



CODEN [USA]: IAJ PBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<https://doi.org/10.5281/zenodo.7049999>Online at: www.iajps.com

Review Article

OVERVIEW OF PREVENTION STRATEGIES COMMUNICABLE AND NON-COMMUNICABLE DISEASES

DR. Roaa Mansour Alhutayli, Abdullah Fahhad Aljabri, Nabeel Hussain Alharbi,
Abdulrhman Abdullah Algamdi, Hani Abduqadir Labban, Sami Saeed AlKurraydimi,
Anmar Mohammad Alyahiawi, Hani Hassan Alfi, Khaled Abdullah Asiri,
Yaseer Saeed Alhutayrashi

Article Received: March 2021

Accepted: March 2021

Published: April 2021

Abstract:

Communicable diseases are viruses or bacteria-borne infections that humans spread to one another through contact with contaminated surfaces, bodily fluids, blood products, insect bites, or through the air. However, the most common causes of noncommunicable diseases (NCDs) are metabolic and behavioral risk factors, which are largely avoidable through a variety of current interventions. The majority of global conversations center on the risks associated with self-management (tobacco and alcohol consumption, physical activity, weight, food, and dental health care) and focus on the role of individual responsibility to manage the risk factors of NCDs. Review conducted through screening previous studies published in medical databases up to mid of 2021. Transmission-blocking Preventive approaches, as well as vaccines designed to create "herd immunity," are not novel in infectious disease control. Nutritional therapies are critical for reducing the risk of NCDs. Because they are critical, this study focuses on NCDs and their risk factors, as well as some common prevention techniques.

Corresponding author:

Dr. Roaa Mansour Alhutayli,

QR code



Please cite this article in press Roaa Mansour Alhutayli et al., *Overview Of Prevention Strategies Communicable And Non-Communicable Diseases.*, Indo Am. J. P. Sci, 2021; 08(04).

INTRODUCTION:

Communicable diseases are illnesses caused by viruses or bacteria that humans pass on to one another via contact with filthy surfaces, bodily fluids, blood objects, insect bites, or the air [1]. There are various cases of communicable diseases, some of which require reporting to appropriate health and wellness departments or federal government authorities in the area of the outbreak. HIV, liver disease A, B, and C, measles, salmonella, measles, and blood-borne disorders are examples of communicable diseases. Fecal-oral, food, sexual relations, insect attacks, contact with dirty fomites, beads, or skin contact are the most common modes of transmission [2,3]. By reducing bacterial concerns, hand cleanliness protects against retaining short-term flora. The recommendation is to use alcohol-based treatments, such as foam with an alcohol content of 60-70%, or, if *C. difficile* is suspected, hand washing with forceful physical adjustment to limit the risk. This need to be coupled with Standard Precautions, which includes using obstacles such as handwear covers, gowns, masks, and eye wear, in order to prevent infection of the health care worker [4,5].

A combination of physiological, genetic, environmental and behaviours factors are the main underlying factors of NCDs. The main goals for management of NCDs are proposed as 25 and 30% relative reduction in the risk of premature mortality from NCDs by 2025 and 2030, respectively [6]. It is documented that healthy lifestyle plays an important role for primordial and primary prevention and control of NCDs [7]. Lifestyle is related to environmental, social or occupational factors. Healthy lifestyle includes personal health, health of others and community health. Main modifiable risk factors of NCDs are tobacco use, unhealthy diet, physical inactivity, and alcohol use [8].

METHODOLOGY:

We conducted this review which includes studies that were selected via bibliographic databases as; PubMed, google scholar, Embase. Then more relevant studies concerning communicable disease prevention and measures published up to mid of 2021, were chosen by reviewing the references of each included study. Only the English language and human subjects were used.

DISCUSSION:

Non-communicable diseases (NCDs), are chronic diseases, often known as long-term diseases, are medical problems with extended durations and slow progression (**Figure 1**). Most NCDs are non-infectious and are caused by a combination of genetic, physiological, behavioral, and environmental factors [8]. NCDs are the major cause of death worldwide, accounting for 71% of all deaths each year, according to the World Health Organization (WHO). Cardiovascular diseases (17.9 million fatalities per year), malignancies (9.0 million), respiratory illnesses (3.9 million), and diabetes are the top four killers among NCDs (1.6 million) (See **Figure 1**) [8]. However, the term of NCDs has been extended to cover a wide range of health problems, such as hepatic, renal, and gastroenterological diseases, endocrine, hematological, and neurological disorders, dermatological conditions, genetic disorders, trauma, mental disorders, and disabilities (e.g., blindness and deafness) [9]. The main risk factors contributing to NCDs involve unhealthy diets, physical inactivity, tobacco use, and alcohol misuse. Hence, most of these diseases are preventable as they eventually progress in early life due to lifestyle aspects [10]. There is an increasing concern that poor diet has increased the potential risk, causing chronic diseases, and nutrition problems in the public health sector [11].

