

Are Primary Health Centers Prepared for Noncommunicable Disease Management? A Facility-Based Mapping of Gaps in Coastal Karnataka, India

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Abstract

Background: India is in the middle of epidemiological and demographic transitions, with an estimated 63% of the deaths attributed to noncommunicable diseases (NCDs). Primary health centers (PHCs) can deliver a package of services to prevent and control NCDs. **Objective:** The aim of this study is to assess the status of health promotion activities and availability of resources for screening and the treatment of NCDs in PHCs of Dakshina Kannada district, Karnataka. **Materials and Methods:** A cross-sectional facility-based assessment of all the 65 functioning PHCs (2016-2017) was conducted for the status of health promotion activities, and availability of resources using a checklist evolved from the World Health Organization Package of Essential NCD Interventions framework and Indian Public Health Standards. **Results:** Forty-eight (74%) PHCs had displayed materials on the intake of healthy foods and avoiding junk food. Warning signs of cancer were displayed at 43 (66%) PHCs. The availability of drugs for the management of hypertension (Atenolol and Amlodipine) and diabetes mellitus (Metformin) were seen in all the PHCs. Insulin was available in 64 (98%) PHCs. Sorbitrate and Nifedipine were found in 11 (17%) and 7 (11%) PHCs. More than a quarter of the PHCs were not having the medical officer and other health-care professionals to manage NCDs. **Conclusions:** Preparedness of the PHCs in the health promotion domain was good. The availability of human resources, laboratory support and emergency drugs for the management of NCDs needs improvement.

Keywords: Noncommunicable diseases, primary health care, public health systems research

INTRODUCTION

Noncommunicable diseases (NCDs) have overtaken communicable diseases as the most common causes of morbidity and premature mortality worldwide. According to the Global Burden of Disease estimation, NCDs accounted for 80.6% of years lived with disability (YLD) as against combined YLD due to communicable, maternal, neonatal, and nutritional deficiencies.^[1] Almost 80% or more of the NCDs occur in low and middle-income countries. India is in the midst of an epidemiological and demographic transition with an increasing burden of chronic diseases, decline in mortality and fertility rates, and aging of the population. NCDs are estimated to account for 63% of the deaths in the Indian context.^[2] According to the National Family Health Survey 4, raised blood pressure was seen among 8.8% and

13.6% and raised blood sugar was seen in 8.6% and 11.9% men and women respectively in India.^[3] Addressing the risk factors of NCDs involves a multidisciplinary approach. Clinic-based primary prevention strategies which involve control of blood pressure, lipids and diabetes are important along with primordial prevention measures like tackling the social determinants, public health financing, population policies for smoking cessation, promotion of healthy diet and

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physical activity, and changes in medical education curriculum focusing on preventive care.^[4]

Primary health-care facilities are the first point of care in the Indian public health system and are ideally positioned to provide regular contact with patients, apply the preventive measures and continuum of care that people need to prevent or delay disabilities resulting from chronic health conditions. They can deliver a defined package of services to prevent and control NCDs, including information, education, and communication related to a healthy lifestyle and proper nutrition, smoking control services, regular medical check-ups for adults over 40 years of age, and undertake relevant emergency management.^[5] It is now well recognized that the increasing burden of NCDs in India is best addressed by a primary health-care approach.^[6] The World Health Organization Package of Essential NCD interventions (WHO PEN) framework envisages the integration of NCDs into primary health care settings and delivery of a prioritized set of quality and cost-effective interventions at the primary care level.^[7]

Taking cognizance of the urgent need, the Government of India initiated national program for the prevention and control of cancers, diabetes, cardiovascular diseases and stroke (NPCDCS) during 2010-2011, which envisaged to cover the entire country by 12th five-year plan (2012-2017). The framework included components to reduce the burden of morbidity, premature mortality, and disability related to NCDs through a primary health care strategy.^[8] There is a paucity of published literature in the field to see the performance of the primary health-care facilities in providing basic health promotion and disease management facilities for NCDs. Hence, we intended to assess the status of health promotion activities and availability of resources for screening and the treatment of NCDs in primary health centers (PHCs) of Dakshina Kannada (DK) district, Karnataka state.

