Research Article

Non-Communicable Diseases and their Challenges in India

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Abstract

Background: Non-communicable diseases (NCDs) are one of the major concerns of the 21st century globally. Low- and middle-income countries (LMICs) show a higher burden of NCDs including India. The country has launched various programs for the control and prevention of NCDs, but the organization, integration, and implementation of NCD-related health services and programs face many challenges. The objective of this review article is to study the trends and challenges in the prevention and control of common NCDs in India and find probable solutions to them.

Methodology: Search on PubMed and Google Scholar databases was done. Out of 387 relevant articles, 50 were included. Websites of various institutes and government portals were searched. Data were compiled and studied for identifying the challenges and their solutions.

Results: The challenges were organized at four levels – community, facility, health system and policy, and research as per the WHO Innovative Care for Chronic Conditions frameworks (WHO ICCC) such as identification of eligible beneficiaries, shortage of infrastructure and workforce, lack of skills and need for training, inadequate data, poor surveillance, and monitoring systems and limited research.

Conclusion: India's growing NCD burden needs to be addressed by health-promoting partnerships, policies, and programs. To create successful national, multisectoral program for prevention and control of NCDs, high-level political commitment, intersectoral coordination, and community mobilization is required. Learnings from various other programs could be incorporated for effective management of NCDs in India. A more scientific research-based focus needs to be given to AYUSH and other non-medical interventions.

Keywords: Non-communicable diseases, challenges and solutions, NPCDCS, National Program For Prevention and Control of NCDs, health workers, India

Introduction

Non-communicable diseases (NCDs) or chronic diseases are of long duration and are the result of a combination of genetic, physiological, environmental, and behavioral factors. NCDs include a number of diseases such as cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases.

NCDs cause approximately 41 million deaths every year which is 71% of the total 57 million global deaths. Out of this, 15 million deaths occur prematurely before a person attains 70 years of age;[1] 85% of which occur in low- and middle-income countries (LMICs).[2] NCDs are predominant in developing countries and India is no exemption from them. In 2016, 78% of all NCD-related deaths and 85% of premature adult NCD-related deaths happened in LMICs. The proportion of premature deaths due to NCD in high-income countries was nearly half (25%) as compared with low-income (43%) and lower-middle-income (47%) countries. About 63% of all deaths in India in 2016 were due to NCDs which are far ahead of injuries, communicable diseases, maternal, prenatal, and nutritional problems; alarmingly, 48% of mortality is due to premature deaths that are preventable.[3]

India contributed more than two-third of the total deaths caused by NCDs in the South-East Asian Region (SEAR) of the WHO.[4] As per the report on NCD status in SEAR 2011, the three major factors which were responsible for the majority of deaths every year in this region were raised blood glucose

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levels, raised blood pressure (BP), and use of tobacco. The contribution of NCDs has shown an upsurge from 30% of the total disease burden that is disability-adjusted life years in 1990 to 55% in 2016. There is also a rise in the proportion of deaths due to NCDs from 37% in 1990 to 61% in 2016.[3]

This shows that India is experiencing an epidemiological health transition, causing a transfer in disease burden to NCDs due to changes in demography and lifestyle as a result of rapid urbanization, globalization, and industrialization. On one side, this has led to better economic development, but at the same time, it is also associated with various behavioral, biological and socioeconomic risk factors. Physical inactivity, unhealthy diets, tobacco use, and alcohol abuse are behavioral factors which lead to the development of biological factors such as hypertension, diabetes, dyslipidemia, and obesity which further lead to the development of NCDs. Socioeconomic factors such as poverty, illiteracy, poor health infrastructure, and social inequity also increase the susceptibility of people toward the development of NCDs. As per the National NCD monitoring survey 2017–18, the prevalence of risk factors associated with NCDs among adults (18–69 years) is such as 32.8% in current tobacco use, 15.9% in current alcohol use, 98.4% in inadequate intake of fruits and/or vegetable intake, and 41.3% in insufficient physical activity.

Air pollution both outdoors and households (due to the burning of solid fuel) is also a leading risk factor for NCDs.

