



Review Article

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ROLE OF AYURVEDA IN PREVENTION AND MANAGEMENT OF NON-COMMUNICABLE DISEASES: A REVIEW

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ABSTRACT

Non-communicable diseases (NCDs) are medical conditions that are not caused by infectious agent and cannot be transmitted from one person to another. These diseases are typically chronic, develop over a long period, and are often linked to lifestyle factors and genetic predisposition. Non-communicable diseases (NCDs) include chronic diseases such as cardiovascular diseases, diabetes, cancer, chronic respiratory conditions, stroke, peripheral artery disease, deep vein thrombosis, chronic kidney disease, pulmonary hypertension, etc. These diseases are characterized by their long duration and generally slow progression. Non-communicable diseases (NCDs) are a major public health concern due to their high prevalence and significant impact on the health system and quality of life. Swasthavritta is a branch in Ayurveda that focuses on preventive health and the maintenance of well-being. It is a key component of Ayurvedic medicine that emphasizes the importance of maintaining health through balancing living rather than solely treating illness. Swasthavritta is primarily concerned with preventing disease through lifestyle modifications, dietary adjustments, and daily routines. It mentions about Dinacharya (daily regimen) and Ritucharya (seasonal regimen) that helps individuals stay healthy throughout different times of the day and year. Ayurveda also mentioned several practices that help to keep individuals healthy.

Keywords: Swasthavritta, Non-communicable diseases (NCDs), Dinacharya (daily regimen), Ritucharya (seasonal regimen), Ahara, Satkarma, millets

INTRODUCTION

74% of all deaths globally are caused by non-communicable diseases (NCDs), which include heart disease, stroke, cancer, diabetes, peripheral artery disease, deep vein thrombosis, chronic kidney disease, and pulmonary hypertension. Low and middle-income nations account for 86% of the 17 million premature deaths or deaths before the age of 70, and more than three-quarters of all deaths from non-communicable diseases (NCDs) occur there.

The non-communicable diseases (NCDs) epidemic threatens to overburden health services and has catastrophic health effects on people, families, and communities. The prevention and control of non-communicable diseases (NCDs) is a critical development imperative for the 21st century due to the socioeconomic implications associated with these diseases.¹ Ayurveda plays a significant role in the prevention of non-communicable diseases (NCDs) through its holistic and individualized approach. Unique principles of Ayurveda like Dinacharya (daily regimen), Ritucharya (seasonal regimen), Sadavritta (good conduct), Satkarma, Rasayana, Ahara according to Prakriti, Yoga, Nindra (sleep) are very effective in prevention of NCDs.

Risk factors for non-communicable diseases (NCDs)

Non-communicable diseases (NCDs) share five major risk factors, i.e. tobacco use, physical inactivity, harmful use of alcohol,

unhealthy diet and pollution. Metabolic risk factors contribute to four key metabolic changes that increase the risk of non-communicable diseases (NCDs): raised blood pressure, Overweight and obesity, Hyperglycemia, Hyperlipidemia.² Many Non-communicable diseases (NCDs) can be prevented by reducing common risk factors such as tobacco use, harmful use of alcohol, physical inactivity and eating unhealthy diets.

Primordial Prevention

Primordial prevention, the newest approach to preventative measures, was introduced in 1978. By emphasizing social and environmental settings, it aims to reduce risk factors for the entire population. It is prevention of the emergence of risk factors in population in which they have not yet appeared. It is considered as the best level of prevention for non-communicable disease. Individual and mass education, as well as the promotion of health, are the major interventions in primordial prevention.³

Example – Childhood obesity prevention through education.

Education on maintenance of normal body weight, preservation of lifestyle, primitive nutritional habits for prevention of myocardial infarction.

Education on benefits of salt restriction for prevention of CAD.