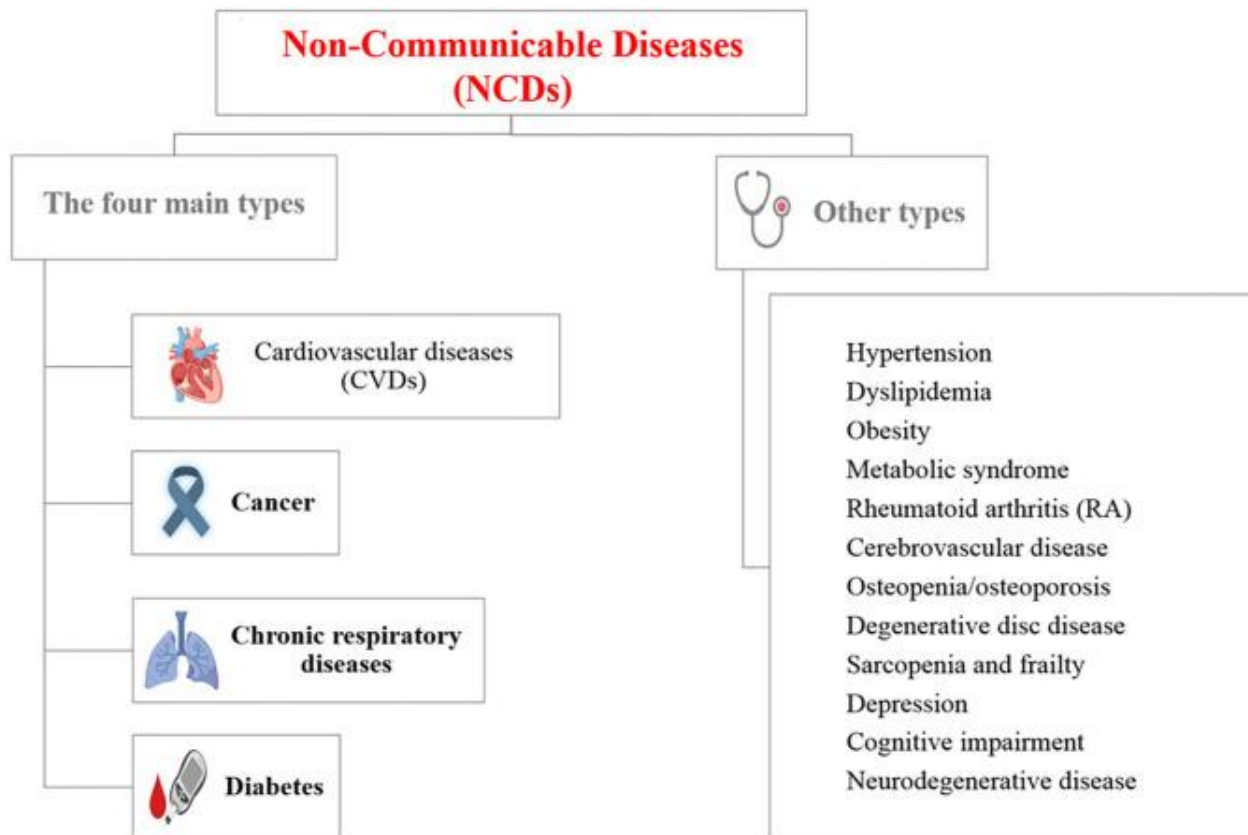


Figure 1: List of non-communicable diseases (NCDs)

Key Risk Factors of NCDs:

Several factors can enhance the likelihood of developing NCDs and are categorised in various ways. In one method, risk variables are categorised as modifiable or non-modifiable, with changeable or non-changeable circumstances. High blood pressure, smoking, diabetes mellitus, physical inactivity, obesity, and high blood cholesterol are modifiable risk factors, whereas age, gender, genetic variables, race, and ethnicity are non-modifiable risk factors [12,13,14]. Interestingly, whereas age and gender are

unchangeable, the majority of their linked characteristics are. **Figure 2** depicts a model for categorizing NCD risk factors. The non-modifiable factors can also be divided into three categories. classes: (i) biological factors, such as being overweight, dyslipidemia, hyper-insulinaemia, and hypertension; (ii) behavioral factors, such as diet, lack physical activity, tobacco smoking, and alcohol consumption; and (iii) societal factors, which involve complex combinations of interacting socioeconomic, cultural and environmental parameters [15].

