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 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.


Source of support: Nil
Conflict of interest: None

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 countries1 (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.

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

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 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), Saurashtra (Gujarat), and Gaya (Bihar).

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

<table>
<thead>
<tr>
<th>State</th>
<th>Districts</th>
<th>No. of CHCs/Block PHCs + DHs</th>
<th>No. of PHCs in the district</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bihar</td>
<td>Gaya</td>
<td>17 CHCs/Block DHs + 7 PHCs</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 CHCs + 1 DH</td>
<td>37</td>
</tr>
<tr>
<td>Gujarat</td>
<td>Saurashtra</td>
<td>22 CHCs + 1 DH</td>
<td>75</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>Bhilwara</td>
<td>49 CHCs and 3 DHs</td>
<td>183</td>
</tr>
</tbody>
</table>
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 Practice-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

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

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

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** | • To screen, detect the NCD patients in early stages, and arrest the disease progress through lifestyle counseling  
• To refer the patients of NCDs (nonrespondents to lifestyle/Ayurveda) for proper consultations  
• To entertain cross-referrals from modern medicine and provide lifestyle management to the patients  
• To coordinate with the District Nodal Officer (NPCDCS) and in-charges of NCD clinics for investigations support (diagnostic and laboratory)  
• To provide service to NCD patients by giving consultation, lifestyle counseling (*Pathya–Apathya*), and medicine  
• To generate awareness about risk factors of NCDs and importance of healthy diet, regular physical activity, and Ayurvedic approach for prevention of NCDs  
• To coordinate with Yoga instructor for Yoga prescription with practical demonstration of Yogic practices as required for NCD patients  
• To collect data of NCD patients at lifestyle clinics

**Research Associate (Ay.) at CHC level** | • To generate awareness about risk factors of NCDs and importance of healthy diet, regular physical activity, and Ayurvedic approach for prevention of NCDs  
• To provide service to NCD patients by giving consultation, lifestyle counseling (*Pathya–Apathya*), and medicines  
• To coordinate with Yoga instructor for Yoga prescription with practical demonstration of Yogic practices as required for NCD patients  
• To coordinate with the in-charge of CHC/NPCDCS cell for diagnostic and laboratory investigations, etc.  
• 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

**Yoga Instructor** | • To generate awareness about role of yoga in prevention of NCDs.  
• To impart training to the identified Yoga volunteers on Yoga procedures to enable them to conduct Yoga practices regularly at concerned PHC  
• To prescribe and demonstrate the Yoga Asanas 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

**Pharmacist (Ay.)** | • 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  
• To explain the procedure for taking medicines as advised by Sr. Consultants/Research Associates  
• To counsel patients for better compliance of prescribed medicines, promotion of health, and prevention of diseases

**Data entry operator** | • To assist Sr. Consultant/Research Associate and Yoga Instructor in preparation of reports and maintenance of records of activities and tasks under the project

**Multitasking staff** | • 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  
• To assist in outreach activities, such as organization of camps, distribution of IEC materials, etc.
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.
Further, the health camps are also being organized at DH/CHC level are being thoroughly screened for NCDs. The patients attending the AYUSH NPCDCS clinic 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 5: Advocacy on diet and lifestyles for prevention of NCDs

