



## RESEARCH ARTICLE

# Integration of AYUSH (Ayurveda and Yoga) with National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS): An Appraisal of Central Council for Research in Ayurvedic Sciences Research and Development Initiatives

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## ABSTRACT

**Introduction:** Noncommunicable diseases (NCDs) include cardiovascular diseases, diabetes, hypertension, stroke, cancer, etc. Such diseases mainly result from lifestyle-related factors, such as unhealthy diet, lack of physical activity, use of tobacco, etc. Changes in lifestyles, behavioral patterns, demographic profile, sociocultural and technological advancements lead to sharp increase in the prevalence of NCDs. These diseases, by and large, can be prevented by making simple changes in the way people live their lives or by simply changing our lifestyle.

**Aims and objectives:** Central Council of Research in Ayurvedic Sciences, Ministry of AYUSH in collaboration with Directorate General of Health Services, Ministry of Health and Family Welfare has implemented and executed a program, viz., Integration of AYUSH (Ayurveda) component with National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) program in the identified districts of three states, viz., Bhilwara (Rajasthan), Surendranagar (Gujarat), and Gaya (Bihar), with an aim to cater health care services and to reduce the burden of NCDs by combining the strength of Ayurveda and Yoga.

**Materials and methods:** This program has been implemented on a pilot basis in three districts of the three states at three district hospitals (DHs), 49 community health centers (CHCs), and 183 primary health centers (PHCs) (71 at Gaya, 37 at Surendranagar, and 75 at Bhilwara). In view of etiology of NCDs' pharmacological and nonpharmacological interventions, lifestyle and Yoga have been advocated. Sixteen common Ayurvedic medicines were identified for the prevention and management of the NCDs. Training to human resource was provided through various training programs before implementation.

**Outcomes:** The aforesaid program is successfully functional in 52 centers (49 CHCs and 3 DHs) of all the three identified

districts. This program boosted the referrals and cross-referrals of patients among conventional and various AYUSH systems.

**Keywords:** Integration, Lifestyle, Noncommunicable disease.

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## INTRODUCTION

Achievement of control over communicable diseases is a notable success during the last decade, but now, the NCDs have taken the front row leading to a considerable shift in the disease burden of the country from communicable to NCDs. Noncommunicable diseases kill 40 million people each year, equivalent to 70% of all deaths globally. Each year, 15 million people die from NCDs between the ages of 30 and 69 years; over 80% of these "premature" deaths occur in low- and middle-income countries<sup>1</sup> (undeveloped and developing countries).

In India, as per the NCD country profile 2014 published by the World Health Organization, the overall mortality due to NCDs was 60%. The disease-specific share was for cardiovascular diseases—26%, cancers—7%, diabetes—2%, chronic obstructive pulmonary disease (COPD)—13%, and other NCDs—12%. Based on National Cancer Registry Programme of the Indian Council of Medical Research, it is estimated that there are about 28 lakh cases of different types of cancer in the country with new occurrence, about 11 lakh cases, and about 5 lakh deaths annually. The three most prevalent cancers in India are breast, cervical, and oral cancers.<sup>2</sup>

Noncommunicable diseases are caused, to a larger extent, by four behavioral risk factors which are pervasive aspects of economic transition, rapid urbanization, and

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21st-century lifestyles: Tobacco use, unhealthy diet, insufficient physical activity, and the excessive use of alcohol. The greater effects of these risk factors fall increasingly on low and middle-income countries, and on poor people within all countries, mirroring the underlying socioeconomic determinants.<sup>3</sup> Detection, screening, and management of NCDs, as well as prevention of complications, are key components of therapeutic approach to NCDs. The NCDs require prolonged treatment and are expensive to treat. Thus, prevention and health promotion would be the key factors to reduce disease burden. In view of this, Government of India launched the NPCDCS in 2008 to prevent and control the projected increase in the burden of NCDs. This program has been implemented in 36 states (till March 2017<sup>4</sup>) by Directorate of Health Services.

### Potential of Ayurveda in Prevention and Management of NCDs

Ayurveda, an age-old science, gives foremost importance to maintenance of health in healthy individuals, i.e., prevention and thereafter management of diseases. According to Ayurveda, food (*Pathya* and *Apathya*) and lifestyle (*Vihara*) play a key role in the maintenance of health and in prevention of many diseases.<sup>5</sup> This includes advocacy on food items (qualitative and quantitative), according to the disease. Further, the daily routine activities (*Dinacharya*), such as dental care, oil massage, Yoga exercise, physical activities, good conduct, mental health, and seasonal routine for maintenance of health are also described. Ayurveda emphasizes the practice of healthy lifestyle for healthy persons to prevent diseases and specific lifestyle modifications for different diseases to arrest the progress of the disease and complications. It was viewed that the potential of this unique contribution of Ayurveda may be adopted for the prevention of NCDs through food and lifestyle counseling.<sup>6</sup>

The National Policy on Indian Systems of Medicine and Homeopathy (ISM and H policy), adopted in 2002, suggested phase-wise integration of ISM and H with health delivery systems. National Health Policy<sup>7</sup> emphasizes on mainstreaming of AYUSH systems through integration and collocation for achievement on national goal and to reduce premature mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases up to 25% by 2025.