Risk factors of noncommunicable diseases (NCDs)

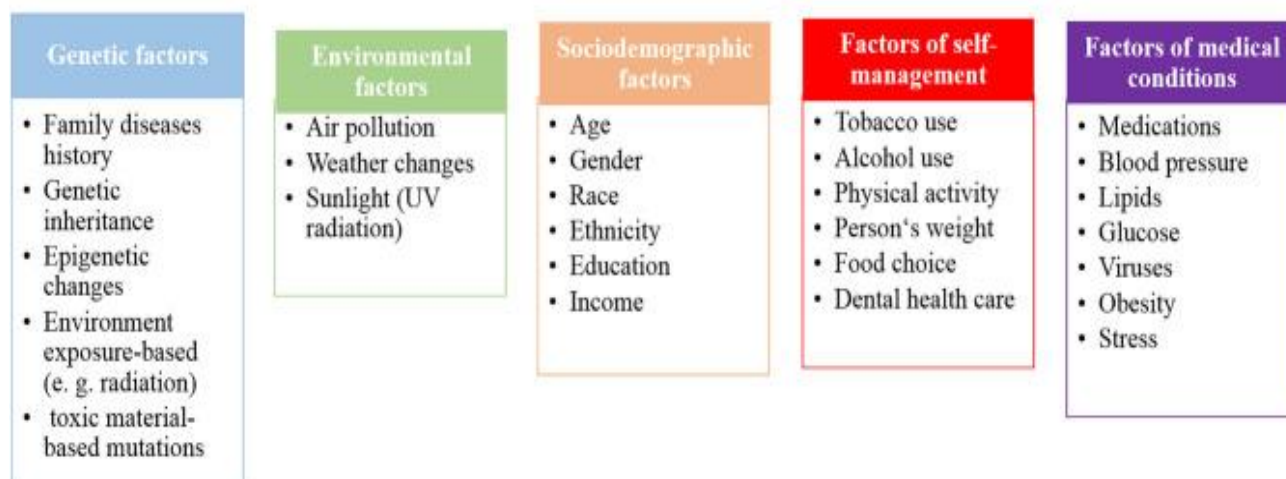


Figure 2: A proposed model to classify the risk factors of NCDs.

Communicable Disease Control:

An epidemic, or outbreak, can occur when a combination of factors in the agent (microorganism), population (hosts), and environment create an ideal environment for spread. Transmittable representatives abound, mutate swiftly, and can become resistant to treatments if not entirely destroyed. Reduced inoculation rates, poor nutrition, age (young and also senior), and immunosuppression all increase to infectious danger. Congestion, poor regional architecture and hygiene as a result of poverty, filthy drinking water, rapid climate changes, and natural disasters can all produce issues that allow for easier disease transmission [14].

Resistance to infectious diseases is related to many host and environmental factors, including age, gender, pregnancy, nutrition, trauma, fatigue, living as well as socioeconomic problems, and psychological condition. Great dietary standing has a protective impact and boosts immune proficiency. Vitamin A supplements lower the risk of complications from measles and enteric infections. TB may exist in an individual whose resistance is sufficient to avoid professional illness; however, the contaminated individual (with or without symptoms) may be a provider of a microorganism that can be transmitted to another or cause clinical illness if the individual's susceptibility is minimized. [8,13]

Innate and adaptable immune responses are critical components of the host's response to transmittable representatives [3]. Each of these functions is performed by cells from a specific hematopoietic stem cell family tree: The myeloid lineage activates innate

immune cells (for example, neutrophils, macrophages, and dendritic cells) as well as the lymphoid family tree generates flexible immune cells (e.g., T cells, B cells). The inherent immune feedback is a prompt, nonspecific action to wide groups of microorganisms.

