths, demonstrating the burden of infectious diseases (3)

With globalization, industrialization, rapid urbanization, and lifestyle changes, NCDs are rapidly spreading around the world and reached epidemic levels in several nations (4). Annually 40 million individuals die due to NCDs which account for almost 70% of deaths throughout the world (5). Out of

which 15 million fatalities occur among adults in the age group of 30 to 69 years, low-income and middle-income countries (LMICs) account for more than 80% of these premature deaths (6). Further, it is predicted that by 2030, 52 million people die every year from NCDs (7). Cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are the core non-communicable disease groups which account for 82% and 54% of loss in disability-adjusted life years of all NCD deaths. Cardiovascular diseases account for the main cause of NCD deaths (17.5 million annually), cancer (8.2 million), respiratory diseases (4 million) and diabetes (1.5 million) (8).

NCDs cause crudely 5.87 million deaths in India, accounting for 60% of total deaths. More than two-thirds of all deaths from NCDs in the WHO's South-East Asia Region (SEAR) are attributable to India (WHO, 2014). It is facing an epidemiological shift from communicable to chronic diseases with more than 20% of the inhabitants. In most developing countries, the onset of NCDs usually commences among individuals at the age of 55 years or above, however, in India, the age of the start of NCD has declined to  $\geq 45$  years of age (9). The National Family Health Survey (NFHS) 4 report shows, per 100,000 population 2,630 women and 2,573 men aged 15-49 have diabetes, 821 women and 739 men have any heart disease, 1490 women and 736 men have Asthma, and 330 women and 81 men have cancer. Supplementary, 12% of women and 17% of men have hypertension disease. As of 2016, annually about 4 million deaths occurred due to cardiovascular diseases, respiratory diseases and diabetes among those aged 30-70 years, and most of them are premature death (10). The burden of NCDs influences the global economy largely, it is predicted that only 2 diseases i.e., cardiovascular diseases and diabetes reduce global GDP by 5% (11).

The World Health Organization (WHO) presented an Action Plan of Global Strategy

for the Prevention and Control of NCDs at its World Health Assembly in 2008. Being a member state of WHO, India has implemented various health programs to reduce the burden of NCD and supported all states to implement such programs nationwide (12). Additionally, India is the first country to set concrete national goals and benchmarks for cutting the number of early deaths from NCDs by 25% globally by 2025(13). In this context, the Ministry of Health and Family Welfare (MoHFW), Government of India (GOI), has implemented the "National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke" (NPCDCS) with the objectives to increase awareness on risk factors, to set up infrastructure (like NCD clinics, cardiac care units) and to carry out opportunistic screening at primary health care levels. In 2018, a total of 6.51 crore patients were screened at NCD clinics. Of these, 4.75 % of patients were diagnosed with diabetes, 6.19 % with hypertension, 0.3 % with cardiovascular diseases, 0.10 % with stroke and 0.26 % with common cancer (14).

The study conducted on "The Economic Implications of Non-Communicable Disease for India" shows that, around 40% of all hospitalizations and 35% of all outpatient visits were due to NCDs in 2004. In addition to making it hard for households to afford treatment, NCDs significantly strain the health system on the health system. The percentage of out-of-pocket (OOP) expenses for NCDs climbed from 31.6% in 1995 to 47.3% in 2004(15). In terms of accessing health care for NCDs, around 35% of beneficiaries availed NCD services from government facilities (16).

To form effective policies to address the burden of NCDs, it is very crucial to have enough statistics at the country, state and regional levels. In India, the Indian Council of Medical Research (ICMR), and the National Family Health Survey (NFHS) survey, reports provide the prevalence of NCDs. Additionally; the Health Management Information System (HMIS) is

one of the government's standard data sources which reflects the number of NCD patients registered to access services at different levels of public health facilities. In this context, the authors put an effort to explore the percentage change in outpatient visits for NCD OPD, the magnitude of outpatient visits for NCDs across the districts and the type of NCD patients attending different levels of public hospitals in the state.