During the past decade, the global emergence of integrative medicine has established that India has the potential to become a world leader in this sphere, if adequate support and opportunities for research and development is given. The integration will enable patients to choose the appropriate interventions. The Ministry also desires to generate the health data of population in relation to various disease preventive factors described

in AYUSH systems. The AYUSH doctors can play a vital role in prevention and control of NCDs through primary health care network.

Keeping the strength of AYUSH systems for prevention and management of NCDs by promoting healthy lifestyle, "Integration of AYUSH (Ayurveda) with NPCDCS programme" was conceived in 2015 by the Ministry of AYUSH and Central Council of Research in Ayurvedic Sciences (CCRAS) in collaboration with the Directorate General of Health Services, for imparting health services on pilot basis. This would initially cover districts of three states, viz., Bhilwara (Rajasthan), Surendranagar (Gujarat), and Gaya (Bihar).<sup>8</sup>

### Objectives

- To integrate Ayurveda with the existing health care system for promotion, prevention, and control of NCDs through NPCDCS program.
- To ensure early diagnosis of NCDs for management through lifestyle and behavioral changes through the principles of Ayurveda.
- To reduce drug dependency in chronic cases through Ayurveda, Yoga practices, and lifestyle changes.
- To provide Ayurveda as an adjuvant therapy to reduce complications and associated symptoms.

## MATERIALS AND METHODS

### Study Site

This program has been implemented on pilot basis in three districts of the three states at CHC and PHC level, and the details of the program are depicted in Table 1.

### Engagement of Human Resources

For this program, technical manpower from Ayurveda and Yoga discipline and supporting manpower for other secretarial work has been engaged on temporary basis. They have been placed at CHC/block PHC and DHs of the selected districts and at CCRAS headquarters. The details of the manpower engaged are depicted in Table 2.

The roles and responsibilities of each category of manpower have been well defined for smooth implementation of the program. The details are depicted in Table 3.

**Table 1:** Details of study sites of NPCDCS program

State	Districts	No. of CHCs/Block PHCs + DHs	No. of PHCs in the district
Bihar	Gaya	17 CHCs/Block PHCs + 1 DH	71
Gujarat	Surendranagar	10 CHCs + 1 DH	37
Rajasthan	Bhilwara	22 CHCs + 1 DH	75
		49 CHCs and 3 DHs	183

**Table 2:** Details of the staff recruited for the program

Name of the district and state	Total	Senior consultant (Ay.)	RA (Ay.)	Pharmacist (Ay.)	Yoga instructor	DEO	MTS
CCRAS headquarters, New Delhi	03	02	–	–	–	01	–
Surendranagar District, Gujarat	77	02	20	22	11	11	11
Bhilwara District, Rajasthan	161	02	44	46	23	23	23
Gaya District, Bihar	126	02	34	36	18	18	18

RA: Research associate; DEO: Data entry operator; MTS: Multitasking staff

**Table 3:** Roles and responsibilities of manpower

Manpower	Role and responsibilities
Senior Consultant (Ay.) at DH level	<ul style="list-style-type: none"> <li>To screen, detect the NCD patients in early stages, and arrest the disease progress through lifestyle counseling</li> <li>To refer the patients of NCDs (nonrespondents to lifestyle/Ayurveda) for proper consultations</li> <li>To entertain cross-referrals from modern medicine and provide lifestyle management to the patients</li> <li>To coordinate with the District Nodal Officer (NPCDCS) and in-charges of NCD clinics for investigations support (diagnostic and laboratory)</li> <li>To provide service to NCD patients by giving consultation, lifestyle counseling (<i>Pathya–Apathya</i>), and medicine</li> <li>To generate awareness about risk factors of NCDs and importance of healthy diet, regular physical activity, and Ayurvedic approach for prevention of NCDs</li> <li>To coordinate with Yoga instructor for Yoga prescription with practical demonstration of Yogic practices as required for NCD patients</li> <li>To collect data of NCD patients at lifestyle clinics</li> </ul>
Research Associate (Ay.) at CHC level	<ul style="list-style-type: none"> <li>To generate awareness about risk factors of NCDs and importance of healthy diet, regular physical activity, and Ayurvedic approach for prevention of NCDs</li> <li>To provide service to NCD patients by giving consultation, lifestyle counseling (<i>Pathya–Apathya</i>), and medicines</li> <li>To coordinate with Yoga instructor for Yoga prescription with practical demonstration of Yogic practices as required for NCD patients</li> <li>To coordinate with the in-charge of CHC/NPCDCS cell for diagnostic and laboratory investigations, etc.</li> <li>To distribute medicines and Information Education and Communication (IEC) materials to the NCD patients visiting lifestyle clinic and general public attending health camps arranged at PHC level</li> </ul>
Yoga Instructor	<ul style="list-style-type: none"> <li>To generate awareness about role of yoga in prevention of NCDs.</li> <li>To impart training to the identified Yoga volunteers on Yoga procedures to enable them to conduct Yoga practices regularly at concerned PHC</li> <li>To prescribe and demonstrate the <i>Yoga Asanas</i> and other related procedures to the person susceptible for NCDs and patients (disease-specific yoga procedures) in coordination with Ayurvedic Consultant/ Research Associate and maintain the records</li> </ul>
Pharmacist (Ay.)	<ul style="list-style-type: none"> <li>To dispense medicines as prescribed by the Sr. Consultants/Research Associates at respective lifestyle clinics and camps and to keep all relevant records as required</li> <li>To explain the procedure for taking medicines as advised by Sr. Consultants/Research Associates</li> <li>To counsel patients for better compliance of prescribed medicines, promotion of health, and prevention of diseases</li> </ul>
Data entry operator	<ul style="list-style-type: none"> <li>To assist Sr. Consultant/Research Associate and Yoga Instructor in preparation of reports and maintenance of records of activities and tasks under the project</li> </ul>
Multitasking staff	<ul style="list-style-type: none"> <li>To assist in routine office work like diary, dispatch, photocopying, sending of Fax, etc. and to maintain the cleanliness, coordinate supply of electricity, water, housekeeping, etc. of the premises</li> <li>To assist in outreach activities, such as organization of camps, distribution of IEC materials, etc.</li> </ul>

