

## **Functioning of NCD Clinics: A Case Study in Yadgiri District of Kalyana Karnataka Region**

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### **Abstract:**

Non-communicable diseases (NCDs) are a major global health problem, especially in low- and middle-income nations like India. This problem was addressed with the establishment of the National Programme for Prevention and Control of Diabetes, Stroke, Cardiovascular Diseases, and Cancer (NPCDCS). Comprehend the health infrastructure, service delivery, and patient outcomes; this study focuses on evaluating the functioning of NCD clinics in Yadgiri district, in the Kalyana Karnataka region. Primary and secondary data were collected from NCD clinics at Yadgiri district hospital and the Community Health Centre (CHC) in Gurmitkal. Information was gathered using checklists and questionnaires, assessing physical infrastructure, availability of equipment, drugs, human resources, and patient satisfaction with services.

In Yadgiri district, NCD clinics face challenges such as inadequate physical infrastructure, outsourcing of laboratory services, and insufficient availability of drugs. Patient awareness and utilization of services vary, with notable gaps in knowledge regarding available healthcare benefits. Human resources are available as per guidelines, but training and coordination issues exist among health staff. The NCD clinics in Yadgiri demonstrate negligible operational efficiency due to infrastructural deficits, inadequate service integration, gaps in healthcare delivery, as well as awareness. Policy recommendations include improving physical infrastructure, ensuring comprehensive service provision onsite, enhancing staff training, and fostering better coordination between health professionals and higher authorities.

**Keywords:** Non-communicable diseases (NCDs), NPCDCS, healthcare infrastructure, service delivery, Yadgiri district, Kalyana Karnataka region.

**Introduction:**

Over a period of time, non-communicable diseases (NCDs) have become a major public health challenge worldwide, especially in low- and middle-income countries (LMICs). Non-communicable diseases (NCDs) are defined as diseases of long duration and are generally slow in progression. The global pandemic of NCDs is a threat to sustainable development. The Sustainable Development Goals (SDGs) include reducing premature deaths from the four main NCDs by one-third by 2030. Furthermore, three of the nine health targets in the SDGs also focus on NCD-related issues.

India is experiencing rapid demographic and epidemiological transitions, with NCDs causing significant disability, morbidity and mortality both in urban and rural populations and across all socioeconomic strata. According to the Indian Council of Medical Research's (ICMR) State Level Disease Burden Initiative, in 2016, NCDs accounted for an estimated 6.0 million deaths, constituting 62 percent of the total mortality of that year. The four NCDs—cardiovascular diseases, cancers, Diabetes and chronic respiratory diseases—contributed to nearly 58 percent of the premature mortality in the age group 30-69 years.

The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was launched in 2010 in 100 districts across 21 states in order to prevent and control the major NCDs. The main focus of the programme is on health promotion, early diagnosis, management and referral of cases, besides strengthening the infrastructure and capacity building. The vision of NCD clinics is to provide the highest attainable status of health, well-being and quality of life at all ages, free of preventable non-communicable diseases (NCDs) and premature death. The goal is to promote healthy choices and reduce preventable morbidity, avoidable disability and premature mortality due to NCDs in India.

In India, NCD cells have been established in all 36 states and UTs, and district NCD cells have been established in 390 district headquarters as of March 2017. Provision has been made under the programme to provide free diagnostic facilities and free drugs for NCD patients attending the NCD clinics at the district and CHC levels. As of March 2017, there were 388 district NCD clinics, and 2115 CHCs had NCD clinics established in the country. Also, 133 Cardiac Care Units (CCU) for emergency cardiac care and 82 Day Care Centres for cancer chemotherapy have been set up in identified districts.

Similarly, in Karnataka, NCD cells have been established in all 30 districts, which have been functioning in order to screen the patients, and necessary treatment has been provided in the district hospital, where 10 bed facilities have been provided to NCD patients. Apart from this, there are 243 NCD clinics that have also been functioning at the SDH and CHC levels in Karnataka.

### **Objectives:**

1. To Study the Existing Health Infrastructure at NCD Clinics in the District of Yadgiri in terms of Human Resources as well as Physical Infrastructure is a Concern.
2. To Understand the Various Health Care Service Delivery Providing in the NCD Clinics in Yadgiri District.

