The Pharma Innovation Journal 2022; SP-11(6): 1896-1907

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(6): 1896-1907

www.thepharmajournal.com
Received: 02-04-2022
Accepted: 07-05-2022

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Clarification of non communicable diseases their types and risk factor and some preventive action to reduce the chronic diseases

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Abstract
The non communicable diseases are global health problem. Cardiovascular diseases, diabetes and pulmonary diseases are mostly recognizing as non communicable disease. Cardiovascular disease are the major causes of the death it contribute 17.9 million deaths and 31% of all global death. Cancer causes 9 million death and 7% of all global deaths, diabetes causes 1.6 million death and 3% of all global death, chronic respiratory disease responsible for 3.8 million and 7% of all global death. NCDs are the main cause of 73% of all global mortality and 8·3 million (20%) deaths are occurring due to another type of NCDs. The main risk factors of NCDs are smoking, alcohol consumption and lack of physical activity, unbalance blood pressure and dietary factors. In modern society people are changes their "nutrition transition" from traditional vegetable dietary pattern to unhealthy dietary intake, such as processed food, fast food, and fried food, is the decisive factor in the rapid growth of NCDs. The aim of the is study to identify different types of intervention strategies to tackle non communicable diseases and different type of government policies and program to decreased environmental and nutritional risk factor and adopt some preventive actions, which will require legislation and leadership policies to prevent NCDs.

Keywords: Non communicable diseases, risk factor, some preventive action, reduce, chronic diseases

Introduction
Non-communicable diseases (NCDs) are a chronic disease and four main types of NCDs are cancer, cardiovascular diseases, diabetes and pulmonary diseases (Collins *et al*., 2019) [78]. Most of the NCDs are the result of various factors including behavioral, genetic, physiological, and environmental factor (Budreviciute *et al*., 2020) [60]. In a modern society people are less engaged in physical activity and eat food that are high in calories, sodium and fat with low fiber content which associated with many diseases such as cancer, cardiovascular disease, obesity, and hypertension (Kavishe *et al*., 2015).
NCDs are the major causes of death in low and middle income countries (Pullar *et al*., 2018) [80]. The data obtained from WHO show that the chronic diseases are responsible for 60% of the world's death in which 80% of death are found in low and middle income country (Na *et al*., 2015). There is direct relationship in between NCDs and low income group which show that the rate of premature death is high in low income group than high income groups (Allen *et al*., 2017). Non-communicable diseases (NCDs) are the main cause of 73% of all global mortality (GBD 2017). Recent study show that 32·2 million NCD deaths (80%) are caused by cancers, cardiovascular diseases, chronic respiratory diseases, and diabetes and 8.3 million (20%) death are occur due to another type of NCDs (Bennett *et al*., 2018) [83]. The international community is more focus on these conditions, as evidenced by High-Level Meetings on NCDs at the UN General Assembly; in 2015 approximately 193 countries committed to decreased the chances of premature NCD deaths by one third by 2030 which is the part of the Sustainable Development Goals (WHO, 2017) [82].
WHO (World Health Organization) established a action plan to prevent and control the non communicable disease 2013-2020 which contain global monitoring framework and have a nine globally target to achieved it by 2025 and the first target is to reduction in the rate of mortality rate due cardiovascular disease, cancer, diabetes, and chronic respiratory diseases than set the target to reduce the non communicable risk factor for behavioral risk like intake of alcohol, tobacco and lack of physical activity and work on metabolic risk factor related to high blood pressure and obesity (WHO, 2018) [86].

In ancient times the relationship in between food and health and prevention from disease is well known (Boone-Villa *et al*., 2019) [84]. Some nutrition-related non-communicable diseases are the major health problem and they are recognized as driven by unhealthy food environment (Laar *et al*., 2020) [85, 120]. It is very important to take comprehensive action to make progress in controlling dietary risk factors associated with nutritional related non -communicable disease and it helpful in understanding of the status and progress in implementing food environment relevant policies, regulations, and programs by national governments is required, given that these are very important point to reduce unhealthy diets (WHO, 2017, United Nations, 2018) [82].

Types of NCDs

Non-communicable diseases (NCDs), including cardiovascular disease (CVDs), stroke, chronic obstructive pulmonary disease (COPD), cancer, and diabetes are currently represent the number one cause of morbidity and mortality in worldwide, that declare about 36% of people are dying every year, which is only 63% of adults (Chaker *et al*., 2015) [27]. Obesity is a growing public health issue that are associated with an elevated risk of different types of non-communicable diseases, such as type 2 diabetes, coronary heart disease, stroke, asthma, and cancers and chronic obstructive pulmonary disease (Nyberg *et al*., 2018).