## MATERIALS AND METHODS

HMIS is a Government web-based monitoring information system that has been put in place by the Ministry of Health & Family Welfare (MoHFW), Government of India, since October 2008 with the view to monitor the National Health Mission (NHM) and other Health programmes and provide key inputs for policy formulation and appropriate programme interventions. Around 2 lakh health facilities (across all States/UTs) upload facility-wise service delivery data on monthly basis on this web portal. It captures facility-wise service delivery information on Reproductive, Maternal and Child Health, Immunization, Family planning, Vector-borne disease, Tuberculosis, Morbidity and Mortality, Outpatient Department (OPD), Inpatient Department (IPD) Services, Surgeries, etc., data on monthly basis. The portal gives a physical performance of all health facilities from Health Sub Centre (HSC) to District hospitals, District, State and National levels. Further, the data items from 14.1.1 to 14.1.9 offers information on the total number of new out-patients for Diabetes, Hypertension, Stroke/Paralysis, Acute Heart Diseases (AHD), Mental illness (MI), Epilepsy, Ophthalmic, Dental and Oncology attended at the various levels of public health facilities during the reporting period.

### Data Source

HMIS data from 2017-18, 2018-19 to 2019-20. (HMIS data entry live data <https://nrhm->

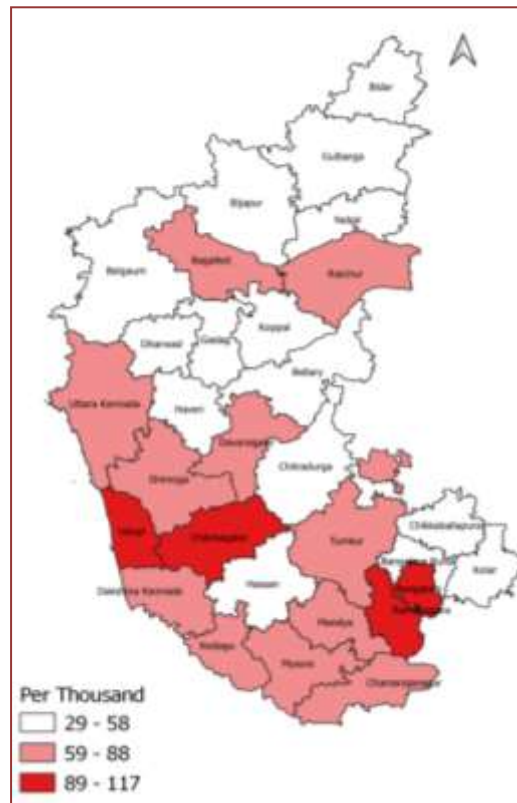
[mis.nic.in/MOHFW\\_MIES\\_RELEASE/UI/Reports/Transaction/QueryBuilder/frmQuery\\_Builder.aspx](https://mis.nic.in/MOHFW_MIES_RELEASE/UI/Reports/Transaction/QueryBuilder/frmQuery_Builder.aspx) Facility data accessed on 20.5.2020 District level HMIS data accessed on 22.5.2020).

## STATISTICAL ANALYSIS

In this study, an effort was made to understand the percentage change in attendance of outpatients for NCD during 2017-18 to 2019-20 across the districts using the HMIS dataset. However, further analysis was restricted to the most recent (2019-20) year statistics to understand the proportion of patients who attended OPD for Hypertension, Diabetes, Stroke/Paralysis, Acute Heart disease, Mental Illness, Epilepsy and Oncology across the districts. Further, to understand the proportion of patients who attended to use services from different levels of public health facilities, the HMIS dataset of Health Sub Centre's (HSC), Primary Health Centres (PHC)/Urban Health Centres (UHC), Community Health Centre's (CHC), Sub Divisional Hospitals (SDH) and District Hospital (DH)/Medical Colleges was consolidated and calculated. The proportion of different categories of patients visited for NCD in districts was calculated for 1,000 patients. Additionally, plotted the maps to see the variation in the proportion of NCD patients attended in various districts of Karnataka using the geographic information system (GIS) method.