## INTERVENTIONS

In view of etiology of NCDs, pharmacological and non-pharmacological interventions have been advocated.

### Pharmacological Interventions

Sixteen common classical Ayurvedic medicines have been identified in consultation with the experts for the

prevention and management of the NCDs. The medicines have been procured from Good Manufacturing Practices-certified Ayurvedic pharmaceutical companies as per pharmacopoeial standards. The medicines were usually prescribed for 3 months or as required as per the discretion of the Ayurvedic doctors based on assessment of the condition of the patients and condition of the disease (*Rogi Roga Pariksha*). However, follow-up was done for another



**Table 4:** List of the selected classical ayurvedic medicines for the NCDs with their doses and dosage form

Medicine	Disease condition	Dose per day
Mamajjak capsule	Diabetes	1 gm BID
Arogyavardhini Vati	Obesity and dyslipidemia	500 mg BID (not more than 45 days)
Triphala Churna	Obesity and dyslipidemia	3 gm BID
Sarpagandha Mishrana	Hypertension	250 mg BID
Pravala Pishti	Hypertension	250 mg BID
Ashvagandha Churna	Cancer	3 gm BID
Guduchi Churna	Diabetes, cancer	3 gm BID
Amalaki Churna	Diabetes ( <i>Amlapitta</i> )	3 gm BID
Ekgangaveera Rasa	Stroke/ <i>Pakshaghat</i>	125 mg BID
Haridra Khanda	COPD, chronic bronchitis, allergic bronchitis	3 gm BID
Tribhuvan Mishran	COPD, chronic bronchitis	1 Tab BID
Soma Churna	COPD	500 mg BID
Chitrakadi Gutika	Obesity and dyslipidemia	250 mg BID
Kutajghan Vati	Diabetes ( <i>Atisara, Grahani</i> )	250 mg BID
Yograj Guggulu	Obesity and dyslipidemia	500 mg TID
Sitopaladi Churna	COPD, chronic bronchitis	3 gm BID

3 months after treatment. List of medicines with their doses is depicted in Table 4.

The medicines selected for disease conditions as mentioned in Table 4 are as per their classical indications.

## Nonpharmacological Interventions

### Diet and Lifestyle

It includes regulation of diets, lifestyle, and *Yogic Asanas*. Some advocacies on diet and lifestyles for prevention of NCDs are presented in Table 5.

### Yogic Asanas

Some useful *Asanas/Kriyas/Pranayam* have been advocated for the NCDs under the supervision of Yoga experts. These are presented in Table 6.

## Establishment of AYUSH NPCDCS Clinics/ Lifestyle Clinics

For the establishment of AYUSH NPCDCS clinic/lifestyle clinics in all the selected CHCs and DHs, initially the concerned state health authorities were approached and made aware about this program as health is the state subject. The state authorities extended their support by providing space/rooms in CHCs/DHs premises. The feasibility in existing conditions of CHCs was surveyed and the in-charges of the CHCs/DHs were also made aware about the program through team visits and various meetings. The necessary equipments, namely blood pressure apparatus, stethoscope, weighing machine, thermometer, torch, measuring tape, height scale, were provided at every center. Apart from this, computer with internet facility was provided to each center for recording

the data and communicating reports to the monitoring centers, i.e., CCRAS Institute, of concerned state and CCRAS headquarters.

## Development of IEC Materials, Program Guidelines, and Training Manual

The information in the form of pamphlets on prevention and management of the selected NCDs through Ayurveda has been prepared and made available for wide distribution to the patients and general public in all the CHCs to create awareness. As a part of the implementation strategy, the AYUSH doctors are also disseminating healthy lifestyle advices and benefits of Yoga practices to the attending patients regularly. A detailed "Guidelines and Training Manual" has been prepared to depict approach and methodology to be adopted for screening and examination along with the selected Ayurveda and Yoga interventions.