MATERIALS AND METHODS

DK, a coastal district in the southwestern part of Karnataka, India lies between 12.57' and 13.50' North latitude and 74' and 75.50' East latitude with a geographical area of 4859 km² and population of 20,89,649 (Census India, 2011). The public health infrastructure comprised one district hospital, one maternity and child health hospital at district headquarters, eight sub-district hospitals, and sixty-five PHCs in 2016-2017. DK was one of the two districts from Karnataka selected for the world bank funded NCD project launched in October 2015, which aimed at building public health capacity to identify and treat patients suffering from NCDs right at PHC level.^[9,10] The medical officers and staff nurses of all PHCs were trained in batches through this project. NPCDCS was launched in the district in March 2018 (source: district health and family welfare office, DK).

This cross-sectional facility-based assessment was conducted across all 65 functioning PHCs (2016-2017) of DK district. PHCs were physically visited by principal investigators from

November 2016 to January 2017. A predesigned, pretested pro forma based on the Indian Public Health Standards (IPHS) for PHCs^[11] and WHO PEN guidelines (components of essential technologies and essential medicines) for low resource settings was used to collect the information.^[7] The data were entered and analyzed using Microsoft excel for percentages and proportions. Institutional ethics clearance was obtained along with a waiver of consent as no human participants were involved. Required permissions were obtained from the office of the district health and family welfare.

RESULTS

The results of the facility-based assessment of PHCs are described under two broad categories: health promotion activities for prevention and resources for screening and the treatment of NCDs.

About 48 (74%) of the PHCs had displayed materials in their waiting areas related to the intake of healthy foods and avoiding junk food. Warning signs of cancer and the need for early diagnosis and treatment of NCDs were displayed at 43 (66%) and 42 (65%) PHCs respectively. Implementation of the ban on smoking in public places and regulation on the sale of tobacco/tobacco products was implemented in 56 (86%) PHCs. About 40 (62%) PHCs conducted the survey of the population to identify vulnerable and those suffering from NCDs [Table 1].

Forty-five (69%) PHCs had at least one medical officer. Nonavailability of nutritionists and physiotherapist was evident from all PHCs. Point of care test supplies (blood glucose estimation strips/glucose strips, lancets/needles)

Table 1: Status of health promotion activities on prevention of non communicable diseases in the primary health centers of Dakshina Kannada, 2016-2017, (n=65)

| Activities | Percentage |
|--|------------|
| Display material on health education messages in PHCs | |
| Promoting intake of healthy foods and avoiding junk food | 74 |
| Reducing salt in the diet | 68 |
| Increased physical activity/regular exercise | 71 |
| Avoidance of tobacco and alcohol | 72 |
| Health hazards of obesity | 65 |
| Avoiding and managing stress by using appropriate strategies | 52 |
| Awareness about early warning signs of common cancers | 66 |
| Importance of early diagnosis and treatment | 65 |
| Regular health check-up | 69 |
| Implementation of other desirable components in PHCs | |
| Implementation of ban on smoking in public places, sale of tobacco products to minors, sale of tobacco products within 100 yards of educational institutions | 86 |
| Survey of population to identify vulnerable, high risk and those suffering from disease | 62 |

PHCs: Primary health centers

were available in 64 (98%) PHCs. Urinary strips for proteins and ketones were available in 49 (75%) PHCs. Glycosylated hemoglobin estimation and electrocardiogram facilities were not available in any of the PHCs. The availability of drugs for the management of hypertension (atenolol and amlodipine) and diabetes mellitus (metformin) were seen in all the PHCs. Insulin was available in 64 (98%) PHCs. Pioglitazone was not available in any PHC. Drugs used for the management of chronic disease emergencies such as sorbitrate and nifedipine were found in 11 (17%) and 7 (11%) PHCs [Table 2].

DISCUSSION

Primary healthcare is the cornerstone for achieving universal health coverage. It provides a cost-effective approach toward providing comprehensive services near to patient's doorsteps.^[12] With the epidemiological and demographic transition, primary healthcare needs a shift in its focus towards addressing NCDs.^[6,13] Some of the strengths of this health

systems research included on-site assessment of all the primary care facilities and use of a comprehensive checklist based on IPHS and WHO PEN guidelines for assessment.