Economic Effects Of Ncds

NCDs not only affect health but also productivity and economic growth. India is estimated to experience an economic loss of approximately USD 3.55 trillion by 2030, as shown in Table 1, if the four major NCDs (diabetes, cardiovascular disease, chronic respiratory disease, and cancer) are not taken care of urgently.[5] Various studies have attempted to enumerate NCDs' burden on the Indian economy. In one such study, Thakur *et al*.[6] reported that the cost of NCDs is about 5–10% of GDP. In another study, Mahal, Karan, and Engelgau (2009) estimated that India stands to suffer a cost of 4–10% in annual economic output due to NCDs.[5]

The number of productive life years lost in India due to NCDs has been estimated to be among the highest in the world. NCDs and household poverty are closely interlinked. Poverty exposes people to risk behavior and poor health outcomes. The cost and duration of the NCD treatment being higher than the other diseases impose a large burden on the poor population and lead to higher out of pocket expenditure and poverty.[4]

Table 1: Economic burden of NCDs in India, 2012–2030, Ref – world economic forum, non-communicable diseases India report – 2014

NCD category	Economic loss (in trillions of 2010 US dollars), India
Diabetes	0.15
Cardiovascular disease	2.17
Chronic respiratory disease	0.98
Cancer	0.25
Total NCDs, excluding mental health conditions	3.55
Mental health conditions	1.03
Overall total	4.58

The WHO health profile report, 2014, says that due to high out of pocket expenditure annually about 3.2% of Indians fall below the poverty line and three-fourths of Indians spend their entire income on health care and purchasing drugs.[4,7] The per capita Out of Pocket Expenditure in the year 2017–18 was Rs. 2097; 48.8% of the total health expenditure and 1.62% of the GDP, while the expenditure on pharmaceuticals was 33.4% of current health expenditure.[8]

According to the WHO's World Health Statistics Report 2022, 17.3% of Indian households spend more than 10%, while 6.5% spend more than 25% of their total household expenditure or income on health.

Methodology

A wide-ranging search on PubMed and Google Scholar databases was done using keywords – NCDs, Challenges, National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular disease and Stroke (NPCDCS), National Program for prevention and control of NCDs, Health Workers, India. A total of 387 potentially relevant articles were found in the databases. Out of these 387 articles, 50 articles were included after excluding duplicate articles and publications older than 10 years.

The open-access websites of the WHO, Institute of Health Metrics and Evaluation, Ministry of Health and Family Welfare, Government of India, and other government portals were also searched. The data so collected were compiled and studied for identifying the challenges and their probable solutions in the prevention and control of NCDs in India.

Results

The findings of the literature search have been broadly presented across three categories. Further, within each category, the results are presented at Community Level, Facility Level, Health System and Policy Level, and Research Level where ever applicable.

The Challenges in the Prevention and Control of Ncds in India

Based on the WHO Innovative Care for Chronic Conditions framework (WHO ICCC), there are various challenges that are being faced by the country at the level of community, facility, health system, and policy and research level in dealing with the prevention and control of NCDs.

At community level

There are challenges in the identification of eligible beneficiaries.[9] As the geographical boundaries, revenue

boundaries, judiciary boundaries, and health services-related boundaries are usually unmatching and unclear and there is a large scale migration in and out of urban areas, the listing of households is a great challenge.[10] This makes the provision and organization of care very difficult.

India is struggling with a shortage of human resources[4,8] and as such, the distribution of the workforce is also disproportionate, especially in the rural and isolated areas.[11] A qualitative study conducted in Odisha and Kerala by Rajmohan *et al*. showed that there is a lack of adequate workforce in NCD programs in both the states. It includes a lack of doctors, counselors, physiotherapists, and laboratory technicians. In one of the districts of Orissa, out of the total sanctioned posts, 26% of posts for physicians are lying vacant and the majority of the physicians who are in position are working on a contractual basis. The study also indicated a higher attrition rate of the health workforce due to financial delays.[12] The shortage of trained counselors lays an additional burden of counseling on the already ladened doctors and the lack of standard counseling messages further results in uneven patient education and compliance to treatment.[10]

Poor functioning of community groups and poor community knowledge of NCD and their risk factors are present at the community level.[13] India has 200 million people with hypertension, but only 14.5% are on treatment.[14] A study in India indicated that 25% of the population were unaware of diabetes and only 22.2% of the population and 41% of known diabetic cases knew that diabetes is preventable. Only 42.6% of the educated population including postgraduates, medical professionals, and lawyers knew that diabetes is preventable.[10] Another study conducted among diabetic patients found that 41.4% of respondents have not gone to their health-care provider in the last year; only 13% have got an HbA1c test done, 16.2% got an eye examination done, 32.1% had a serum cholesterol test done, and 3.1% have undergone foot examination.[15]