<table>
<thead>
<tr>
<th>Diabetes mellitus</th>
<th>Don’ts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake of old harvested cereals, barley (Yava), Sorghum (Jowar), whole wheat atta, bitter gourd (Karela), green leafy vegetables, garlic (Lasuna), turmeric (Haridra), aloe (Kumari) in vegetables and fruits like guava, oranges, Indian blackberry (Jamun), etc.</td>
<td>Sugarcane juice, jaggery, sugar, milk products</td>
</tr>
<tr>
<td>Timely intake of diet</td>
<td>Reduce intake of rice, food rich in carbohydrate, and fried or processed food</td>
</tr>
<tr>
<td>Regular exercise especially walking</td>
<td>Sedentary lifestyle</td>
</tr>
<tr>
<td>Regular practice of Yoga, meditation, etc., under the supervision of Yoga specialist is suggested</td>
<td>Sleeping in the day time and excessive sleeping</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Regular blood pressure check-up</td>
<td>Excessive intake of salt (sprinkling over salad, curd etc.)</td>
</tr>
<tr>
<td>Regular physical exercise</td>
<td>Excessive use of butter, ghee, chillies (red-green), pickles, sesame oil (Til taila), Bengal gram (Chana dal), mustard oil (Sarson ka Taila), sour fruits, curd, tea, coffee, etc.</td>
</tr>
<tr>
<td>Daily brisk walking for half an hour</td>
<td>Intake of animal fat, processed/oily food items</td>
</tr>
<tr>
<td>Reduce intake of oily, salty, sour, and spicy food items</td>
<td>Alcohol consumption and smoking</td>
</tr>
<tr>
<td>Weight reduction</td>
<td>Practice of day sleeping and awakening at night</td>
</tr>
<tr>
<td>Barley (Yava), sorghum (Jowar), wheat, green gram (Mudga/moong dal), horse gram (Kulatha), moringa (Shigru), Bitter gourd (karela), bottle gourd (Ghia/Lauki), turnip (Shalgam), carrot (Gajar), radish (Muli), Indian gooseberry (Amla), cucumber (Khira), black grapes (Draksha), pomegranate (Anar), apple, pineapple, cold milk, etc.</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td></td>
</tr>
<tr>
<td>Take low-fat and low-calorie food items</td>
<td>Watching TV while having food</td>
</tr>
<tr>
<td>Take frequent small meals to avoid food cravings</td>
<td>High carbohydrate vegetables like potato, rice, etc.</td>
</tr>
<tr>
<td>Take more proteins to stay longer without food</td>
<td>More sugary or sweet products, more dairy products, fried and oily foods, fast foods, excess salt</td>
</tr>
<tr>
<td>Use warm water for drinking</td>
<td>Sedentary habits</td>
</tr>
<tr>
<td>Include cabbage in daily meal. It will stop the conversion of sugars to fat</td>
<td>Excessive sleep</td>
</tr>
<tr>
<td>Steamed, boiled and baked vegetables rather than fried</td>
<td>Alcohol and smoking</td>
</tr>
<tr>
<td>Drink skimmed milk instead of whole milk</td>
<td>Salty foods or excessive salt in meals</td>
</tr>
<tr>
<td>Include lemon in diet and drinks</td>
<td></td>
</tr>
<tr>
<td>Take healthy foods, such as oatmeal, walnuts, salads, bitter gourd (Karela), drumstick (Shigru), barley (Yava), wheat, honey (Madhu), Indian Gooseberry (Amla), pomegranate (Anar), snake gourd, etc.</td>
<td></td>
</tr>
<tr>
<td>Brisk morning walk of 30 minutes</td>
<td></td>
</tr>
<tr>
<td>Yoga and meditation to manage stress and fatigue</td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td></td>
</tr>
<tr>
<td>Intake of regular and balanced diet</td>
<td>Frequent and excessive intake of oily/heavy food items</td>
</tr>
<tr>
<td>Use of lukewarm water (Ushnodaka) for drinking</td>
<td>Sleeping in day time (Diva-swapna)</td>
</tr>
<tr>
<td>Use of barley (Yava), sorghum (Jowar), Indian gooseberry (Amla), honey (Madhu), and butter milk (Takra)</td>
<td>Sleeping immediately after taking meals</td>
</tr>
<tr>
<td>Use of Green gram (Moong), Horse gram (Kulathi), Bengal gram (Chana), and Spilt Red Gram (Arhar)</td>
<td>Canned food products</td>
</tr>
<tr>
<td>Plenty of green leafy vegetables and fruits</td>
<td>Sedentary lifestyle</td>
</tr>
<tr>
<td>Fibrous food items</td>
<td>Junk foods like burger, pizza, cold drinks, and fried food items</td>
</tr>
<tr>
<td>Brisk walking and jogging in fresh air everyday in early morning</td>
<td></td>
</tr>
<tr>
<td>Regular exercise</td>
<td></td>
</tr>
<tr>
<td>Practice of Yoga and Naturopathy in consultation with the specialist</td>
<td></td>
</tr>
</tbody>
</table>