Swasthavritta emphasizes on primordial prevention. Different measures described in Swasthavritta for prevention of non-communicable diseases (NCDs) are:

Dinacharya (Daily Regimen)

It includes Brahma Muhurta Jagaran (waking up before sunrise), Prabhate Kara Darshanam, Achamana, Ghrita (ghee) and Drapan Darshan, Usha Jalapana, Mala Mutra Visarjana, Dantadhavana (cleaning of teeth), Jihva Nirlekhana (tongue cleaning), Ista Devta Smaran (remembering god), Mukha Netra Prakshalana, Gandusa (oil pulling) and Kawala (gargling), Anjana, Pratimarsa Nasya, Dhoomapana, Abyanga (massage), Udvartana and Utsadana, Vyayama (exercise), Snana (bath), Vastra dharana, Gandha Mala Anulepana, Bhojana, Tamboola Sevana, Vritti Dharma, Sandhya Vandana (evening prayer), Ratri Bhojana (dinner), Nindra (sleep).^{4,5,6}

Dinacharya means "practice of daily routine" is described in Ayurveda in proper sequence. Dinacharya (daily regimen) when followed as per rules leads to balance in Tridoshas and in this way directly affect the biological clock and circadian rhythm of body. Well-practiced Dinacharya (daily regimen) results in good balance between Tryoupstambha (Ahara, Nindra (sleep), Brahmacharya)⁷ which synchronize with Dhatu Paka and Dhatu Poshana and Oja formation which is main component of Vyadhikshmatva (immunity) in Ayurveda. All these practices in Dinacharya (daily regimen) improves physical, mental as well as spiritual health thereby reducing the risk of non-communicable diseases (NCDs).

Ritucharya

Ritucharya (seasonal regimen) is a traditional Ayurvedic practice that emphasizes the significance of adhering to a set of regimen or discipline in harmony with seasons. The name Ritucharya (seasonal regimen) is a combination of the Sanskrit terms "Ritu", which means season and "Charya", which means discipline or regularity. To preserve good health the practice entails adjusting your food and way of life following the season. By following Ritucharya (seasonal regimen) one can avoid seasonal diseases.

Ritucharya (seasonal regimen) is a concept from Ayurveda, the traditional system of medicine from India. It refers to the regimen or lifestyle recommendations that are aligned with the changes in the seasons, aimed at maintaining health and balance throughout the year. According to Ayurveda, different seasons have different qualities and effects on the body, and adapting one's lifestyle accordingly can help in maintaining optimal health and preventing diseases.

Ritucharya (seasonal regimen) provides dietary and lifestyle guidelines that help maintain balance and prevent imbalances that can lead to health issues. By following these guidelines, individuals can support their overall well-being and potentially reduce the risk of developing non-communicable diseases (NCDs). Different seasons can influence the body's balance of Doshas (vital energies in Ayurveda). Adapting to seasonal changes through appropriate diet and lifestyle can help mitigate these imbalances, which might otherwise contribute to chronic diseases. Ritucharya emphasizes prevention through proper diet, exercise, and lifestyle changes. This preventive approach aligns well with modern strategies for managing and reducing the risk of non-communicable diseases (NCDs), which also focus on lifestyle modifications and early intervention. Ayurveda's holistic approach considers physical, mental, and emotional health. Managing stress, getting adequate sleep, and maintaining a balanced diet are all aspects of Ritucharya (seasonal regimen) that can support overall health and potentially reduce the risk of non-communicable diseases (NCDs).

Sadvritta (Good Conduct)

Sadvritta (good conduct) is another important concept in Ayurveda, referring to a set of ethical and behavioral guidelines

for maintaining health and well-being. It includes Regular Sleep, Hygiene, Moderate Eating, Exercise, Stress Management, Social Conduct etc.