A step survey done by Thakur *et al*., in Punjab, showed that out of all the known hypertensive cases, only 48.3% of the respondents were aware of their condition and 30.9% are on treatment. Out of all the known diabetes cases, only 34.2% of the respondents knew about their condition and only 28.2% are on treatment.[16] In a similar survey, the results showed that out of all the identified hypertensive cases in Haryana, only 33.4% of the respondents were Knowing their condition and 26.3% were on treatment, while only 12% of the cases were controlled. Out of all known diabetes cases, only 29.5% of the respondents were aware of their condition and only 22.4% were on treatment, while only 13.8% of the cases of diabetes are controlled.[17] People have a profound lack of awareness; yet, few attempts have been done to overcome this knowledge gap on risk factors and enhance NCD health-seeking behavior.[10]

At facility level

As per the Rural Health Statistics Bulletin 2011 Government of India, the Indian health-care system is facing a shortage of public health facilities and required infrastructure such as operation theaters and laboratories. There is a lack of access to diagnostics and a regular supply of essential medicines too. On an average, only 10–12% of cases with diabetes get modern pharmacological treatment in India. The availability of essential oral anti-diabetic drugs like Glibenclamide differs from 100% in Karnataka to 3.8% in West Bengal. Insulin therapy which is believed to be one of the most effective and reliable treatment options for diabetes is also having several barriers to its use.[18]

The health-care provider/front line health-care workers lack knowledge on standards of NCD care in providing services regarding NCDs. There is also a significant gap between skills and knowledge among the health workforce across the country.[6,19-22] There is a huge need that all the staff involved in the management and control of NCDs is fully trained in the NCD related care and management. A Karnataka-based study for the assessment of NPCDCS implementation indicated that only 69% of auxiliary nurse midwives (ANMs) have got training for the NPCDCS program.[23] Being involved in many national health programs and schemes, the health workforce is already laden with doing their assigned responsibilities and priorities. Apart from this, the health workforce is recruited mostly on contract and many research studies have highlighted that role conflict, staff turnover, and poor motivation are also present. A severe shortage of public health workers also discourages evidence-based decision-making due to ineffective health information systems.

The population-based screening under the NPCDCS program also poses many challenges related to the referral and tracking system. Kashyap and Shivaswamy in their study indicated that follow-up treatment services for screened NCDs under NPCDCS must be made available at subcenters to higher centers for better compliance and follow-ups. In addition, the initial screening results suggested a significant loss of suspected cases to follow-up.[24] Properly organized referral linkages have not yet been formed amidst the facilities' treatment and complication management of NCDs. This may lead to higher complications related deaths.

At health system and policy level

India has a relatively poor response to NCD risk factors surveillance and the available information is irregular and partial.[25] The data availability on core risk factor indicators for monitoring the rising burden of NCDs is insufficient in the country.[26] There is also an inadequate focus on health promotion, multisectoral collaboration and coordination, surveillance, monitoring, and evaluation of the program at different levels of health-care delivery.

Many gaps are present in the execution of interventions such as encouraging physical activity in schools and institutions, limiting marketing, and reach to food products that are high in salt, sugar or harmful fats, and legislations such as tobacco advertising ban and raising tax on tobacco products which need to be addressed by intersectoral collaboration.

In India, the private sector contributes to 60–80% of all outpatient health care.[18] Similar is the case with NCDs, where a large number of patients seek care from non-government facilities, but there is no such mechanism for mandatory reporting of the patient who is diagnosed with NCD by such health-care facility. There is a strong need to involve the private sector, corporate hospitals, nursing homes, and smaller clinics which cater for a large number of people so that the actual number of people suffering from NCDs is known. The organization of care, program management, and monitoring systems need to be more prepared and geared up accordingly.

Another major challenge is low budget allocation as well as under-utilization of the allocated budget. In FY 2017–18, the total health expenditure was only 3.31% of the GDP and the Government Health expenditure was 40.8% of the Total Health Expenditure, as presented in Table 2. A study found that Punjab is spending 0.62% and Haryana is spending 1.2% of their total budget available under National Health Mission (NHM) for IEC/BCC/health promotion activities for the year 2016–2017. Out of this IEC/BCC budget, 75% goes for the printing of registers and newspaper advertisements.[27]

At research level

There is limited research on the impact of health promotion and prevention, especially the impact of non-medical interventions on NCDs. The available resources for such research are also very few.