### **Literature Review**

**Chandra et al. (2012)**, this study found that role of district hospitals in providing initial care for NCD patients and discussed the challenges faced by healthcare professionals in rural regions like Yadgiri. Despite this, the establishment of clinics was seen as a significant step forward in improving access to preventive care and early diagnosis.

**Reddy et al. (2015)**, this study focused on the NCD screening program and the integration of these clinics with existing health services, emphasizing the critical role of awareness and community engagement in the success of these programs. They observed that the effectiveness of these programs was significantly influenced by the availability of trained staff, adequate equipment, and proper coordination with district and state health authorities.

**Sharma et al. (2016)**, this study explored the impact of outsourcing laboratory services and the resulting delay in diagnostics at rural clinics. Their findings indicated that outsourcing laboratory services led to a reduced ability for prompt medical intervention. Similarly, *Verma et al. (2017)* identified the gaps in patient awareness regarding free healthcare services provided under the NPCDCS. Their research showed that although patients were aware of the existence of NCD clinics, many were unaware of the full range of services offered, such as free drugs, diagnostic tests, and referral services.

**Rai and Sharma (2019)**, this study examined the human resource challenges in rural NCD clinics, noting that although the government had provided the necessary guidelines for staffing,

training and coordination between different health professionals remained inconsistent. Their research emphasized the need for ongoing training to improve staff competency in managing chronic conditions like cardiovascular diseases and diabetes. Furthermore,

**Kumar and Singh (2020)**, this study explored the role of telemedicine and digital platforms in improving patient engagement and follow-up care in NCD clinics, particularly in remote areas. Their findings indicated that digital interventions could bridge the gap caused by limited physical infrastructure.

**Prakash and Mehta (2022)**, this study highlight the patient satisfaction and the effectiveness of NCD clinics in providing comprehensive care. This research echoed findings from earlier studies, emphasizing the need for improved infrastructural facilities, especially the availability of dedicated laboratory services and a 10-bed facility for geriatric care, which were not fully implemented in some clinics like those in Yadgiri district.

**Das and Rao (2023)**, this study critically reviewed patient knowledge and access to NCD services. Their survey found that while NCD clinics were generally well-known, many patients still faced barriers in accessing services due to lack of awareness about the full spectrum of benefits provided, such as free drugs and diagnostic tests.

#### **Data Source and Methodology:**

For the study, both primary and secondary data have been collected from the NCD clinics that are functioning in the district hospital and the CHC of Yadgiri district in Kalyana Karnataka Region. Secondary data have been collected from the Human Development Report, "Karnataka 2022, District Census Handbook," Yadagiri 2011. Data has been collected out from the Department of Health and Family Welfare Services, NCD Cell, "Government of Karnataka, National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)," launched in 2010.

Primary data has been gathered by using appropriate checklists and questionnaires for each NCD clinic in the visited health facilities. Similarly, the opinion of the patients on the available screening and necessary health care services provided at OPD and IPD health care service delivery at NCD clinics has been investigated.

A detailed amount of information has been collected on accessibility, physical infrastructure in terms of buildings, laboratories, equipment (in terms of availability, functionality and usability), supply of essential drugs, human resources (in terms of sanctioned, in position and vacant), training skills among health staff and other services like laboratories and additional support services.

### **Kalyana Karnataka Region:**

The Hyderabad Karnataka, also known as the Kalyana Karnataka region, includes the seven backward districts of Northern Karnataka: Kalaburagi, Bidar, Raichur, Koppal, Yadgir, Ballary and Vijayanagara. Article 371-J, which provided for special provisions for the Kalyana-Karnataka region, was inserted in the Constitution by the 98<sup>th</sup> Constitutional Amendment Act of 2012.

### **Yadgiri District:**

Yadgiri district was carved out of the erstwhile Gulbarga (Kalaburagi) district of Hyderabad, Karnataka, also known as the Kalyana Karnataka region, in 2009. Basically, this is among the backward districts of Karnataka. The district has 10,954.97 square kilometres of geographical area, comprising 7 sub-divisional administrative blocks and a total of 876 villages. As per the 2011 census, the total population of Yadgiri is 11,74,271, of which a majority, i.e., 81 percent, resides in rural areas. There are 984 females per every 1000 males; the density of population is 224, which is below the state average of 319. The district has a 2.69 percent geographical area and 1.92 percent of the state's population.