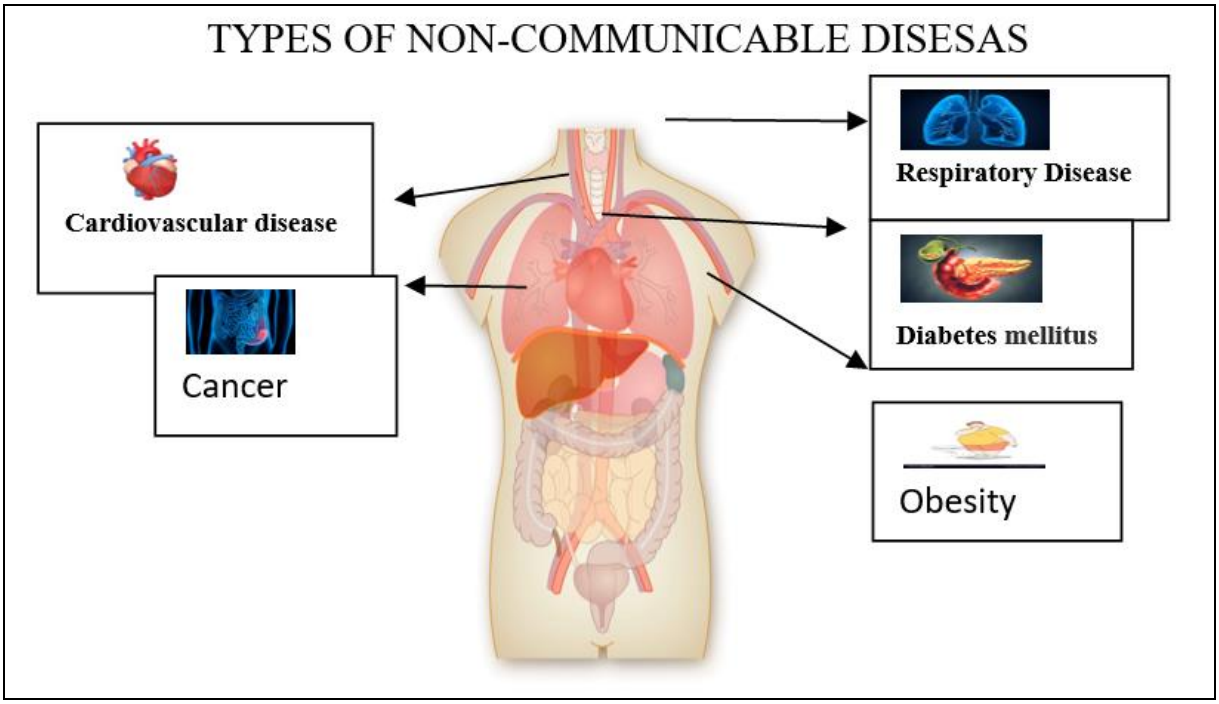

Fig 1: Types of Non-communicable diseases

Cardiovascular diseases (CVDs)

The cardiovascular systems are made up of the heart and blood vessels (Jan *et al*., 2018). CVDs are many types such as ischaemic heart disease, stroke, coronary heart disease, peripheral arteries and hypertension (Namara *et al*., 2019). CVDs are responsible for16.7 million worldwide deaths in developing countries (Hennekens *et al*., 2017). Cardiovascular diseases cause a much greater mortality burden in Europeans than any other diseases (Wilkins *et al*., 2017) [1]. The contribution of cardiovascular diseases (CVDs) to mortality increased by 34.3% in 2016 (Prabhakaran *et al*., 2018) [74]. The patients who are already suffering from CVD appear to have more vulnerability to develop COVID-19 and tend to have more severe disease with very bad clinical outcomes (Wu *et al*., 2020) [2].

American Heart Association describe 7 factors that is responsible for increasing the rate of risk related to heart disease and stroke:-improper nutrition, overweight /obesity, sedentary lifestyle, smoking, imbalance in blood pressure, elevated level of cholesterol and uncontrolled blood sugar level (Budreviciute *et al*., 2020) [60].

In modern society the industrialization of the economy are move from physically demanding to sedentary works, along with the current situation of consumerism and technology-driven culture that is mostly related to overlong work hours, overlong commutes, and less leisure time for some recreational activities, these are associated with the significant and steady increase in the rates of CVD during the last few decades (Benjamin *et al*., 2018, Curry *et al*., 2018) [3, 4].