Probable Solutions and Way Forward

India is a country with diversity and regional differences in trends of NCDs, and hence, the solutions to the challenges of NCDs must be in line with local circumstances. A complete set of solutions needs to be employed by various stakeholders in preventing and controlling these diseases further.

At community level

Enlisting and tracking of the eligible beneficiaries need to be done so that the right care and treatment could be provided to the right person. Availability of appropriate human resources such as specialists, nurses, and paramedical staff should be ensured at all the facilities as per requirements and their distribution should be made proportional with a special focus on the rural and remote areas.

Community groups such as the Village Health Sanitation and Nutrition Committee, Gram panchayats, Self-help groups, and Mahila Arogya Samiti should be sensitized and encouraged for more participation in spreading the knowledge, prevention, and treatment of the NCDs. Capacity building of the community groups and people is one of the multidimensional roles performed by the frontline healthcare workers which need to be strengthened further. Mass media such as Radio, Television, Print media, and locally predominant folk media can be utilized more effectively for increasing public awareness regarding the prevention and control of NCDs.

At facility level

For providing continuous services, strengthening the public health facilities, and their infrastructures like laboratories, OTs and the availability of essential drugs should be ensured at all the levels of health care, especially in the rural areas. A dedicated workforce involved in the management of NCDs should be there. It must be ensured that all health-care providers are given the required training (with a special focus on skills) under the NPCDCS program regarding prevention control and treatment of NCDs as per the standard protocols. Once the training of these health-care providers is over, there should be provisions for periodic and regular competency-based assessment. Integrating the NCD into the training curriculum both at the pre-service and in-service level can help in providing better services for the prevention and control of NCDs. Their role should be clearly specified which will reduce the chances of any role conflicts and they must be given encouragement regarding the importance of the work that they are performing.

Leveraging the role of nurses and other health-care workers can play a key role in the prevention and control of NCDs. Regular training, periodic competency-based assessment, and logistic support can help them to keep up their knowledge and skills updated which will lead to better screening, detection, and treatment of various chronic ailments. Redefining and extending the roles of non-physician health workers (NPHW) keep the doctors free to utilize their time and proficiencies for more complicated cases.[28] A systematic review on task-shifting responsibilities related to NCD management in developing countries reported that the tasks performed by NPHW lead to better health outcomes.[29]

According to an estimate, 2.5 million lives or more per year could be saved by enhancing the role of nurses, female health workers, ASHA workers, community health workers, etc.[30] Various health problems such as hypertension, diabetes,

Table 2: Key Health Financing Indicators for India. Ref: National Health Accounts Estimates 2017–18, MoHFW, Government of India

S. No	Key Indicator	2017-18	2016-17	2015-16	2014-15	2013-14	2004-05
1	Total Health Expenditure as the percent of GDP	3.31	3.8	3.8	3.9	4	4.2
2	Total Health Expenditure per capita (Rs.) at current price	4,297	4,381	4,116	3,826	3,638	1,201
3	Total Health Expenditure per capita (Rs) at constant price	3,333	3,503	3,405	3,231	3,174	2,066
4	Current Health Expenditure as the percent of Total Health Expenditure	88.5	92.8	93.7	93.4	93	98.9
5	Government Health expenditure as the percent of Total Health Expenditure	40.8	32.4	30.6	29	28.6	22.5
6	Out of pocket Expenditure as percent of Total Health Expenditure	48.8	58.7	60.6	63.6	64.2	69.4

various cancers, and mental health concerns can be effectively moderated at the level of these workers.[31-34] Kavita *et al*. conducted a quasi-experimental study to analyze the efficacy of CVD risk assessment and communication by nurses and found that nurse-led intervention is a great tool in risk modification and enhancing compliance among the general population for the primary and secondary CVD prevention.[35]

A good interlinking referral system between facilities at different levels should be developed so that a proper referral and follow-up of the cases can be done. To minimize the loss to follow-up of cases, a list of people who did not return for treatment could be generated through a digital system or on paper by the nurse/health workers at the facility. The patients could be then reminded either over the telephone or by home visit (if possible). This strategy could motivate a large number of patients to continue their treatment and adopt a lifestyle modification according to their condition.