There were gaps in some of the key items required for the management of NCDs at the primary care level, which included a shortage of health-care staff. Similar findings were observed in studies from other parts of India.^[14,15] The deficiency of nutritionists and physiotherapists was also quite evident and comparable to the study from Madhya Pradesh.^[14] Efficient delivery of primary care services for NCD care requires strong well informed health workforce for ensuring referral at appropriate times.^[16] It is also well established that task shifting and task sharing is an effective strategy for ensuring a continuum of care in NCDs.^[17] In such a scenario, the absence of a full-time medical officer acts as a deterrent for delivery of primary NCD care.

The next essential component in NCD management is the need for essential tools and diagnostics for diagnosis. Many PHCs were not equipped with measuring tape, which is essential for the measurement of waist and hip circumference and the assessment of obesity. Similarly, tuning fork and percussion hammer are required for screening of complications of diabetes mellitus. Nonavailability of these instruments will affect the basic tenets of secondary and tertiary prevention approaches in NCDs. Furthermore, the absence of point-of-care supplies, especially for proteins and ketones in urine and laboratory investigations, namely lipid profile, and serum creatinine in many centers could act as barriers for diagnosing complications of NCDs. These findings are similar to other studies from India.^[14,18,19] Deficiencies in human resources and technologies were also reported in a multicentric study from eight low- and middle-income countries. Deficits were also identified in health financing, access to basic technologies and medicines, medical information systems, and the health workforce.^[20] The WHO PEN mentions that electrocardiograph machines, creatinine, and cholesterol measurements may be incorporated in settings where resources permit.^[13]

It was encouraging to see that drugs required for long-term management of hypertension and diabetes mellitus, including insulin, were available across all/most of the PHCs at the time of visit. However, since we did not have permission to access past records, we were not able to assess the situation of the possible stockouts, which are often seen in public health facilities as reported from another study from Karnataka.^[15] Suboptimal availability of drugs for emergency management of NCD complications is comparable to other studies from Gujarat and Madhya Pradesh.^[14,18] In our study, we did not look into the factors associated with utilization of health care services with respect to NCDs in the public health set up. Studies from Karnataka and neighboring Kerala have reported that long waiting time, lack of attention from doctors, nonavailability of medicines, knowledge about the NCD services provided, home visits by frontline health workers influence the health-care utilization from public health facilities.^[19,21]

Table 2: Availability of resources for screening and treatment of non communicable diseases in the primary health centers of Dakshina Kannada, 2016-17, (n=65)

| Resources | Percentage |
|---|------------|
| Manpower | |
| One medical officer | 69 |
| Laboratory technician | 77 |
| Health educator | 74 |
| Instruments | |
| Sphygmomanometer (mercury or aneroid) | 100 |
| Glucometer | 100 |
| Percussion hammer and tuning fork | 29 |
| Measuring tape | 74 |
| Stadiometer and weighing machine | 98 |
| Laboratory tests | |
| Plasma glucose estimation | 97 |
| Serum creatinine | 31 |
| Serum lipid profile | 18 |
| Drugs for long term management of hypertension | |
| Angiotensin converting enzyme inhibitor (enalapril)/ angiotensin receptor blocker (losartan) | 95 |
| Beta blocker (atenolol) and calcium channel blocker (amlodipine) | 100 |
| Diuretic (thiazide) | 98 |
| Lipid lowering (atorvastatin) | 97 |
| Drugs for long term management of diabetes mellitus | |
| Metformin | 100 |
| Glibenclamide | 97 |
| Glimepiride | 85 |
| Insulin (any type) | 98 |
| Drugs for management of chronic disease emergencies | |
| Aspirin low dose | 18 |
| Nitrate (sorbitrate) | 17 |
| Nifedipine | 11 |
| Frusemide | 25 |
| Dexamethasone | 31 |

Health promotion is one of the key components that need to be implemented in primary healthcare. This study found that there was a scope for improvement in this regard, although two-thirds PHCs had displayed some key messages. It is noteworthy to see that many PHCs had implemented ban on smoking in public places. DK district is a better performing district and our findings cannot be generalized which is another limitation of our study.

CONCLUSIONS

Our facility-based assessment for the prevention and management of NCDs in PHCs indicates good preparedness in terms of health promotion activities, smoking ban, and screening activities. There is a need to improve the components of availability of the human resource, laboratory support, and emergency drugs for the management of NCDs at the primary care level. An essential and desirable package of resources needs to be framed under the NPCDCS to tackle the ever-increasing burden of NCDs in India.

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Conflicts of interest

There are no conflicts of interest.

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