Many principles of Sadvritta (good conduct) align with modern recommendations for preventing non-communicable diseases (NCDs). For example, regular physical activity, adequate sleep, and stress management are all important for reducing the risk of cardiovascular diseases, diabetes, and other chronic conditions. Sadvritta (good conduct) emphasizes preventive health through daily habits and ethical conduct. Adhering to these principles can help in maintaining balance and preventing the onset of chronic diseases. It promotes balanced living by encouraging moderation in diet and behavior. This balance can help prevent the metabolic disturbances and imbalances that often lead to non-communicable diseases (NCDs). The guidelines also address mental and emotional well-being, which is crucial for preventing stress-related conditions and maintaining overall health. Chronic stress is a known risk factor for many non-communicable diseases (NCDs), so practices that reduce stress can be beneficial. Ayurveda takes a holistic approach to health, focusing on body, mind, and spirit, Sadvritta (good conduct) encourages a comprehensive approach to well-being. This holistic perspective can be effective in preventing and managing non-communicable diseases (NCDs) by addressing various aspects of health.

Aachar Rasayana

Although the essence of Aachar Rasayana is mentioned in most of the Ayurvedic classics but the Acharya Charaka is the one who mentioned about it in detail in Chikitsa Sthana chapter 1.

It refers to the practices and guidelines for leading a healthy lifestyle and maintaining well-being. The term "Aachar" relates to conduct or behavior, while "Rasayana" means rejuvenation or promoting health. It includes Truthfulness, Avoidance of anger, avoidance of alcohol, excessive indulgence in Maithuna, non-violence, patience, charity, proper awakening and sleeping, regular use of Ksheer (milk) and Ghrita (ghee) etc.

Anger and hostility have been associated with an increased risk of cardiovascular disease (CVD). Research indicates that chronic anger can contribute to various physiological responses that may lead to heart problems. Anger triggers a "fight or flight" response, leading to increased heart rate, blood pressure, and levels of stress hormones like cortisol and adrenaline. These changes can damage blood vessels over time.⁸ Anger and stress can contribute to chronic inflammation, a key factor in the development of atherosclerosis (hardening of the arteries).⁹ Individuals with high levels of anger may engage in unhealthy behaviors, such as smoking, poor diet, and lack of exercise, further increasing their cardiovascular risk.¹⁰ Studies show that hostility, often linked with anger, is a significant predictor of coronary heart disease and can worsen outcomes for patients with existing heart conditions.¹¹

Alcohol consumption is a significant risk factor for various non-communicable diseases (NCDs). Alcohol is classified as a carcinogen and is associated with various cancers, including breast, liver, colorectal, and esophageal cancer. The risk increases with the amount of alcohol consumed. Heavy alcohol consumption is linked to an increased risk of type 2 diabetes, although moderate consumption may have a protective effect. However, this protective effect is not consistent across all populations.¹²

Other practices in Aachar Rasayana like patience, calmness, charity, proper awakening and sleeping etc. impact our physical

and mental health positively decreasing the risk of non-communicable diseases (NCDs).

Concept of Dharniya (Suppressible Urges) and Adharniya Vega (Non-Suppressible Urges)

Different classics of Ayurveda mentioned about Dharniya (suppressible urges) and Adharniya (non-suppressible urges) Vega. Acharya Charaka mentioned 13 Adharniya Vega (non-suppressible urges) and 17 Dharniya Vega (suppressible urges).¹³ concept of Adharniya Vega (non-suppressible urges) emphasizes that all the natural Vegas / urges of the body should not be controlled because controlling natural Vegas can lead to different diseases. On the other hand, concept Dharniya Vega (suppressible urges) focuses on mental health. Acharya Charaka mentioned three types of Dharniya Vega (suppressible urges) which are Kayik, Vachik and Mansik. Dharniya Vegas (suppressible urges) like Lobha (greed), Shoka (grief), Bhaya (fear), Krodha (anger), Irshya (jealousy), Suchaka, Parpidaya etc. are some Dharniya Vega (suppressible urges) which should be controlled. By controlling Dharniya Vega (suppressible urges) one can achieve Trivarga. This Dharniya – Adharniya Vega concept of Ayurveda helps in promoting physical and mental health thus contributes to prevention of many non-communicable diseases (NCDs).