**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...
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.

<table>
<thead>
<tr>
<th>Name of the disease</th>
<th>Yoga Asanas</th>
<th>Pranayama</th>
<th>Kriya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>Suryanamaskara, Tadasana, Katichakrasana, Sarvangasana, Halasana, Matsyasana, Ushtrasana, Gomukhasana, Ardhamatsyangrasana, Manduksasana, Paschimottanasana, Pawanmuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Vajrasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati, Agnisara</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Tadasana, Katichakrasana, Konasana, Uttanapadasana, Pavanamuktasana, Vajrasana, Ushtrasana, Shashankasana, Bhujangasana, Gomukhasana, Makarasana, Vakrasana, Shavasana</td>
<td>Nadishodhana, Ujjayi, Shtali, Sitkari, and Bhamari</td>
<td>Jalaneti</td>
</tr>
<tr>
<td>Obesity and dyslipidemia</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Arda Padmasana, Padmasana, Paschimottanasana, Halasana, Bhujangasana, Shalabhasana, Dhanurasana, Naukasana, Navasana, Parvatasana, Vakrasana, Padahastasana, Vajrasana, Shashankasana, Sarvangasana, Ardhamatsyangrasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati</td>
</tr>
<tr>
<td>Stroke</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Bhujangasana, Uttanapadasana (Ekpad), Vakrasana, Makarasana, Ardhalabhasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati</td>
</tr>
<tr>
<td>Cancer</td>
<td>Surya Namaskar, Tadasana, Ushtrasana, Vakrasana, Gomukhasana, Bhujangasana, Shalabhasana, Dhanurasana, Sthimhasasana, Shavasana</td>
<td>Nadishodhana, Ujjai, Shtali, Sitkari, Bhastrika</td>
<td>Kapalbhati</td>
</tr>
<tr>
<td>Rheumatic heart disease</td>
<td>Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Makarasana, Bhujangasana, Shalabhasana, Vakrasana, Paschimottanasana, Ushtrasana</td>
<td>Nadishodhana, Bhastrika, Suryabhedi</td>
<td>Kapalbhati</td>
</tr>
<tr>
<td>COPD</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Setubandhasan, Ushtrasan, Bhujangasan, Dhanurasan, Gomukhasan, Vajrasan, Vakrasan</td>
<td>Bhastrika, Suryabhedi, Ujjai</td>
<td>Agnisara, Jalaneeti, Vamandhouti (Kunjal), Kapalbhati</td>
</tr>
</tbody>
</table>

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

### Table 6: Some Yoga Asanas for NCDs

<table>
<thead>
<tr>
<th>Name of the disease</th>
<th>Yoga Asanas</th>
<th>Pranayama</th>
<th>Kriya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>Suryanamaskara, Tadasana, Katichakrasana, Sarvangasana, Halasana, Matsyasana, Ushtrasana, Gomukhasana, Ardhamatsyangrasana, Manduksasana, Paschimottanasana, Pawanmuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Vajrasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati, Agnisara</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Tadasana, Katichakrasana, Konasana, Uttanapadasana, Pavanamuktasana, Vajrasana, Ushtrasana, Shashankasana, Bhujangasana, Gomukhasana, Makarasana, Vakrasana, Shavasana</td>
<td>Nadishodhana, Ujjayi, Shtali, Sitkari, and Bhamari</td>
<td>Jalaneti</td>
</tr>
<tr>
<td>Obesity and dyslipidemia</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Arda Padmasana, Padmasana, Paschimottanasana, Halasana, Bhujangasana, Shalabhasana, Dhanurasana, Naukasana, Navasana, Parvatasana, Vakrasana, Padahastasana, Vajrasana, Shashankasana, Sarvangasana, Ardhamatsyangrasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati</td>
</tr>
<tr>
<td>Stroke</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Bhujangasana, Uttanapadasana (Ekpad), Vakrasana, Makarasana, Ardhalabhasana, Shavasana</td>
<td>Nadishodhana, Suryabhedi, Bhastrika</td>
<td>Kunjal, Kapalabhati</td>
</tr>
<tr>
<td>Cancer</td>
<td>Surya Namaskar, Tadasana, Ushtrasana, Vakrasana, Gomukhasana, Bhujangasana, Shalabhasana, Dhanurasana, Sthimhasasana, Shavasana</td>
<td>Nadishodhana, Ujjai, Shtali, Sitkari, Bhastrika</td>
<td>Kapalbhati</td>
</tr>
<tr>
<td>Rheumatic heart disease</td>
<td>Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Makarasana, Bhujangasana, Shalabhasana, Vakrasana, Paschimottanasana, Ushtrasana</td>
<td>Nadishodhana, Bhastrika, Suryabhedi</td>
<td>Kapalbhati</td>
</tr>
<tr>
<td>COPD</td>
<td>Surya Namaskar, Tadasana, Katichakrasana, Konasana, Pavanmuktasana, Setubandhasan, Ushtrasan, Bhujangasan, Dhanurasan, Gomukhasan, Vajrasan, Vakrasan</td>
<td>Bhastrika, Suryabhedi, Ujjai</td>
<td>Agnisara, Jalaneeti, Vamandhouti (Kunjal), Kapalbhati</td>
</tr>
</tbody>
</table>
Flow Chart 1: Methodology adopted for diabetes

- **Prediabetic** (with or without associated illness)
  - FBS = 100-125 mg/dL
  - PPBS = 140-199 mg/dL

  If yes, then treat either as in group A-1 or A-2

- **Diabetic** (with or without complication)
  - FBS >125 mg/dL
  - PPBS >199 mg/dL