Management of Risk Factors of NCDs:

The most common causes of NCDs are metabolic and behavioral risk factors that can be largely avoided through a variety of current methods. Most global conversations center on self-management risk factors (tobacco and alcohol usage, physical activity, weight, food, and dental health care) and the significance of human responsibility in managing NCD risk factors. Health care providers should educate patients on the importance of nutrition and increase the visibility of didactics, practicums, and seminars in everyday practice [16]. Furthermore, in most countries, the public health sector prioritizes the management of NCDs, because societal management is the primary focus of NCD prevention measures. Interventions are employed in public health management to encourage healthy behavior. For example, India is implementing multi-sectoral (partnership between different sectors) NCD prevention actions, such as school health programs, initiatives of the National Cancer Control Program, the National Trauma Control Program, the National Program for Control of Blindness, the National Mental Health Programme, the National Tobacco Control Program, and the National Program for Control of Diabetes, Stroke, and Anemia. Another method emphasizes environmental elements (air pollution, climate change, sunlight) and their impact on NCD development. Air pollution will be a major issue in the future, with new technology, such as

microchips, will have more of an impact in air monitoring [17]. Since diet is a common risk factor among most NCDs, it attracts more attention in an effort to find effective strategies to provide healthy food to the community and at all stages of life. Evidence-based nutrition interventions should be a global health priority and the role of the dietary fat studied should be a modifiable variable in the prevention of NCDs [18]. Recent data suggests that a diet rich in unsaturated fatty acids and high in healthy fat decreases the development of metabolic disorders and minimizes cardiovascular events. Many poverty and development interventions have an impact on NCD prevalence and risk [17]. The existing research is confined to diets, and it has been proposed that agricultural-based food security programs have a good effect on diet indicators. A poor diet, rather than macronutrients or micronutrients, is the major risk factor for NCDs and may be the most significant risk factor for NCDs [18]. Strategic health communication in population-wide interventions involves collaborating with the food industry to minimize salt content in foods [19]. The notion of a sustainable diet integrates health and environmental concerns, and it includes the risk factors stated above as part of the recommendations to minimize processed meat intake and increase whole-grain consumption [20]. Healthy diets that restrict the consumption of salt, sugar, and saturated fats are examples of lifestyle activities [21]. While our bodies can produce many of the chemicals required for optimum operation, key nutrients must be received through food. The primary components of food are carbohydrates, proteins, and fats. Minerals are necessary inorganic nutrients that must be taken from diet. The omega-3 alpha-linolenic and omega-6 linoleic acids are important fatty acids required for the formation of some membrane phospholipids. Vitamins (B, C, A, D, E, and K) are the classes of essential organic molecules (such as cofactors) that are required in small quantities for most enzymes to function properly. The absence or low levels of vitamins can have a dramatic effect on health. A focus on the need to meet adequate dietary intakes of essential nutrients through a healthy diet is considered to be very significant for the aging society [22]. Food supplements are concentrated sources of nutrients (minerals and vitamins) or other substances with a nutritional or physiological effect, which are marketed in the form of pills, capsules, and/or liquids. These dietary supplements offer many benefits, including the maintaining of an adequate intake of certain nutrients, to correct nutritional deficiencies, or to support specific physiological functions. Recently, researchers have been looking for new solutions to implement an

efficient food production process and to discover the benefits of starch waste on human health [21,22].

CONCLUSION:

Transmission-blocking preventive methods, as well as vaccinations designed to create "herd immunity," are not novel in infectious disease management. The quest of a transmission-blocking vaccine to prevent malaria among endemic communities and the rubella vaccine, which tries to avoid the catastrophic consequences of rubella on the fetus, are two famous examples (rubella is generally a mild disease otherwise). Noncommunicable diseases (NCDs) become symptomatic in adulthood, but they begin in childhood. Because NCDs are the leading cause of death in both developed and developing countries, global efforts to prevent and control them are required. Tobacco use, an unhealthy diet, and physical inactivity are the primary preventable risk factors for NCDs. These risk factors track from childhood to adulthood; it is well documented that healthy lifestyles play an vital role for primordial and primary prevention of NCDs. Sedentary lifestyle, particularly prolonged screen usage, is a major risk factor for NCDs. Lower consumption of fruits, vegetables, and fibers, as well as higher consumption of fatty and salty meals (fast foods, junk food), and carbonated soft drinks, are among the most common practices associated with an elevated risk of NCDs.

REFERENCES:

1. Wang P, Li Z, Jones A, Bodner ME, Dean E. Discordance between lifestyle-related health behaviors and beliefs of urban mainland Chinese: A questionnaire study with implications for targeting health education. *AIMS Public Health*. 2019;6(1):49-66.
2. Moein D, Masoud D, Mahmood N, Abbas D. Epidemiological Trend of Cutaneous Leishmaniasis in an Endemic Focus Disease During 2009-2016, Central Iran. *Turkiye Parazit Derg*. 2019 Jun 17;43(2):55-59.
3. Heller O, Somerville C, Suggs LS, Lachat S, Piper J, Aya Pastrana N, Correia JC, Miranda JJ, Beran D. The process of prioritization of non-communicable diseases in the global health policy arena. *Health Policy Plan*. 2019 Jun 01;34(5):370-383.
4. Snieszko S.F. The effects of environmental stress on outbreaks of infectious diseases of fishes* *J. Fish Biol*. 1974;6:197-208.
5. Sisti LG, Dajko M, Campanella P, Shkurti E, Ricciardi W, de Waure C (2018) The effect of multifactorial lifestyle interventions on cardiovascular risk factors: a systematic review