As per the 2011 census, the average literacy rate of Yadgiri district is 52.36 percent, and the child sex ratio is 942, which is lower than the general sex ratio of 984 at 42 percentage points. The proportion of males and females in the total population is almost equal. The share of SCs and STs in the total is more than a quarter at 35.78 percent. And similarly, the share of the child population (below 6 years) in the total is about 15.81 percent. The percentage of the working population is 46.64 percent of the total population. There are a total of 111 public health institutions in the district, which includes the district hospital, which means each health institution serves a population of 10,579.

According to the Planning, Programme Monitoring and Statistics Department of the Government of Karnataka, out of 30 districts, the Human Development Index (HDI) of Yadgiri is 0.196 and the district-wise health index (DHI) is 0.389 (2011). The district ranking in terms of the above is 29<sup>th</sup> and 26<sup>th</sup>, respectively. Hence, the district is considered a low-performing district in terms of social, economic and health indexes.

### **Implementation of the NCD programme in Karnataka :**

The NPCDCS (National Programme for Prevention and Control of Cancer, Diabetes, CVDS, and Stroke) was launched in 2010 and is currently implemented in all 30 districts. The above-mentioned five non-communicable disorders are screened for early detection under the NPCDCS: The key objective of this programme is prevention through health promotion, screening and early diagnosis, case management, supervision, monitoring, evaluation and capacity building.

The state NCD cell consists of a joint director, deputy director, state programme coordinator, finance and logistics consultants, and data entry operator. The district NCD cell consists of the District Surveillance Office, assisted by the District Programme Coordinator, Finance and Logistic Consultant, and data entry operator. Currently, district NCD clinics are established in 30 districts. District NCD clinics are operationally assisted by a specialist, staff nurse, counsellor, lab technician, Physiotherapist.

Currently, CHC NCD clinics are in 20 districts. (Kolar, Shivamogga, Udupi, Tumakuru, Chikkamagaluru, Bagalkote, Vijayapura, Belagavi, Kalaburagi, Dharwad, Bengaluru Urban, Mysuru, Hassan, Raichur, Ballari, Bidar, Gadag, Haveri, Koppal and Yadgiri) CHC NCD clinics are operationally assisted by a medical officer, staff nurse, counsellor, lab Technician and data entry perator. As per 2019 figures, the total sanctioned CHC NCD clinics are 243. (of which 97 are taluk-level clinics and 146 are CHC-level clinics.)

### **Discussion and Results:**

In order to report the available health infrastructure in terms of both physical and human resources in the selected NCD clinics in Yadgiri district in the Kalyana Karnataka region, an effort has been made to analyse whether the established NCD clinics have the necessary health infrastructure in terms of both physical and human resources as per the GoI guidelines envisaged

under NHM. Health infrastructure includes the space for buildings, laboratory equipment, drugs and screening and diagnosis services at the visited health facility, which were implemented in 2010.

### **Health care service deliveries:**

As per the information provided by the district coordinator of NCD clinics, in Yadgiri district, only the district hospital and the CHC of Gurmitkal have functioning NCD clinics. However, necessary health equipment is available and functioning at the NCD clinic at the CHC. However, as far as laboratory service is concerned, it is outsourced. Patients have been referred to the general hospital or private hospital. Even the minimum laboratory service is not available at the NCD clinic at the CHC.

As per the guidelines in all OPDs, there is a need to follow a separate queue for the elderly at NCD clinics. However, as revealed by the field observation, a separate queue is not followed for NCD patients, but as per the inquiry, first preference has been given to elderly persons at the NCD clinic at the district hospital. An inquiry was also been made about whether geriatric clinics are conducted with consultation with specialist doctors for the elderly on Tuesday and Friday. It is not followed regularly. The screening has been made available to patients in all day. Under IPD services, free counselling and physiotherapy facilities have been provided to patients, and follow-up services have also been provided to them at the NCD clinic.

### **Physical infrastructure:**

An inquiry on the availability of physical infrastructure in terms of building and space for the NCD clinic in the district hospital of Yadgiri, it was found that the existing NCD clinic is not functioning within the district hospital; it is functioning at the health staff building, which has no adequate space for different sections of health services like the laboratory and separate rooms for doctors as well as for counselling.