## Workshop/Training Program for the Engaged Manpower

The workshop/training programs were conducted at all the three selected districts to impart training to stakeholders about the modus operandi of the program. State health authorities also participated in the training program and emphasized the significance of integration and the importance of working in coordination for the success of the program. Various lectures on the NCDs like diabetes, hypertension, dyslipidemia, cancer, etc., and the methodology to be adopted were imparted in this program for better understanding and to work in a coordinated manner with a team spirit.

**Table 5:** Advocacy on diet and lifestyles for prevention of NCDs

<i>Diabetes mellitus</i>	
<i>Do's</i>	<i>Don'ts</i>
<ul style="list-style-type: none"> <li>• Intake of old harvested cereals, barley (<i>Yava</i>), Sorghum (<i>Jowar</i>), whole wheat atta, bitter gourd (<i>Karela</i>), green leafy vegetables, garlic (<i>Lasuna</i>), turmeric (<i>Haridra</i>), aloe (<i>Kumari</i>) in vegetables and fruits like guava, oranges, Indian blackberry (<i>Jamun</i>), etc.</li> <li>• Timely intake of diet</li> <li>• Regular exercise especially walking</li> <li>• Regular practice of Yoga, meditation, etc., under the supervision of Yoga specialist is suggested</li> </ul> <p><i>Hypertension</i></p> <ul style="list-style-type: none"> <li>• Regular blood pressure check-up</li> <li>• Timely intake of balanced diet, more use of fruits and green vegetables</li> <li>• Regular physical exercise</li> <li>• Daily brisk walking for half an hour</li> <li>• Reduce intake of oily, salty, sour, and spicy food items</li> <li>• Weight reduction</li> <li>• Barley (<i>Yava</i>), sorghum (<i>Jowar</i>), wheat, green gram (<i>Mudga</i>/moong dal), horse gram (<i>Kulatha</i>), moringa (<i>Shigru</i>), Bitter gourd (<i>karela</i>), bottle gourd (<i>Ghia/Lauki</i>), turnip (<i>Shalgam</i>), carrot (<i>Gajar</i>), radish (<i>Muli</i>), Indian gooseberry (<i>Amla</i>), cucumber (<i>Khira</i>), black grapes (<i>Draksha</i>), pomegranate (<i>Anar</i>), apple, pineapple, cold milk, etc.</li> <li>• Timely sleeping and awakening</li> <li>• Regular practice of Yoga and meditation under the supervision of Yoga expert</li> </ul> <p><i>Obesity</i></p> <ul style="list-style-type: none"> <li>• Take low-fat and low-calorie food items</li> <li>• Take frequent small meals to avoid food cravings</li> <li>• Take more proteins to stay longer without food</li> <li>• Use warm water for drinking</li> <li>• Include cabbage in daily meal. It will stop the conversion of sugars to fat</li> <li>• Steamed, boiled and baked vegetables rather than fried</li> <li>• Drink skimmed milk instead of whole milk</li> <li>• Include lemon in diet and drinks</li> <li>• Take healthy foods, such as oatmeal, walnuts, salads, bitter gourd (<i>Karela</i>), drumstick (<i>Shigru</i>), barley (<i>Yava</i>), wheat, honey (<i>Madhu</i>), Indian Gooseberry (<i>Amla</i>), pomegranate (<i>Anar</i>), snake gourd, etc.</li> <li>• Brisk morning walk of 30 minutes</li> <li>• Yoga and meditation to manage stress and fatigue</li> </ul> <p><i>Dyslipidemia</i></p> <ul style="list-style-type: none"> <li>• Intake of regular and balanced diet</li> <li>• Use of lukewarm water (<i>Ushnodaka</i>) for drinking</li> <li>• Use of barley (<i>Yava</i>), sorghum (<i>Jowar</i>), Indian gooseberry (<i>Amla</i>), honey (<i>Madhu</i>), and butter milk (<i>Takra</i>)</li> <li>• Use of Green gram (<i>Moong</i>), Horse gram (<i>Kulathi</i>), Bengal gram (<i>Chana</i>), and Spilt Red Gram (<i>Arhar</i>)</li> <li>• Plenty of green leafy vegetables and fruits</li> <li>• Fibrous food items</li> <li>• Brisk walking and jogging in fresh air everyday in early morning</li> <li>• Regular exercise</li> <li>• Practice of Yoga and Naturopathy in consultation with the specialist</li> </ul>	<ul style="list-style-type: none"> <li>• Sugarcane juice, jaggery, sugar, milk products</li> <li>• Reduce intake of rice, food rich in carbohydrate, and fried or processed food</li> <li>• Sedentary lifestyle</li> <li>• Sleeping in the day time and excessive sleeping</li> <li>• Alcohol</li> <li>• Staying too long on empty stomach</li> <li>• Cold drinks, ice cream, burger-pizza, other fast foods, etc.</li> </ul> <ul style="list-style-type: none"> <li>• Excessive intake of salt (sprinkling over salad, curd etc.)</li> <li>• Excessive use of butter, ghee, chillies (red-green), pickles, sesame oil (<i>Til taila</i>), Bengal gram (<i>Chana dal</i>), mustard oil (<i>Sarson ka Taila</i>), sour fruits, curd, tea, coffee, etc.</li> <li>• Intake of animal fat, processed/oily food items</li> <li>• Alcohol consumption and smoking</li> <li>• Practice of day sleeping and awakening at night</li> </ul> <ul style="list-style-type: none"> <li>• Watching TV while having food</li> <li>• High carbohydrate vegetables like potato, rice, etc.</li> <li>• More sugary or sweet products, more dairy products, fried and oily foods, fast foods, excess salt</li> <li>• Sedentary habits</li> <li>• Excessive sleep</li> <li>• Alcohol and smoking</li> <li>• Salty foods or excessive salt in meals</li> </ul> <ul style="list-style-type: none"> <li>• Frequent and excessive intake of oily/heavy food items</li> <li>• Sleeping in day time (<i>Diva-swapna</i>)</li> <li>• Sleeping immediately after taking meals</li> <li>• Canned food products</li> <li>• Sedentary lifestyle</li> <li>• Junk foods like burger, pizza, cold drinks, and fried food items</li> </ul>