- and meta-analysis of trials conducted in the general population and high risk groups. *Prev Med* 109:82–97.
6. Chakma J, Gupta S (2017) Lifestyle practice and associated risk factors of noncommunicable diseases among the students of Delhi University. *Int J Health Allied Sci* 6:20–25
 7. Bollyky TJ, Templin T, Andridge C, Dieleman JL (2015) Understanding the relationships between noncommunicable diseases, unhealthy lifestyles, and country wealth. *Health Aff (Project Hope)* 34(9):1464–1471.
 8. World Health Organization Noncommunicable Diseases (NCD). (2019). Available online at: https://www.who.int/gho/ncd/mortality_morbidity/en/
 9. World Health Organization Global Action Plan: For the Prevention and Control of Non-communicable Diseases. (2013–2020). Available online at: https://apps.who.int/iris/bitstream/handle/10665/94384/9789241506236_eng.pdf
 10. Noor NAM, Yap SF, Liew KH, Rajah E. Consumer attitudes toward dietary supplements consumption: implications for pharmaceutical marketing. *Int J Pharm Healthc Mark.* (2014) 8:6–26. 10.1108/IJPHM-04-2013-0019
 11. Sithey G, Li M, Thow MA. Strengthening non-communicable disease policy with lessons from Bhutan: linking gross national happiness and health policy action. *J Public Health Policy.* (2018) 39:327–42. 10.1057/s41271-018-0135-y
 12. International Diabetes Federation IDF Diabetes Atlas. 7th Edn. Brussels: International Diabetes Federation; (2015).
 13. Kahn SE, Cooper ME, Del PS. Pathophysiology and treatment of type 2 diabetes: perspectives on the past, present, and future. *Lancet.* (2014) 383:1068–83. 10.1016/S0140-6736(13)62154-6
 14. Aune D, Ursin G, Veierød MB. Meat consumption and the risk of type 2 diabetes: a systematic review and meta-analysis of cohort studies. *Diabetologia.* (2009) 52:2277–87. 10.1007/s00125-009-1481-x
 15. World Health Organization Technical Report Series Diet, Nutrition and the Prevention of Chronic Diseases. Geneva: WHO; (2003). p. 1–149.
 16. Johnston E, Mathews T, Aspary K, Aggarwal M, Gianos E. Strategies to fill the gaps in nutrition education for health professionals through continuing medical education. *Curr Atheroscler Rep.* (2019) 21:13. 10.1007/s11883-019-0775-9.
 17. Arora M, Chauhan K, John S, Mukhopadhyay A. Multi-sectoral action for addressing social determinants of noncommunicable diseases and mainstreaming health promotion in national health programmes in India. *Indian J Commun Med.* (2011) 36:S43–9. 10.4103/0970-0218.94708.
 18. Mutie PM, Giordano GN, Franks PW. Lifestyle precision medicine: the next generation in type 2 diabetes prevention? *BMC Med.* (2017) 15:171. 10.1186/s12916-017-0938-x
 19. Micha R, Khatibzadeh S, Shi P, Andrews KG, Engell RE, Mozaffarian D. Global, regional and national consumption of major food groups in 1990 and 2010: a systematic analysis including 266 country-specific nutrition surveys worldwide. *BMJ Open.* (2015) 5:e008705. 10.1136/bmjopen-2015-008705
 20. Webster J, Pillay A, Suku A, Gohil P, Santos JA, Schultz J, et al.. Process evaluation and costing of a multifaceted population-wide intervention to reduce salt consumption in fiji. *Nutrients.* (2018) 10:155. 10.3390/nu10020155
 21. Springmann M, Wiebe K, Mason-D'Croz D, Sulser TB, Rayner M, Scarborough P. Health and nutritional aspects of sustainable diet strategies and their association with environmental impacts: a global modelling analysis with country-level detail. *Lancet Planet Health.* (2018) 2:e451–61. 10.1016/S2542-5196(18)30206-7
 22. Bruins MJ, van Dael P, Eggersdorfer M. The role of nutrients in reducing the risk for noncommunicable diseases during aging. *Nutrients.* (2019) 11:85. 10.3390/nu11010085