## RESULT

Map 1 depicts the number of outpatients who attended OPD for NCD across the districts in 2019-20. As many as 89 to 117 outpatients attended OPD for NCD in Ramanagar, Bangalore Urban, Udupi, and Chikmagalur. In contrast, just 29 to 58 outpatients were attended for NCD in Koppal, Chikkaballapur, and Dharwad districts.



Map1: Proportion of new outpatients visited for NCD across the districts

### Distribution of outpatient's visits for different NCDs

Out of 7,415,201 individuals, little less than half of the patients attended for Hypertension followed by Diabetes. Nevertheless, just 1% of patients attended for Stroke/Paralysis.

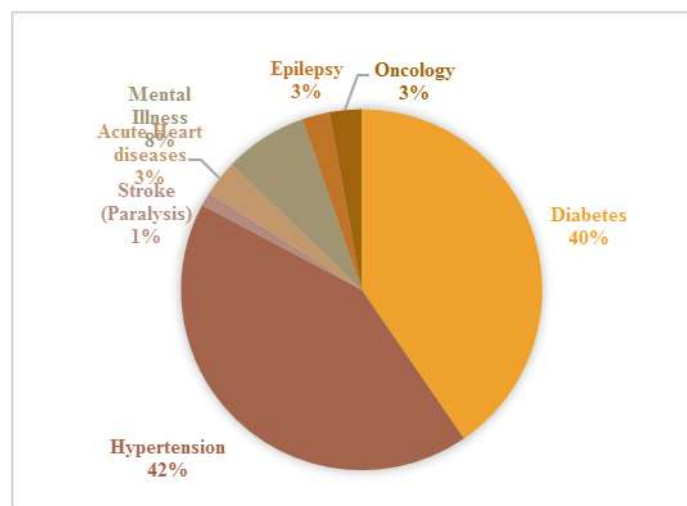


Figure 1: Percent distribution of patient visits by type of NCD

### Distribution of outpatient visits for NCDs to different levels of Public Health Facilities

A total 61,87,353 patients received health care services at various levels of public health facilities out of 74,15,201 new NCD

OPD cases in the state during 2019–20. Of which 35% of patients visited PHCs, followed by SDHs (26%) and DH/Medical Colleges (16%). But, just 11% of patients visited HSCs (Figure 3).