## MODUS OPERANDI FOR THE EXECUTION OF THE PROGRAM

### Screening of the NCD Patients

The patients attending the AYUSH NPCDCS clinic at DH/CHC level are being thoroughly screened for NCDs. Further, the health camps are also being organized at

PHC level of selected districts on regular interval to screen the general population for NCDs and to sensitize them about the role of the faulty dietetic habits and lifestyles responsible for increasing incidence of NCDs along with creating awareness about the preventive measures to prevent the NCDs. A format has also been developed for the screening.

**Table 6:** Some Yoga Asanas for NCDs

Name of the disease	Yoga Asanas	Pranayama	Kriya
Diabetes mellitus	Suryanamaskara, Tadasana, Katichakrasana, Sarvangasana, Halasana, Matsyasana, Ushtrasana, Gomukhasana, Ardhamatsyendrasana, Mandukasana, Paschimottanasana, Pawanmuktaasana, Bhujangasana, Shalabhasana, Dhanurasana, Vajrasana, Shavasana	Nadishodhana, Suryabhedi, Bhastrika	Kunjal, Kapalabhati, Agnisara
Hypertension	Tadasana, Katichakrasana, Konasana, Uttanapadasana, Pavanamuktasana, Vajrasana, Ushtrasana, Shashankasana, Bhujangasana, Gomukhasana, Makarasana, Vakrasana, Shavasana	Nadishodhana, Ujjayi, Shitali, Sitkari, and Bhramari	Jalneti
Obesity and dyslipidemia	Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Ardha Padmasana, Padmasana, Paschimottanasana, Halasana, Bhujangasana, Shalabhasana, Dhanurasana, Naukasana, Navasana, Parvatasana, Vakrasana, Padahastana, Vajrasana, Shashankasana, Sarvangasana, Ardhamatsyendrasana, Shavasana	Nadishodhana, Suryabhedi, Bhastrika	Kunjal, Kapalabhati
Stroke	Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Bhujangasana, Uttanapadasana (Ekpad), Vakrasana, Makarasana, Ardhsalabhasana, Shavasana	Nadishodhana, Suryabhedi, Bhastrika	Kunjal, Kapalabhati
Cancer	Surya Namaskar, Tadasana, Ushtrasana, Vakrasana, Gomukhasana, Bhujangasana, Shalabhasana, Dhanurasana, Simhasana, Shavasana	Nadishodhana, Ujjai, Shitali, Sitkari, Bhastrika	Kapalabhati
Rheumatic heart disease	Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Makarasana, Bhujangasana, Shalabhasana, Vakrasana, Paschimottanasana, Ushtrasana	Nadishodhana, Bhastrika, Suryabhedi	
COPD	Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanamuktasana, Setubandhasana, Ushtrasana, Bhujangasana, Dhanurasana, Gomukhasana, Vajrasana, Vakrasana	Bhastrika, Suryabhedi, Ujjai	Agnisara, Jalneti, Vamandhuti (Kunjal), Kapalabhati

### Facility for Regular Yoga Practice

The *Yoga Asanas* are being demonstrated and regularly put into practice by the Yoga Instructors at CHCs and DH level for the susceptible/diagnosed patients of NCDs. At each PHC level two volunteers (one male and one female) have been identified and trained by the Yoga Instructor who in turn provides regular yoga practices to general public at village level.

### Treatment Protocol for NCDs through Ayurveda

Based on the screening, the subjects who were identified to be in the risk zone of NCDs or established NCD patients have been registered into two cohorts, i.e., predisease group (I) and disease group (II) and further subdivided into treatment groups A1, A2 and B1, B2. The patients in the early stages of NCDs mainly of diabetes, hypertension, and dyslipidemia have been focused. The case record forms have been designed for recording the data of registered patients. The schematic diagrams of the projects undertaken with integration of Ayurveda to NPCDCS program are depicted in Flow Charts 1 to 4.