At health system and policy level

There is a need for a robust management information system, surveillance, and research on NCDs which can provide accurate and reliable data on the risk factors, health complications due to NCDs, quality of healthcare, and health expenditures. To increase information comprehensiveness, the data on core risk factor indicators using standard definitions should be incorporated into the ongoing national household health surveys to supply data at the national and disaggregated levels. A strong cost and time effective NCD surveillance system are very much required. Emphasis needs to be given on generating databases, which applied and operational research related to the program for better planning and timely interventions needed in the national programs on NCDs.

To reduce the out-of-pocket expenditure the government should bring in more financial schemes like risk pooling to reduce the burden on the poor. There is a strong need for population-based financial strategies induced by the government. Although schemes like Ayushman Bharat are present, their coverage, efficacy, and utilization and impact need to be monitored regularly so that the eligible beneficiaries are not excluded from the benefits. Awareness about the scheme itself is on the lower side. A study conducted in a rural district of Tamil Nadu indicated that, out of 300 households, only 42.33% of the households were covered under Ayushman Bharat scheme. Out of those covered, only 47.24% of household have availed Ayushman Bharat scheme in the past 1 year and 10% of those who availed the scheme has spent an additional amount on health care. Around 39.88% of the households not having Ayushman Bharat scheme have faced financial burdens due to health-care expenditure.[7]

A multisectoral collaboration and coordination involving governments, NGOs, civil society and private sectors, etc., in health promotion, early diagnosis, and treatment of common NCDs through appropriate guidelines as per the need at different levels of the health-care system are much needed. Regular and proper monitoring and evaluation of the NCD programs should be carried out at different levels through NCD cells, reports, regular visits to the field, and periodic review meetings.

Reporting each and every case of NCD by the private/corporate health settings must be made mandatory as is already being done in case of notifiable diseases such as TB and mumps so that an exact estimate of the caseload can be ascertained.

Endorsing and implementing the WHO "best buys" for NCDs can help in reducing the number of deaths by NCDs. Almost 10 million premature deaths from NCDs can be avoided by 2025 by implementing the WHO "best buys" for NCDs, endorsed by the World Health Assembly in 2017. This will lead to the prevention of 17 million strokes and heart attacks in the poorest countries by 2030 as well as generating USD 350 billion in economic growth. According to the World Economic Forum Report 2014 on NCDs in India, every USD1 invested in the proven interventions for NCDs will produce a return of at least USD7 by 2030.

At research level

It is high time that researchers go beyond risk factors and disease prevalence surveys toward research in identifying "best practices" for reducing risk factors. There is a need to do detailed research for developing primary care models for NCD management, exploring the role of complementary and alternative medicine in tackling NCDs, approaches to improve patient compliance and enhancing self-management, and conducting economic evaluations to study the cost-effectiveness of the different interventions.[36] The use of prospective studies and operational research can explain how to deliver the interventions related to care delivery effectively in a limited resource setting in a cost-effective way.

There is a need of developing a native research infrastructure and a skilled workforce. This would require greater fund allocation and financial investment.[36]

Actions Being Taken at the National Level

India has a dedicated NCD division (National, State, and District level) that coordinates the activities of the various programs running in the country for the prevention and control of NCDs. As per the MoHFW data, 2018, the infrastructure includes 524 district NCD cells, 565 district NCD clinics, 167 district cardiac care units, 164 district day-care centers, and 2759 CHC NCD clinics.[23]

The main focus of the government is on reducing the risk factors to address the root cause and prevent deaths from NCDs. This will have the dual benefit of saving lives on one hand and increasing economic growth on the other. India is constantly developing many national public health programs in this direction. One such program is the "National Cancer Control Program" (NCCP) which is a centrally funded scheme by the Ministry of Health and Family welfare, Government of India. This program began in 1975, with the goal of equipping the premier cancer hospitals and organizations. It was revised

in the year 1984–1985 with emphasis on primary prevention and early detection of cancer. Later, District Cancer Control Program was introduced in the year 1990–1991 and then modified in 2000–2001. In 2004, the NCCP was appraised and was, further, revised with effect from 2005.

The NCCP is, now, integrated in the NPCDCS which has already been implemented in India to increase awareness regarding the risk factors and set up the NCD clinics, cardiac care units, etc., and screening for NCD at primary health-care level.