  If yes, then treat either as in group B1-1 or B2

**Group A-1**
- Lifestyle modifications
- Yogic practices (in consultation with yoga instructor)

**Group A-2**
- Ayurvedic medicine
- Lifestyle modifications
- Yogic practices

**Group B-1**
- Lifestyle modifications
- Yogic practices
- Conventional treatment

**Group B-2**
- Ayurvedic medicine
- Lifestyle modifications
- Yogic practices
- Conventional treatment

Flow Chart 2: Methodology adopted for hypertension

- **Prehypertensive**
  - Systolic: 120-139
  - Diastolic: or 80-89
  - Isolated systolic hypertension: ≤ 140
  - and < 90

If yes, then treat in group A-1 or A-2

**Group A-1**
- Lifestyle modifications
- Yogic practices

**Group A-2**
- Ayurvedic medicine
- +
- Lifestyle modifications
- Yogic practices

**Group B-1**
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices

**Group B-2**
- Ayurvedic medicine
- +
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices

Flow Chart 3: Methodology adopted for dyslipidemia

- **Borderline high lipid levels**
- Blood lipids
- Total cholesterol: 200-239
- LDL cholesterol: 130-159
- Serum triglycerides: <150

If yes, then treat in group A-1 or A-2

**Group A-1**
- Lifestyle modifications
- Yogic practices

**Group A-2**
- Ayurvedic medicine
- +
- Lifestyle modifications
- Yogic practices

**Group B-1**
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices

**Group B-2**
- Ayurvedic medicine
- +
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices

- **High lipid levels**
- Blood lipids
- Serum level (mg/dL)
- Total cholesterol: >240
- LDL cholesterol: ≥160
- Serum triglycerides: ≥150

If yes, then treat in group B1-1 or B2

**Group B-1**
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices

**Group B-2**
- Ayurvedic medicine
- +
- Conventional treatment
- +
- Lifestyle modifications
- Yogic practices
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.

REFERENCES
हिंदी सारांश

कैसर, महुगेह, इदरपोप एवं आयुष (स्ट्रोक) के रोकथाम एवं नियंत्रण हेतु राष्ट्रीय कार्यक्रम (एपीसीडीसीएस) के साथ आयुष (आयुर्वेद एवं योग) का एकीकरण–सीसीआरएचस की पहल

1. रेनु सिंह, 2. शारदा अंकला, 3. कुमार विनोब, 4. शास्त्री रामचंद्र, 5. लक्ष्मी महेन्द्र, 6. अरुण भलु, 7. आयुर्वेद शीर्षक, 8. आयुष एस, गोविन्द

पूर्ववर्ती: गैर संघारी रोगों जैसे इदरपोप, महुगेह, उच्च रक्तचाप, आयुष और कैसर के लिए सुरक्षा अर्थशास्त्र भोजन, शारीरिक क्रियाधारणों में कामी द तामाक, 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: सीसीआरएचस एवं आयुष मंडल ने डीजीएचएस, व्यायात्मक एवं परिवार कल्याण मंडल के सहयोग से गैर संघारी रोगों के रोकथाम एवं नियंत्रण के उद्देश्य से योग एवं आयुर्वेद को सम्बंधित करते हुए एक राष्ट्रीय कार्यक्रम एपी.सी.डी.सी.एस. के साथ शुरू किया जो वर्तमान में तीन राज्यों के विभिन्न जिलों यथा भीवलवाड़ा (राजस्थान), गुजरात और बिहार में नियुक्त किया गया।

सामग्री और प्रकिया: इस कार्यक्रम का कार्यनिष्ठ पायलट स्तर पर 3 राज्यों के 3 जिलों के 3 जिला अस्पतालों, 49 समुदायविभाग राजस्थान केंद्र (पीएचसी) और 183 प्रातिक राजस्थान केंद्र (पीएचसी) (भारत में 71, गुजरात में 37 और भीवलवाड़ा में 75) में किया गया। एपी.सी.डी.सी.एस. के हेतु आयुष जिला अस्पताल एवं आयुषकीय विभागों के साथ-साथ जीवनशैली परिवर्तन व योग विकल्प का समावेश किया गया। एपी.सी.डी. के निवारण और प्रशान्ति में 16 सामान्य आयुर्वैदिक औषधियों का उपयोग किया गया।

परिणाम: उपर्युक्त कार्यक्रम सामान्यपूर्वक 3 चिह्नित जिलों के 52 केंद्रों (49 पीएचसी और 3 जिला अस्पताल) में चल रहा है। इस कार्यक्रम ने पारंपरिक और विभिन्न आयुष प्रणालियों में संगठनों के मध्य रेफरल और कॉस रेफरल को मजबूत किया गया।