Also, the NCD clinic is functioning in a room within the CHC building at Gurmitkal. However, it still requires sufficient rooms for different sections, such as laboratories, OT rooms, and separate rooms for health staff as well as for counselling the NCD patients, respectively.

**Human resources and training skills:**

The available human resources at the NCD clinic in the district hospital of Yadgiri are as per the GoI guidelines. One general physician, two staff nurses, a technician, a physiotherapist, counselor and a data entry operator are in position. The available health staff at the clinic has been trained in key areas of training such as health promotion, NCD prevention, early detection and management of diabetes, CVD and stroke, common cancer screening, etc. Medical officers and ASHAs have been trained in various health skills. The visited CHC in Gurmitkal has the necessary human resources as per the guidelines. The training skills are quite good.

**Availability of health equipment and laboratory services:**

As observed from the field work, both the health facilities of the CHC of Gurmitkal and the district hospital of Yadgiri have the necessary health equipment to deliver healthcare services for NCD patients. It seems to be good. However, it is found that health equipment such as BP apparatus, glucometers, lancets, weighing machine and height measuring scales are available and all equipment are functioning at the NCD clinic. But laboratory services such as Hb, TLC, DLC, platelet count, fasting blood sugar, liver function test, kidney function test, lipid profile, urine sugar and X-ray tests are outsourced both at CHC and at the district hospital of Yadgiri. All laboratory tests are being done at the general hospital.

**Availability of drugs:**

After the counselling of the patients at the NCD clinic, the availability of drugs for needy patients is an important component. However, the NCD clinic at the district hospital of Yadgiri as well as at the NCD clinic of Gurmitkal CHC does not have separate pharmacies; drugs are kept in the district hospital, and hence it is difficult to get the drugs from the general hospital. As per the guidelines prescribed by the government of India, every NCD clinic in the district hospital should make provision for a 10-bed facility, i.e., a geriatric ward. However, so far, the existing NCD clinic has not implemented the same, and it is not working.

**IEC display:**

Posters, handbills and hoardings have been displayed at the visited NCD clinic in Yadgiri district hospital as well as at the NCD clinic at Gurmitkal CHC. However, there is no IEC display with regard to drug availability or a list of laboratory services available for patients both



at the district hospital and CHC. The cleanliness and overall maintenance of the clinic, both at the district hospital and CHC, have been rated as average.

### **Knowledge of the free healthcare components under NCD clinics:**

In Karnataka, NCD cells have been established in all 30 districts, which have been functioning in order to screen the patients and provide necessary treatment for NCD patients. Further, as per the guidelines in the district hospital, a 10-bed facility has been provided to NCD patients at the IPD ward. Apart from this, there are also 243 NCD clinics that have been functioning at the SDH and CHC levels in Karnataka. In view of this, an attempt has been made to understand the availability of free health benefits under NCD clinics among the public at the selected health facilities in Yadgiri.

The study conducted face-to-face interviews with 30 OPD patients in Yadgiri district, which included 14 from the district NCD clinic and 16 from the CHC of Gurmitkal. Of them, 14 respondents were males and 16 were females. A majority, i.e., 73 percent, of the respondents were from urban areas (22 persons), and the rest were from rural areas (8 patients). If we look at their education status, a majority of them were illiterate (60 percent), and only 40 percent were literate. However, interestingly, all of the respondents had knowledge of NCD clinics. The main source to know about the NCD clinic was the health worker (40 percent), followed by 26.66 percent from ANMs, and the same proportion of respondents had heard of the NCD clinic on their own and some 6.66 percent from Anganawadi workers.

The enquiry with the out-patients about their knowledge of various health services, such as screening of NCD patients, availability of drugs, X-ray/scanning facilities, referral services, availability of IPD for NCD patients, guidelines about the separate queue for senior citizens (geriatric care), and diagnosis facilities, which are available under the NCD programme to the public free of charge, It is really very much really helped to public in the Yadgiri District.

First of all, with regard to screening of the patients, around 67 percent of the 30 interviewed beneficiaries said that they were aware of screening. Almost 94 percent of beneficiaries have knowledge of drugs available at no cost at the NCD clinics. Interestingly, 100 percent of the interviewed beneficiaries do not have knowledge of the scanning facility, which is available at the NCD clinic free of charge in Yadgiri district. However, when it came to referral, the knowledge among the interviewed outpatients was hardly about 7 percent. Similarly, the

knowledge of IPD facilities among NCD patients is zero. The knowledge of how to maintain a separate queue for geriatric care is around 20 percent. About diagnosis facilities, around 67 percent out of 30 patients do not have knowledge of the diagnosis facility, which is available at no cost.