Various newer initiatives have also been taken like the National Multisectoral Action Plan, 2017–2022 to guide in ensuring a holistic approach supporting health-promoting policies, legislations, fiscal, and structural methods required to focus on the social determinants of NCDs and their risk factors. It brings together key stakeholders such as union and state governments, civil society, academia, international partners, and professional bodies.

The National Joint Framework for Tuberculosis-Diabetes collaborative activities has been developed to frame a national strategy for "bi-directional screening," early detection, and better management of Tuberculosis and Diabetes comorbidities.

Another initiative is the India Hypertension Control Initiative which is a multi-partner initiative involving the Indian Council of Medical Research (ICMR), WHO-India, Ministry of Health and Family Welfare, and State governments to improve BP control for people with hypertension. The initiative was started in 2018 in 26 districts and now has been extended to more than 100 districts in 2022. Since 2018, more than two million patients were started on treatment and tracked to see whether they achieved BP control. It is found that approximately half (47%) of the patients under care achieved BP control. The BP control among people registered in treatment was 48% at primary health centers and 55% at the health wellness centers (HWC). This project has demonstrated that BP treatment and control are feasible in the primary care settings in diverse health systems across various states in India.[14]

Various important National bodies in India are dealing with NCD such as the ICMR, National Institute of Communicable Diseases, All India Institute of Medical Sciences, and Public Health Foundation of India.

In addition to its global commitment to tobacco control (WHO-FTCT), the Indian government has framed "The Cigarette and Other Tobacco Products Act (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution), 2003" and "Smoke Act Rules (2008)" to prohibit advertisements and sale to minors; regulate the contents of tobacco products; and regulate trade and commerce in production, supply, and distribution of tobacco products in India. The National Tobacco Control Program (NTCP) facilitates the effective implementation of tobacco control laws to bring about greater awareness of the harmful effects of tobacco.

India is the first country to adopt the nine targets of the national action plan as part of the "Action Plan of Global Strategy for the Prevention and Control of NCD 2013–2020" for reducing the number of global premature deaths from NCDs by 25% by 2025. India has additionally adopted one more target to reduce household air pollution by 50% relative reduction in household use of solid fuel and a 30% relative reduction in the prevalence of current tobacco use by 2025.

Another important step is the integration of NPCDCS with the NHM. The population-based regular screening of hypertension, diabetes, and common cancers can be done by the frontline workers such as ASHAs and ANMs to help in the early detection and prompt referral of common NCDs.

The amalgamation of AYUSH, Rashtriya Bal Swasthya Karyakram and the Revised NTCP with NPCDCS is a step ahead toward promoting a healthy lifestyle in the community. Development of mobile applications such as mDiabetes for diabetes control, mCessation to help quit tobacco, and no more tension which provide support for mental stress management and other social media are being used to spread awareness regarding NCDs and their prevention. The National Tobacco Quitline provides counseling about tobacco cessation through a toll-free number.

To strengthen the Ayushman Bharat scheme, the government has established HWC by converting existing Sub Centers and Primary Health Centers to deliver Comprehensive Primary Health Care (CPHC), bringing healthcare closer to people's homes. This covers NCDs along with maternal and child health services, including free essential drugs and diagnostic services. The HWCs are equipped with trained staff such as the Multi-Purpose Workers (male and female) and ASHAs and are led by a Mid-Level Health Provider at the Sub Health Center level and the staff including Nurses, Pharmacists, and Technicians at the PHC level led by a Medical officer. The first HWC was launched on April 18, 2018 and a total of 118,775 HWCs are operational across India.[37]

A number of different handbooks, operational guidelines, and training modules have been developed for doctors, nurses, and other health-care providers regarding the prevention, screening, and control of common NCDs, reducing risk factors of NCDs, etc. There are almost 21 such documents/guidelines/manuals developed so far under NPCDCS.[23]

Various periodic surveys have also been done, both at the national and state levels, which directly or indirectly target NCDs such as the National Family Health Survey, and Global Adult Tobacco Survey.

Discussion

This review article identified various challenges currently being faced by the country at the community level, facility level, health system, and policy level and research level related to the prevention and management of NCDs. Managing NCDs require interventions at different levels and a multisectoral

approach integrating various stakeholders. The government has taken various steps for the prevention and control of NCDs, but these are still a long way from being fully institutionalized and applied. The NCD program needs to evolve from its current "screening centerd" strategy at the primary care level to an integrated approach of "community engagement" for health promotion, risk reduction, and provider and facility involvement. Integrating NCDs in the primary health care could help in managing NCDs at an early stage and, hence, are a better investment than diagnosing and managing them at a later stage.