Satkarma

In Ayurveda, Shatkarma (often referred to as Shat Kriya or Shatkriya) is a term that also denotes a set of six cleansing techniques, similar to those in Hatha Yoga. However, in Ayurveda, these practices are integrated into the broader framework of maintaining balance and health according to Ayurvedic principles.

The Shatkarma techniques in Ayurveda focus on detoxifying and purifying the body to restore and maintain balance among the Doshas (Vata, Pitta, and Kapha). These practices are intended to enhance physical health, mental clarity, and spiritual well-being. Neti, Dhauti, Basti, Kapalabhati, Trataka, Nauli.

Dhauti and Basti support digestive health by cleansing the digestive system and ensuring that it functions optimally. Good digestion and efficient nutrient absorption are critical for maintaining overall health and preventing conditions like diabetes and cardiovascular diseases. Dhauti and Basti support digestive health by cleansing the digestive system and ensuring that it functions optimally. Good digestion and efficient nutrient absorption are critical for maintaining overall health and preventing conditions like diabetes and cardiovascular diseases. Kapalabhati (a breathing technique) improves lung function and increases oxygen supply to the body. This can support respiratory health and enhance overall vitality, potentially lowering the risk of chronic respiratory conditions. Trataka (concentrated gazing) and Kapalabhati help improve mental focus and clarity. Reduced stress levels and better mental health can lead to healthier lifestyle choices and lower the risk of stress-related chronic conditions. Nauli (abdominal massage) and other Shatkarma practices can enhance blood circulation and energy flow. Better circulation ensures that nutrients and oxygen reach all parts of the body effectively, supporting overall health and disease prevention. Ayurveda emphasizes balancing the Doshas (Vata, Pitta, and Kapha) to maintain health. Shatkarma practices are designed to harmonize these Doshas, which can help prevent imbalances that contribute to various chronic diseases.

Ahara

In Ayurveda, "Ahara" refers to dietary intake and is a fundamental aspect of maintaining health and preventing disease. Non-Communicable Diseases (NCDs), such as diabetes, heart

disease, and hypertension, can be influenced by lifestyle and dietary habits, and Ayurveda provides guidelines that can help prevent these conditions.

Ayurveda identifies three primary Doshas (Vata, Pitta, and Kapha) that govern physiological functions. Each Dosha has specific dietary needs. By aligning your diet with your Dosha type and any imbalances, you can maintain overall bodily harmony, potentially reducing the risk of diseases linked to Dosha imbalances, such as metabolic disorders. Swasthavritta mentioned about seasonal behavior and food according to different Ritu (seasons). Seasonal diets promote optimal digestion and metabolism, which can help prevent metabolic disorders like diabetes and obesity. Eating seasonally supports immune health, potentially reducing the risk of infections and inflammatory conditions. Adjusting diet according to the season helps maintain a balanced weight, which is crucial for preventing cardiovascular diseases and other weight-related conditions. Seasonal eating helps balance Doshas and reduces chronic inflammation, which is a common factor in many non-communicable diseases (NCDs).

Millets and non-communicable diseases (NCDs)

Millets, often referred to as "ancient grains," are gaining recognition for their health benefits and role in managing and preventing non-communicable diseases (NCDs). The United Nations declared 2023 as the International Year of Millets to highlight the significant benefits of these ancient grains and to encourage their adoption in various dietary and agricultural practices.