### **Opinion of the health officials on NCD clinics:**

In order to understand the overall function of NCD clinics, i.e., in terms of the weaknesses and strengths of the selected NCD clinics in Yadgiri district, we sought the opinion of the health staff in this regard on the basis of five categories, i.e., (a) very good, (b) good, (c) average, (d) poor and (e) very poor. The overall opinion about the NCD clinic at Yadgiri district hospital was expressed by the health staff as poor. And except for space and human resources, the rest of the issues, such as physical infrastructure, health equipment, laboratory equipments and drug availability, were mentioned as not sufficient. Similarly, coordination with higher authorities with regard to administrative issues and the financial support extended by the department were not supportive.

### **Findings:**

- In Yadgiri, the district NCD clinic is working in the available health staff quarters, located behind the district general hospital of Yadgiri. There is no adequate space in the existing health facility of the NCD clinic.
- The NCD clinic doesn't have separate laboratory services within its premises. The laboratory and other services are being provided to patients at the district general hospital. Similarly, the NCD clinic doesn't have a separate pharmacy. NCD drugs are available at the district general hospital.
- A 10-bed geriatric ward was recently adopted in the district general hospital, but it was still not working.
- The available infrastructure in terms of physical infrastructure at the NCD clinic was not adequate, and general cleanliness was not up to the mark. It was rated as average. It required basic health and laboratory equipment.
- No toilet or water facilities were available at the NCD clinic.
- There were no proper facilities and service delivery as per the NCD guidelines prescribed by the ministry to NCD patients.

- There was a lack of coordination between the health officials and higher authorities with regard to the administration and upgrade of the health facility.
- NCD staff was not getting salaries on time, and the salaries given to health staff at NCD clinics were very low and needed to be increased.
- Interestingly, it was observed that NCD staff did not know about NCD guidelines with regard to the functioning of the NCD clinic. All NCD staff were working on a contract basis.
- A similar case was with regard to the visited NCD clinic at the CHC of Gurmitkal. First of all, the available health infrastructure in terms of physical as well as human resources was inadequate. Except for tests like BP and sugar, none of the tests were available at the CHC. However, basic health equipment was available and functioning.
- No laboratory service was available at the NCD clinic.

### **Conclusion and Policy Recommendations**

Based on the field observation and information collected from various health officials in the district of Yadgiri, there are a lot of issues with regard to the physical infrastructure, availability of drugs and diagnosis facilities at the visited health facilities and they could be rated as average. The overall cleanliness and maintenance of the buildings at the visited health facilities in Yadgiri were quite good. Most of the tests and diagnosis services for NCD patients were not available at the visited health facility.

The CHC of Gurmitkal and the district hospital of Yadgiri did not make provision for a 10-bed facility in IPD for NCD patients. And a separate queue is not followed for the elderly at both of the visited facilities in Yadgiri. Human resources are available at both the visited health facilities as per the norms. But there is a need to increase their salaries. There is a need to increase the training period for health staff too.

Overall, the functioning of the NCD clinic at Gurmitkal CHC was rated as poor. There was a lack of coordination between health professionals and the higher authorities. The financial support given to run the NCD clinic at CHC Gurmitkal was inadequate. It is important to note that most of the existing health staff available at the NCD clinics in Yadgiri did not have knowledge of the NCD programme and the guidelines. This has drawn attention to provide the same to the public at the cost of government efforts.

- Both NCD clinics need separate physical infrastructure facilities, such as buildings, chairs, tables, fans and other health and laboratory equipment.
- Need to provide a physiotherapist, pharmacist, and group D employee to ensure a full-fledged NCD clinic, which is necessary to deliver healthcare services to NCD patients.
- Need to provide all health facilities, such as laboratory tests and diagnosis, in one place. Similarly, necessary drugs need to be provided at the NCD clinic itself.
- All NCD staff require training regarding the NCD programme, guidelines, etc.
- Need to have close relationships among health staff and higher authority to work in order to develop the NCD clinic in Yadagiri District, which belongs to the Kalyana Karnataka region of India.

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