Incorporating and adapting learnings from other health programs could help in better control and management of NCDs. Prevention using tailored behavior change communication approach for common risk factors and individual patient counseling for compliance of treatment and follow-up, identifying cases through systematic screening of target groups (based on age group, tobacco use, obesity, etc.), and participation of private care providers in finding and reporting NCD cases could be adapted. Treating through a trained multi-disciplinary team and the use of a fixed-dose combination of anti-diabetic or anti-hypertensive drugs like the TB drugs could be followed in the primary care settings.

Involvement and participation of various women groups in community breast cancer screening programs, prioritizing policies for generating a positive environment for the promotion of healthy lifestyles, need to be endorsed. More focus needs to be given to exploiting the AYUSH such as yoga, breathing exercises, and meditation. It is critical to assess them using meticulous scientific methodologies to determine their efficacy in NCD prevention and health promotion.

Conclusion

Managing NCDs require interventions at different levels and a multisectoral approach integrating various stakeholders together. Participation of private care providers in finding and reporting NCD cases could be adapted. More focus needs to be given to exploiting the AYUSH and other non-medical interventions in NCD prevention and health promotion.

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Conflicts of Interest

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References

1. World Health Organization. Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020. Geneva: World Health Organization.
2. World Health Organization. Noncommunicable Diseases Factsheet. Geneva: World Health Organization; 2021.
3. India State-Level Disease Burden Initiative Collaborators. Nations within a nation: Variations in epidemiological transition across the States of India, 1990-2016 in the global burden of disease study. Lancet 2017;390:2437-60.
4. United Nations Statistics Division. Geneva: World Health Organization; 2014, 2018, 2022
5. Bloom DE, Cafiero-Fonseca ET, Candeias V, Adashi E, Bloom L, Gurfein L, *et al*. Economics of Non-Communicable Diseases in India: The Costs and Returns on Investment of Interventions to Promote Healthy Living and Prevent, Treat, and Manage NCDs. Boston: World Economic Forum, Harvard School of Public Health; 2014.
6. Thakur J, Prinja S, Garg CC, Mendis S, Menabde N. Social and economic implications of noncommunicable diseases in India. Indian J Community Med 2011;36:S13-22.
7. Dhaka R, Verma R, Agrawal G, Kumar G. Ayushman Bharat Yojana: A memorable health initiative for Indians. Int J Community Med Public Health 2018;5:3152-3.
8. National Health Accounts Estimates 2017-18 Report. New Delhi: MoHFW, Government of India; 2021.
9. World Health Organization Maximizing Positive Synergies Collaborative Group, Samb B, Evans T, Dybul M, Atun R, Moatti JP, *et al*. An assessment of interactions between global health initiatives and country health systems. Lancet 2009;373:2137-69.
10. Pati MK, Swaroop N, Kar A, Aggarwal P, Jayanna K, Van Damme W. A narrative review of gaps in the provision of integrated care for noncommunicable diseases in India. Public Health Rev 2020;41:8.
11. National Health Profile 2019 Report. New Delhi: MoHFW, Government of India.
12. Panda R, Mahapatra S, Persai D. Health system preparedness in noncommunicable diseases: Findings from two states Odisha and Kerala in India. J Family Med Prim Care 2018;7:565-70.
13. Sharma K. Burden of non-communicable diseases in India: Setting priority for action. Int J Med Sci Public Health 2013;2:7-11.
14. Kaur P. India Registers Success with BP Treatment, Control. India: The Hindu Newspaper; 2022. p. 16.
15. Venkataraman K, Kannan AT, Mohan V. Challenges in diabetes management with particular reference to India. Int J Diabetes Dev Ctries 2009;29:103-9.
16. Thakur JS, Jeet G, Nangia R, Singh D, Grover S, Lyngdoh T, *et al*. Non-communicable diseases and their determinants: A cross-sectional state-wide STEPS survey, Haryana, North India. PLoS One 2019;14:e0208872.
17. Thakur JS, Jeet G, Pal A, Singh A, Singh A, Deepti SS, *et al*. Profile of risk factors for non-communicable diseases in Punjab, Northern India: Results of a state-wide STEPS survey. PLoS One 2016;11:e0157705.
18. Jain N, Kumar A, Nandraj S, Furtado KM. NSSO 71st Round Same Data, Multiple Interpretations; 2015. Available from: https://www.niti.gov.in/writereaddata/files/document_publication/NSSO_71st_Round_Fial.pdf [Last accessed on 2017 Dec 8].
19. Chauhan G, Thakur JS. Assessing health workers' capacity for the prevention and control of noncommunicable diseases in Haroli health block of district Una in Himachal Pradesh, India: A mixed methods approach. Int J Non Commun Dis 2016;1:26-9.
20. Bavoria S, Nongkynrih B, Krishnan A. Health workforce availability and competency to manage noncommunicable diseases at secondary care level hospitals of Delhi. Int J Non Commun Dis 2019;4:38-42.
21. Patel S, Vyas S. Evaluation of training program about awareness of gestational diabetes mellitus (GDM) among health care workers of Ahmedabad municipal corporation. Natl J Community Med 2018;9:114-9.
22. Gupta AV, Phatak AG, Patel MU, Das N, Vaghela NP, Prakash H, *et al*. Effectiveness of a community health worker (CHW) training in monitoring and care of patients with chronic obstructive pulmonary disease (COPD) in rural Gujarat, India. J Family Med Prim Care