CRF: Case Record Form; HbA1c: Glycated hemoglobin; LFT: Liver function test; KFT: Kidney function test; FBS: Fasting blood sugar; PPBS: Postprandial blood sugar; WHO QOL: World Health Organization quality of life

### Program Monitoring

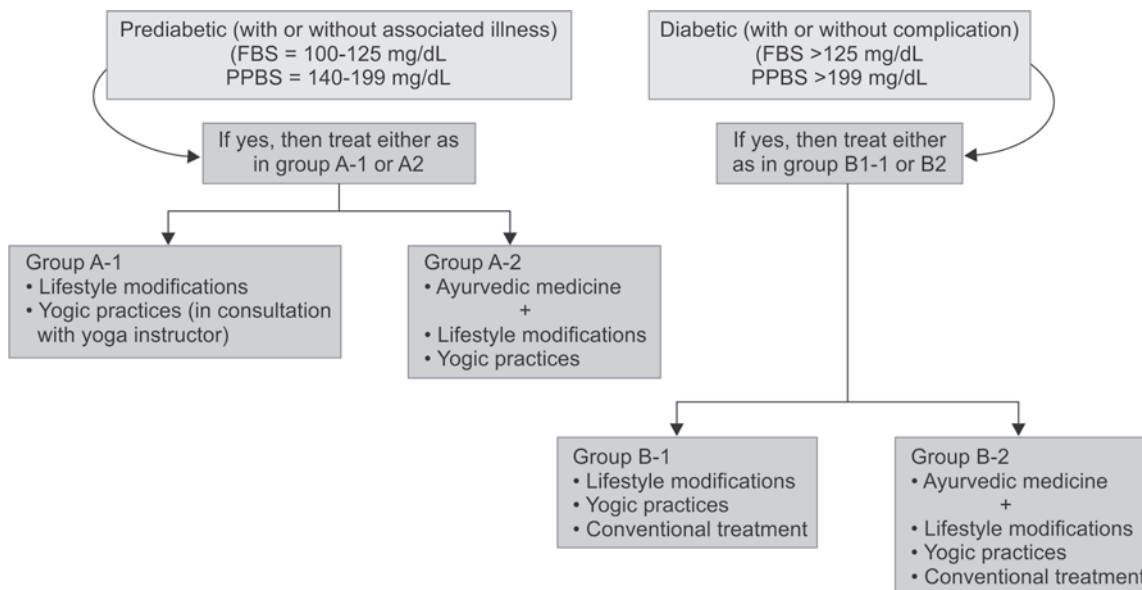
As the program is ongoing, a quarterly monitoring is being conducted regularly to assess the progress.

### Treatment Period and Assessment

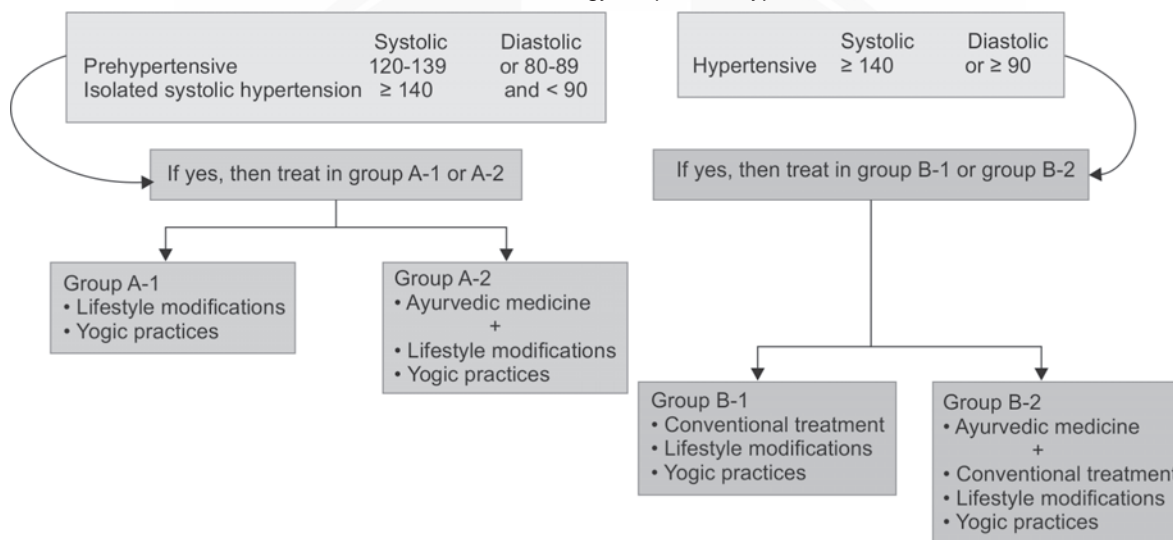
The registered patients are being provided Ayurvedic interventions for a period of 6 months. Till January 31, 2018, 301,102 patients have been screened and 59,107 patients have been enrolled under this program. The laboratory investigations, such as fasting blood sugar, postprandial blood sugar, glycated hemoglobin, liver function test, kidney function test, and lipid profile as required are being conducted (as per the availability of investigation facilities with state health authorities). The program is ongoing. At the end of the study, the comparison between groups A1 and A2 will give the efficacy of Ayurvedic medicine in the predisease condition. The comparison between groups B1 and B2 will give the efficacy of Ayurvedic medicine in the disease condition.