Cancer

Cancer is the one of the most common NCDs which causes of death 25% of German population die because of this reason cancer are the second most leading disease in developing countries (Kerschbaum *et al*., 2019). The development of cancer can be classified as external and internal factor in which internal factor include age, genetic factor while external factor contain smoking, nutrition and lifestyle factor (Piñeros *et al*., 2017). Cancer is also classified into nine categories that are based on the frequency of occurring diseases and the major cancers include lungs cancer, breast cancer, cervix, ovary, oesophagus, gall bladder, rectum and stomach; while other type of cancers mainly are cancer of anus, appendix, lip, prostate and tongue etc (Bray *et al*., 2018) [126].

Recent study show that the global incidence of lung cancer is 11.6 of the total cases and 18.4% of total cancer deaths and female breast cancer (11.6%), prostate cancer (7.1%), and followed by colorectal cancer (9.2%), stomach cancer (8.2%), and liver cancer (8.2%) for mortality (Dar *et al*., 2018) [127].

Some study show that the half of the cancer case can be prevented through balance nutrition, healthy lifestyle, promoting physical activity and maintaining a normal weight (Marmot *et al*., 2018).

Diabetes mellitus

Diabetes is a life threading condition that causes other serious problem such as kidney failure, heart diseases, and damage eye which lead to blindness and foot ulcers problem (Budreviciute *et al*., 2020) [60] resulting in higher medical care cost, reduce standard of life and increased mortality rate (Saeedi *et al*., 2019) [29]. Diabetes are classified as type 1, type 2 and type 3, where type 1 cannot produce adequate amount of insulin, while in case of type 2 cell of the body unable to respond properly to insulin (Bellou *et al*., 2018), and type 3 is related to Alzheimer's disease, in which neurons system present in brain are unable to respond to insulin (Kandimalla *et al*., 2017). Diabetes (DM) is also responsible for developing atherosclerosis, retinopathy, renal failure and CVD, CAD and left ventricular hypertrophy (Tripathy *et al*., 2017) [28].

Some report show that more than 371 million people are suffer with diabetes mellitus, and most of them are distributed throughout the developing countries, such as China and India (Atlas *et al*., 2015) [5]. Some research data shows that diabetes contributes 3.1% of the total mortality burden, in which women (3.4%) contribute more than men (2.9) (Tandon *et al*., 2018) [73]. Patients who suffer with diabetes can reduce the diabetes by changing their bad eating habits, sedentary lifestyle and decrease the consumption of processed food, alcohol, tobacco, red meat, and sugar (Fagherazzi *et al*., 2019).

Obesity / overweight

Overweight and obesity define as a person with BMI is greater than or equal to 25kg/m^2 is considered overweight while a BMI more than 30kg/m^2 is considered obesity (Yaya *et al*., 2018) [88]. Some research describe that 1.9 million adults are overweight and 650 million are obese in 2016 (Nyberg *et al*., 2018). Overweight or obese are important risk factors for type 2 diabetes mellitus, systemic arterial hypertension, cardiovascular diseases, different types of cancers and premature death (Lees *et al*., 2017) [6]. Obesity has traditionally been thought to be caused by unhealthy dietary habit and decreased in levels of physical activity (Hruby *et al*., 2016) [7], recent research demonstrated that a number of other factor also involve with obesity formation such as circadian misalignment and sleep disturbance (Broussard *et al*., 2016) [8].

Prevalence of overweight and obesity is observed in many Countries like Spain have 67.4% overweight and 20.9% obesity, in Germany 64.0% are overweight and 23.1% are obesity and in Austria 62.9% are overweight and 21.3% obesity cases (Peralta *et al*., 2018) [89]. Some research reveals that in developed countries almost 24% of boys and 23% of girls are overweight or obese and in developing countries 13% of both boys and girls are overweight or obese (Bleich *et al*., 2018) [90]. To reduce chances of obesity/overweight it is important to consider some preventive strategies such as promoting excessive breast feeding (Ehrenthal, *et al*., 2016) [92], promote physical activity (Jakicic *et al*., 2018) [93] and promote plant-based diets like fruit and vegetables (Turner *et al*., 2015) [91].