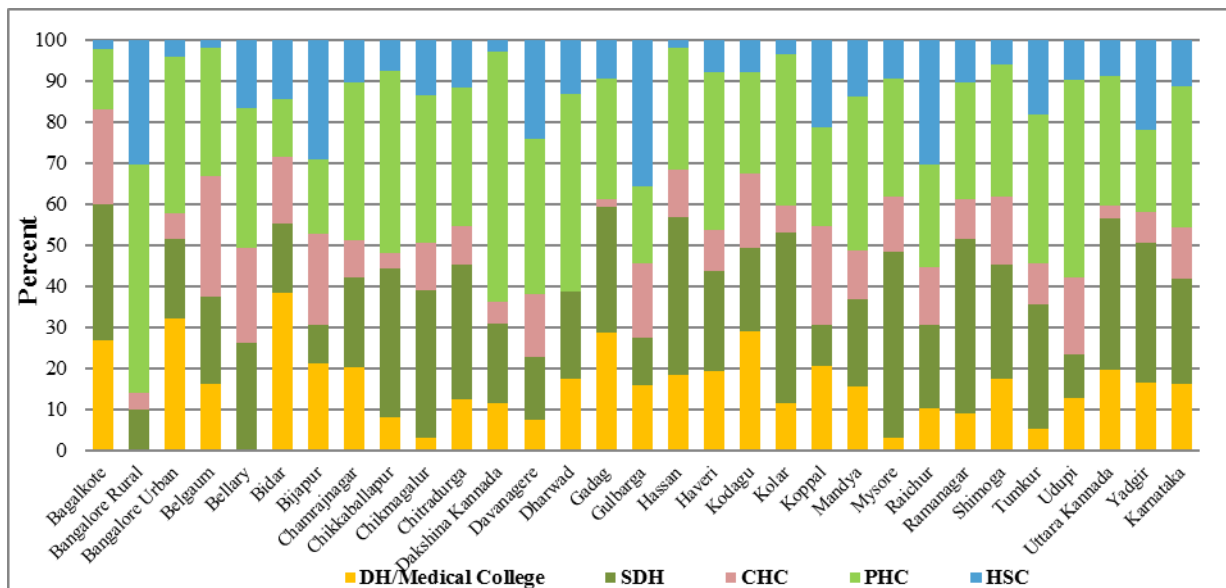


Figure 2: Distribution of NCD OPD visits by type of public health facility in Karnataka, 2019-20

Distribution of outpatient visits for NCDs to Public Health Facilities across the Districts Figure 3 illustrates the percentage distribution of NCD OPD visits to different types of public health facilities according to the districts, during 2019-20. Outpatient visits for NCD found significant at DHs including Medical Colleges in Bidar DH/MC (38 visits) and Bangalore Urban DH/MC (32%). However, very least patients visited such facilities in Mysore (3%) followed by Chikmagalur (3) and Tumkur (5) districts. At Sub-divisional hospitals, a little less than half of the patients visited in Mysore. (45 %) and subsequently Ramanagar (42 %) and Kolar

districts. But very fewer patients visited SDHs in Bijapur (9 %), Bangalore rural (10 %) and Koppal (10 %) districts. Around 30 percent of patients visited CHCs in the Belgaum 24% in Koppal, however, negligible patients visited in Gadag (2%) and Uttara Kannada (3%) districts. A significant proportion of patients for NCD visited to PHCs in Dakshina Kannada (61 %), Bangalore Rural (55 %), while little proportion in Bidar (14 %) and Bagalkote (15 %) districts. Further, more than one-third of patients visited to HSCs in Gulbarga (36%) and Bangalore Rural (31%), less in Hassan (2%), Bagalkote and Belgaum (2%) districts.

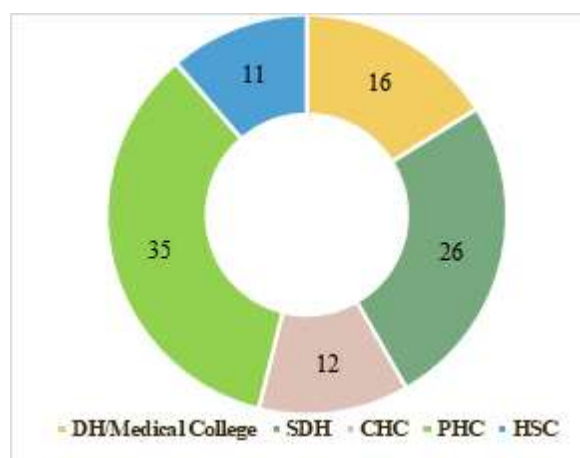


Figure 3: Distribution of outpatient visits for different NCDs across the state



### Outpatient visits to various public health facilities by types of NCDs, Karnataka

Figure 4 exhibits, more than one-third of new outpatients for Epilepsy (40%), Hypertension (39%), and Diabetes (34%) visited PHCs. Around one-fourth were

attended SDHs for the same causes. However, most of the outpatients for Oncology (65%), Mental Illness (52%), and AHD (47%) visited DHs or Medical Colleges.