An interim analysis has revealed that the dosage or components of conventional medicines/prescription were either reduced or discontinued, in consultation and supervision of modern doctors, after integrating the intervention of Ayurveda, lifestyle modification, and Yoga in patients of diabetes, hypertension, and

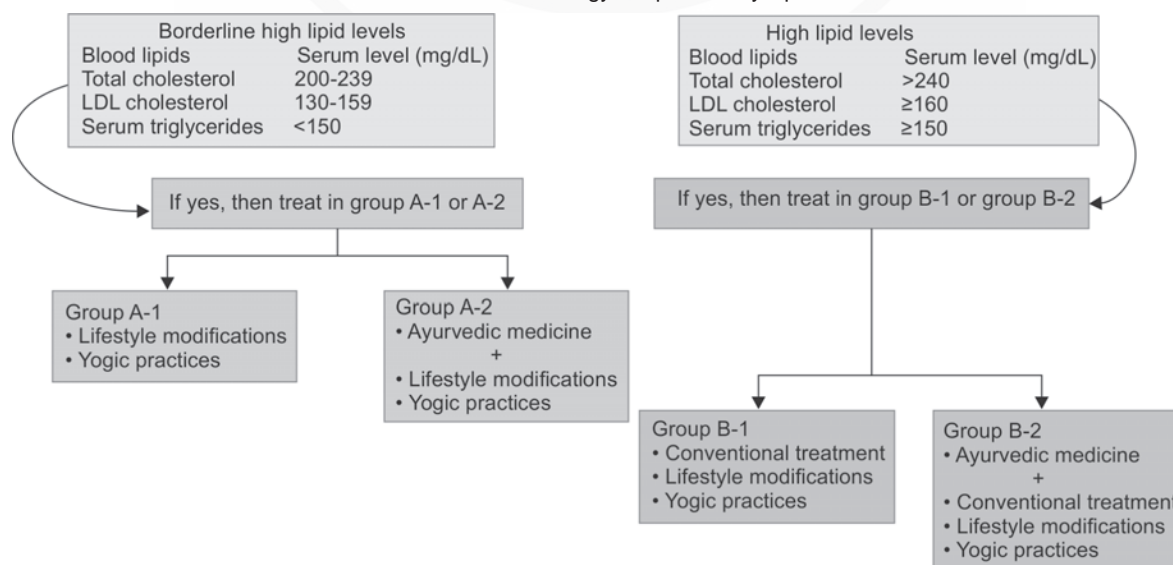
**Flow Chart 1: Methodology adopted for diabetes**