2020;9:1910-4.
23. Thakur JS, Paika R, Singh S. Burden of noncommunicable diseases and implementation challenges of National NCD programmes in India. Med J Armed Forces India 2020;76:261-7.
24. Kashyap VH, Shivaswamy MS. Assessment of implementation of the national programme for the prevention and control of cancer, diabetes, cardiovascular diseases, and stroke at subcenters of Belagavi Taluka: A cross-sectional study. Indian J Health Sci Biomed Res 2019;12:21-7.
25. Nethan S, Sinha D, Mehrotra R. Non communicable disease risk factors and their trends in India. Asian Pac J Cancer Prev 2017;18:2005-10.
26. Raban MZ, Dandona R, Dandona L. Availability of data for monitoring noncommunicable disease risk factors in India. Bull World Health Organ 2012;90:20-9.
27. Thakur JS, Jaswal N, Grover A. Is focus on prevention missing in national health programs? A situation analysis of IEC/BCC/health promotion activities in a district setting of Punjab and Haryana. Indian J Community Med 2017;42:30-6.
28. Nebhinani M, Saini SK. Leveraging role of non-physician health workers in prevention and control of non-communicable diseases in India: Enablers and challenges. J Family Med Prim Care 2021;10: 595-600.
29. Joshi R, Alim M, Kengne AP, Jan S, Maulik PK, Peiris D, *et al*. Task shifting for non-communicable disease management in low and middle income countries--A systematic review. PLoS One 2014;9:e103754.
30. Gupta K, Malik M, Baig VN. Need of a new frontline health functionary dedicated to non-communicable diseases in India. Int J Health Care Educ Med Inform 2017;4:20-3.
31. Leena KC, Shakuntala BS. Non communicable disease (NCDs) control activities by female health workers (FHWs) and availability of related facilities at selected sub centres of DK District, Karnataka, India. Int J Health Sci Res 2014;4:167-73.
32. Jain M, Pandian J, Samuel C, Singh S, Kamra D, Kate M. Multicomponent short-term training of ASHAs for stroke risk factor management in Rural India. J Neurosci Rural Pract 2019;10:592-8.
33. Mishra SR, Neupane D, Preen D, Kallestrup P, Perry HB. Mitigation of non-communicable diseases in developing countries with community health workers. Global Health 2015;11:43.
34. Sharma KK, Gupta R, Mathur M, Natani V, Lodha S, Roy S, *et al*. Non-physician health workers for improving adherence to medications and healthy lifestyle following acute coronary syndrome: 24-month follow-up study. Indian Heart J 2016;68:832-40.
35. Kavita, Thakur JS, Vijayvergiya R, Ghai S. Task shifting of cardiovascular risk assessment and communication by nurses for primary and secondary prevention of cardiovascular diseases in a tertiary health care setting of Northern India. BMC Health Serv Res 2020;20:10.
36. Tripathy JP. Research priorities in non-communicable diseases in developing countries: Time to go beyond prevalence studies. Public Health Action 2018;8:98-9.
37. National Health Portal. New Delhi: Ministry of Health and Family Welfare, Government of India; 2022.

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