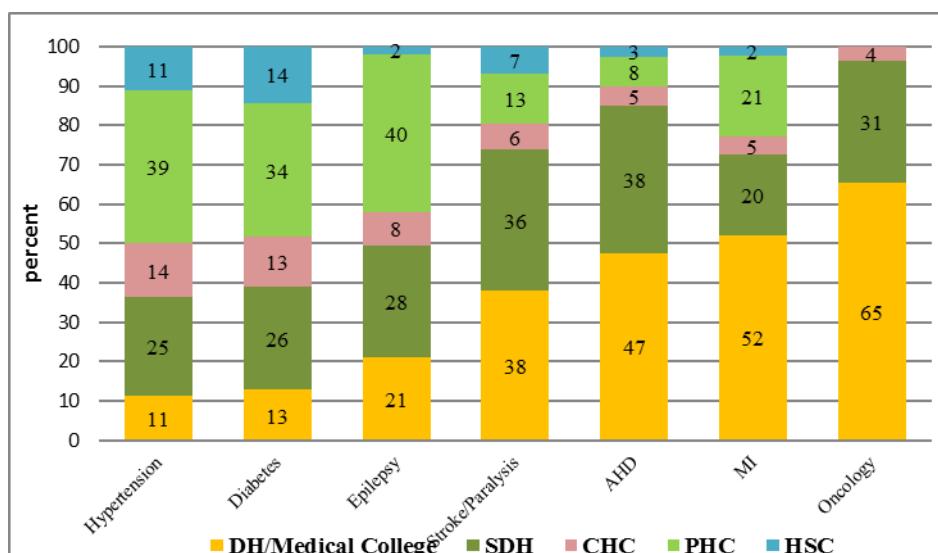


Figure 4: Percent distribution to various public health facilities by types of NCDs, Karnataka

### DISCUSSION AND CONCLUSION

The present study based on HMIS data explores interesting issues and helps policy implications for the health system. Outpatient visits for NCDs raised tremendously in the state during 2017-18 to 2019-20. The study conducted in Kasargod district, Kerala reveals more than one-third (35%) of study participants got service from public health facilities and 41% of the individuals suffering from NCDs used treatment through government facilities (16,17). Early treatment initiation and high-quality NCD care depend on adequate facility preparation and provider readiness. However, previous studies show the system of public health in India, which is intended to be the primary caretaker of citizens' health, is confronted with numerous difficulties at every level, primarily connected to the infrastructural readiness of institutions and the readiness of clinicians to give standardized NCD care (18–20). Outpatient visits for Hypertension and Diabetes very high, it is found less for Stroke/Paralysis, AHD, Mental Illness,

Epilepsy and Oncology at PHCs. As the prevalence of Diabetes and Hypertension cases are more than the other NCD cases hence the attendance of such cases is higher at OPD. Further, the present study shows that most of the patients are accessing services by the PHC for NCDs among public health facilities. However, according to the Rural Health Statistics 2014–15, nine percent of PHCs lack doctors and 40% of PHCs operate without lab technicians. Further, the study conducted in a district of South India in public and private health facilities identifies gaps between infrastructure, workforce, and performance and governance deficiency in local health systems, which could increase patients with diabetes and hypertension's reliance on the private sector (21). Furthermore, the study done by Sumanth MM et.al, 2017 in public Tertiary Hospitals, recommends identifying and resolving issues of patient dissatisfaction in tertiary hospitals by ensuring well-planned services will escort to better compliance of patients to treatment (1). The present study shows a

significant proportion of patients for Oncology, AHD, Mental Illness and Stroke cases seeking treatment at DH or SDH.

## CONCLUSION

The present study concludes that the load of NCDs increasing in public health facilities, there is an urgent need to strengthen PHCs in terms of infrastructure, diagnostic services, manpower and essential medicines required to provide service for hypertension and Diabetic patients. Furthermore, as the outpatient visits for complex NCDs are attending to higher-level public health facilities, our study recommends that there is a need to appoint specialists like Cardiologist, Physician, Oncologist and Psychiatrist etc. and need to strengthen such facilities to ensure super speciality services for the economically vulnerable section at free of cost and to reduce deaths caused due to heart disease, stroke, epilepsy, and cancer in higher-level facilities.

**Limitation:** The HMIS data is information on services delivered through the public health facilities in Karnataka and it does not provide information on other information such as socio-economic and demographic characteristics of the patients accessing the services.

## Declaration by Authors

**Ethical Approval:** The data used for the study is obtained from the web portal of the Health Management Information System. No separate ethics statement and consent for publication was necessary for this study as the HMIS collect the secondary data from the health facilities of Karnataka.

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**Conflict of Interest:** The authors declare no conflict of interest.

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