**Flow Chart 2: Methodology adopted for hypertension**

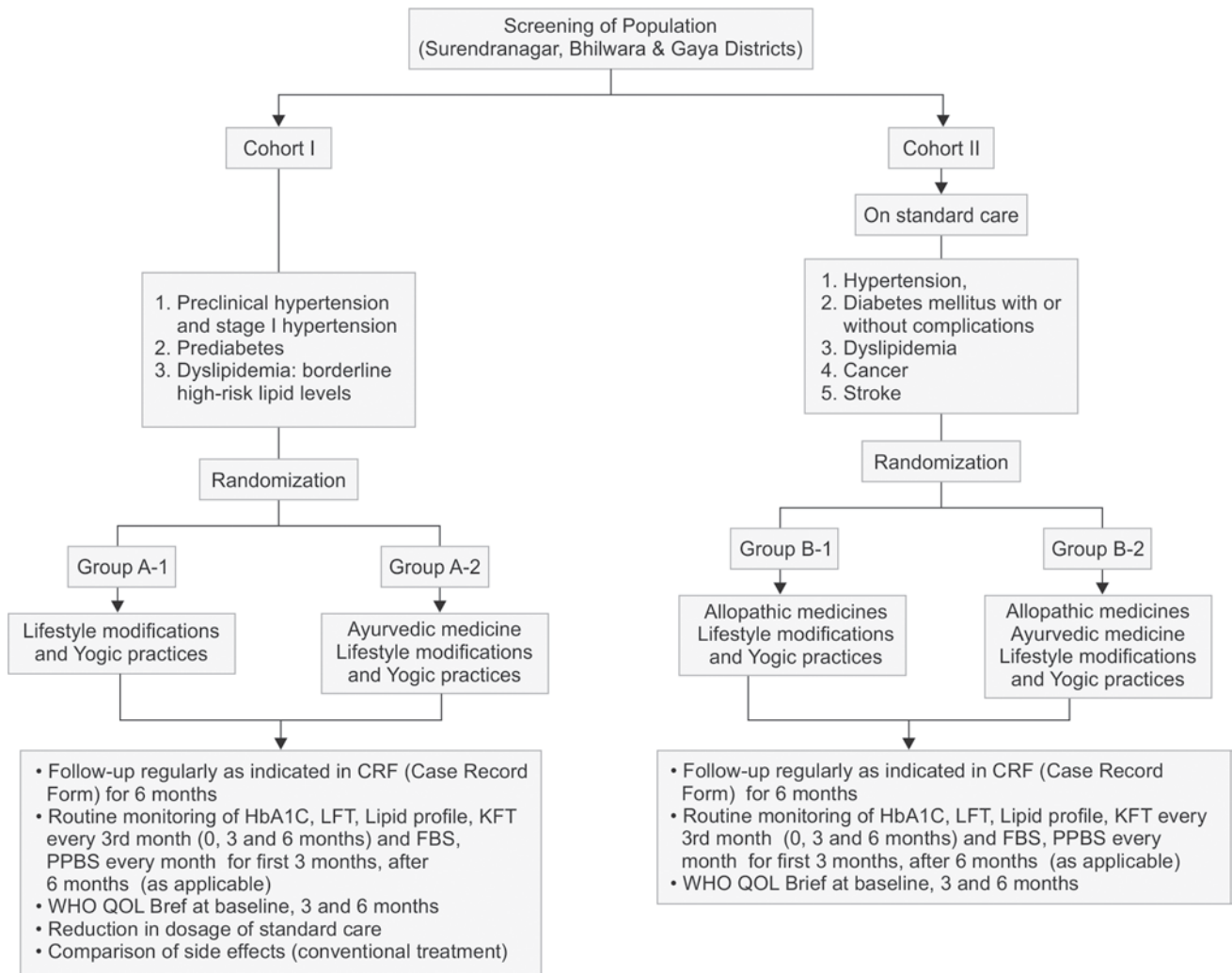


**Flow Chart 3: Methodology adopted for dyslipidemia**





Flow Chart 4: Study design



dyslipidemia. Ayurveda—modern medicine integrative health care services—seems to be a successful attempt of functional integration through delivering in the context of NCDs with encouraging benefits of standalone Ayurveda therapies as well as benefits as add-on therapies.

## CONCLUSION

The Integration of AYUSH (Ayurveda) with NPCDCS program has been successfully launched at three identified districts, viz., Bhilwada, Surendra Nagar, and Gaya of Rajasthan, Gujarat, and Bihar states, respectively, by CCRAS through Ministry of AYUSH and Directorate General of Health Services, and the study is continuing.

Present integration of AYUSH with NPCDCS program at grassroots level will be a useful tool for future action plan and to take appropriate policy decisions for integration, which will further help to control and manage the disease burden. Strengthening of health

care network by utilizing the services of AYUSH doctors can be adopted for the prevention and control of NCDs through primary health care network.

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## हिंदी सारांश

कैंसर, मधुमेह, हृदयरोग एवं आघात (स्ट्रोक) के रोकथाम एवं नियंत्रण हेतु राष्ट्रीय कार्यक्रम (एनपीसीडीसीएस) के साथ आयुष (आयुर्वेद एवं योग) का एकीकरण—सीसीआरएएस की पहल

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**पृष्ठभूमि:** गैर संचारी रोगों जैसे हृदय रोग, मधुमेह, उच्च रक्तचाप, आघात और कैंसर के लिए मुख्यतः अस्वस्थ भोजन, शारीरिक क्रियाकलापों में कमी व तम्बाकू का प्रयोग जैसी जीवनशैली मुख्य रूप से जिम्मेदार है। अपनी जीवनशैली में परिवर्तन करके इन रोगों का निवारण किया जा सकता है।

**लक्ष्य और उद्देश्य:** सीसीआरएएस व आयुष मंत्रालय ने डीजीएचएस, स्वास्थ्य एवं परिवार कल्याण मंत्रालय के सहयोग से गैर संचारी रोगों के रोकथाम एवं नियंत्रण के उद्देश्य से योग एवं आयुर्वेद को सम्मिलित करते हुए एक राष्ट्रीय कार्यक्रम एन.पी.सी.डी.सी.एस के साथ शुरू किया जो वर्तमान में तीन राज्यों के चिन्हित जिलों यथा भीलवाड़ा (राजस्थान), सुरेंद्रनगर (गुजरात) व गया (बिहार) में संचालित है।

**सामग्री और प्रक्रिया:** इस कार्यक्रम का कार्यान्वयन पायलट स्तर पर 3 राज्यों के 3 जिलों के 3 जिला अस्पतालों, 49 सामुदायिक स्वास्थ्य केंद्र (पीएचसी) और 183 प्राथमिक स्वास्थ्य केंद्र (पीएचसी) (गया में 71, सुंदरनगर में 37 और भीलवाड़ा में 75) में किया गया। एनसीडी रोगों के हेतुओं को देखते हुए भेषज व अभेषज चिकित्सा के साथ-साथ जीवनशैली परिवर्तन व योग चिकित्सा का समावेश किया गया। एनसीडी के निवारण और प्रबंधन में 16 सामान्य आयुर्वेदिक औषधियों का उपयोग किया गया।

**परिणाम:** उपर्युक्त कार्यक्रम सफलतापूर्वक 3 चिन्हित जिलों के 52 केंद्रों (49 पीएचसी और 3 जिला अस्पताल) में चल रहा है। इस कार्यक्रम ने पारंपरिक और विभिन्न आयुष प्रणालियों में रोगियों के मध्य रेफरल और क्रॉस रेफरल को मजबूत किया गया।