Millets are rich in dietary fiber, which helps improve digestive health, regulate blood sugar levels, and promote satiety. This can aid in managing and preventing diabetes and obesity. Millets provide essential vitamins and minerals such as magnesium, iron, calcium, and B vitamins. These nutrients support various bodily functions and can help prevent deficiencies linked to chronic diseases. Many millets have a low glycemic index, meaning they cause a slower and more gradual rise in blood sugar levels compared to high-GI foods.¹⁴ This can help in the management of diabetes and reduce the risk of insulin resistance. The complex carbohydrates in millets are digested more slowly, which helps in maintaining stable blood sugar levels. The fiber in millets can help lower LDL (bad) cholesterol levels, reducing the risk of cardiovascular diseases.¹⁵ Millets contain antioxidants such as phenolic compounds and flavonoids that combat oxidative stress and inflammation, both of which are associated with heart disease. The high fiber content in millets promotes healthy bowel movements and can prevent constipation. A healthy digestive system is crucial for overall well-being and preventing gastrointestinal disorders. Some millets have prebiotic properties that support the growth of beneficial gut bacteria, contributing to a balanced gut microbiome. The fiber and protein content in millets contribute to a feeling of fullness, which can help in weight management by reducing overall calorie intake. Millets are nutrient-dense, providing essential nutrients without excessive calories, which supports healthy weight maintenance.

Nindra

Nindra (sleep) is one among Tryoupstambha. In Ayurveda many things depend on Nindra (sleep). Acharya Charaka mentioned that Sthauya and Karshya depend on Swapana (sleep) and Ahara.¹⁶ According to modern science Sleep is closely connected to the risk and management of Non-Communicable Diseases (NCDs). Poor sleep quality and insufficient sleep are linked to an increased risk of cardiovascular diseases, including hypertension, heart attacks, and stroke. Sleep disturbances can affect blood pressure and heart rate, contributing to these risks. There is a strong connection between sleep and diabetes. Sleep deprivation

and poor sleep quality can lead to insulin resistance and higher blood sugar levels, increasing the risk of type 2 diabetes. Inadequate sleep can disrupt the hormones that regulate hunger and appetite, such as ghrelin and leptin. This can lead to increased appetite and weight gain, which is a risk factor for obesity and related non-communicable diseases (NCDs).

Yoga

Yoga can be quite beneficial in managing and potentially reducing the risk of non-communicable diseases (NCDs). Regular Yoga practice can improve cardiovascular function, lower blood pressure, and reduce stress levels, all of which contribute to better heart health. Some studies suggest that Yoga can lower cholesterol levels and improve overall heart function. Yoga can help with blood sugar regulation and insulin sensitivity. It may be particularly beneficial for people with type 2 diabetes by promoting better glucose control and reducing the risk of complications.

Yoga emphasizes relaxation and mindfulness, which can help manage stress and anxiety. Chronic stress is a known risk factor for many non-communicable diseases (NCDs), so reducing stress through yoga may have a positive impact on overall health. Yoga can aid in weight management by promoting physical activity and mindfulness about eating habits. While it may not be as intense as other forms of exercise, it contributes to overall well-being and can complement other lifestyle changes. Yoga can support mental health by improving mood, reducing symptoms of depression and anxiety, and enhancing overall mental well-being. Mental health is closely linked with physical health, so improving it can have broader health benefits.

DISCUSSION

Non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, cancer, and chronic respiratory conditions are long-term and chronic, primarily influenced by lifestyle factors and genetics. They are responsible for a significant percentage of global deaths, particularly in low- and middle-income countries. The major risk factors include tobacco use, physical inactivity, harmful use of alcohol, unhealthy diet, and pollution. Metabolic risk factors like raised blood pressure, obesity, hyperglycemia, and hyperlipidemia also contribute to these diseases. The integration of Ayurvedic principles into modern health strategies provides a comprehensive approach to the prevention and management of non-communicable diseases (NCDs). Swasthavritta plays a major role in prevention of non-communicable diseases (NCDs). Swasthavritta mentioned many principles like Ritucharya, Dinacharya (seasonal regimen), Ahara, Aachar Rasayana, Sadavritta (good conduct), Shatkarma, Nindra (sleep) which helps in prevention and management of non-communicable diseases (NCDs). By promoting a consistent daily routine, Swasthavritta helps in stabilizing the body's internal clock, which can improve metabolic processes and reduce the risk of conditions like obesity and diabetes. Swasthavritta emphasizes a diet that includes a variety of nutrients and is customized based on individual needs and seasonal changes. This balanced approach can help in preventing dietary-related diseases such as hypertension, heart disease, and diabetes.

Ahara, or dietary intake, is central to Ayurvedic disease prevention and management. A balanced diet that aligns with individual needs and seasonal changes supports digestive health, metabolic function, and overall well-being. Incorporating nutrient-dense foods like millets can play a significant role in preventing non-communicable diseases (NCDs). Ayurveda explained about many millets and their properties and their role in management of many diseases. Millets play a significant role

in preventing non-communicable diseases due to their high fiber content, low glycemic index, rich micronutrient profile, and antioxidant properties. By incorporating millets into a balanced diet, individuals can enhance their overall health, manage weight, regulate blood sugar levels, and reduce the risk of cardiovascular diseases, diabetes, obesity, digestive disorders, and certain cancers. Promoting the use of millets through education, public health initiatives, and innovative recipes can contribute to better health outcomes and support disease prevention efforts.

Aachar Rasayana provides a comprehensive framework for lifestyle changes that can help prevent and manage non-communicable diseases. Aachar Rasayana mentioned the practices like Truthfulness, Avoidance of anger, avoidance of alcohol, excessive indulgence in Maithuna, non-violence, patience, charity, proper awakening and sleeping, regular use of Ksheer and Ghrita etc. which promotes our physical as well as mental health hence decreases the risk of non-communicable diseases (NCDs). Concept of Dharniya (suppressible urges) and Adharniya Vega (non-suppressible urges) of Ayurveda helps in promoting physical as well as mental health thus helps in prevention of many non-communicable diseases (NCDs) and chronic diseases.

Shatkarma, with its focus on detoxification and balance, plays a significant role in managing non-communicable diseases in Ayurveda. By addressing the root causes of disease, enhancing digestive health, and supporting metabolic function, Shatkarma offers a holistic approach to disease management and prevention. Integrating Shatkarma with modern medical practices can enhance therapeutic outcomes, improve overall health, and support the effective management of non-communicable diseases (NCDs). In Ayurveda, sleep is a vital component of health and is one among three Upstambha plays a significant role in managing non-communicable diseases. Adequate sleep, another key element in Ayurveda, is essential for managing non-communicable diseases (NCDs). Proper sleep supports metabolic regulation, cardiovascular health, and overall well-being, highlighting the importance of maintaining regular sleep patterns for disease prevention.

CONCLUSION

Non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, cancer, and chronic respiratory conditions are significant global health challenges characterized by their chronic nature and lifestyle-related risk factors. These conditions contribute to a high burden of mortality and morbidity, particularly in low- and middle-income countries. Addressing non-communicable diseases (NCDs) requires a multifaceted approach that includes both prevention and management strategies.

The integration of Ayurvedic principles offers a valuable complement to modern medical practices in tackling non-communicable diseases (NCDs). Swasthavritta, a core component of Ayurveda, emphasizes preventive health through lifestyle modifications, dietary adjustments, and adherence to daily and seasonal routines. Key practices within Swasthavritta, including Dinacharya (daily regimen), Ritucharya (seasonal regimen), and Sadavritta (ethical conduct), focus on maintaining balance and harmony within the body, which can effectively prevent and manage non-communicable diseases (NCDs). By adhering to these practices, individuals can optimize their health, regulate metabolic processes, and reduce the risk of chronic conditions. Adequate sleep, another key element in Ayurveda, is essential for managing non-communicable diseases (NCDs). Proper sleep supports metabolic regulation, cardiovascular

health, and overall well-being, highlighting the importance of maintaining regular sleep patterns for disease prevention.

Integrating Ayurvedic principles with modern health practices provides a comprehensive approach to preventing and managing non-communicable diseases. By combining lifestyle modifications, dietary strategies, cleansing techniques, and proper sleep, individuals can enhance their health and reduce the risk of chronic conditions. Promoting these integrative practices through education and public health initiatives can contribute to better health outcomes and support global efforts to combat the rising prevalence of non-communicable diseases (NCDs).

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