Chronic respiratory diseases

Chronic respiratory diseases (CRDs) affects approximately one billion people worldwide and is a leading cause of death, the most common forms of the disease are non communicable, such as chronic obstructive pulmonary disease (COPD), asthma, chronic bronchitis, occupational lung disease and pulmonary hypertension (Siddharthan *et al*., 2019) [98]. Chronic respiratory diseases is the third leading cause of death in 2017 (544·9 million people in worldwide of all deaths), behind cardiovascular diseases and neoplasms (Soriano *et al*., 2020) [94]. Asthma is a heterogeneous disease which affects 339 million individuals worldwide, with the prevalence increasing in developing countries (Enilari *et al*., 2019) [95]. Some common symptom of asthma is chest tightness, wheezing, shortness of breath, and airway obstruction (Hansbro *et al*., 2017) [96]. Air pollution is leading environmental factor that are affecting respiratory health at global level (Guan *et al*., 2016) [10].

Chronic obstructive pulmonary disease (COPD) is defined by the Global Initiative for Obstructive Lung Disease definition of post-bronchodilator forced expiratory volume in 1 second/forced vital capacity (FEV_1/FVC) quotient <0.7 or FEV_1/FVC <70 (Esteban *et al*., 2016) [30]. The main type of symptomatic patients included some clinical diagnosis of dyspnea, long term cough or sputum production, as well as they are active smokers for more than 1 year and those who exposed to biomass or occupational hazards (Vogelmeier *et al*., 2017) [9]. There are many instruction are available for management of COPD and several action plan to control tobacco and reducing air pollution (Lisy *et al*., 2018). Nutrition is a important factor plays a critical role in healthy lung development and Inadequate level in the nutritional requirements of a developing lung in utero and in early life can compromise the respiratory system integrity which causes poor lung function, reduced protection against infections, and greater likelihood of development of acute illnesses in childhood and chronic illnesses in adulthood (Karim *et al*., 2017) [97].

Prevalence and mortality rate of NCDs

NCDs are responsible to 71% or 41 million deaths occur globally (WHO, 2018) [86]. Cardiovascular disease are the major causes of the death it contribute 17.9 million deaths and 31% of all global death. Cancer causes 9.3 million death and 7% of all global deaths, diabetes causes 1.5 million death and 3% of all global death, chronic respiratory disease responsible for 4.1 million death and 7% of all global death. The aged in between 30 to 69 have higher ratio of premature adult death are caused by non communicable diseases (WHO 2021).

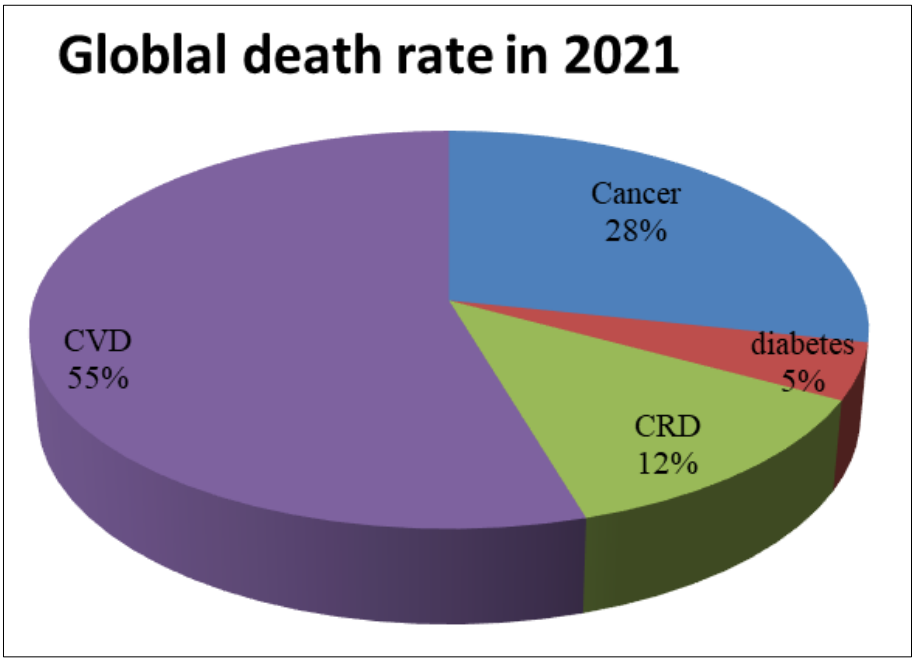

Fig 2: Source WHO 2021

Risk Factor of NCDs

The WHO has recognize four risk factors that are shared among the four major NCDs they are use of tobacco, physical inactivity, the harmful use of alcohol, and unhealthy diets (Sommer *et al*.,2015) [99]. In modern society people are changes their "nutrition transition" from traditional vegetable dietary pattern to unhealthy dietary intake, such as processed food, fast food, and fried food, is the decisive factor in the rapid growth of NCDs (Ma *et al*., 2017) [32]. These NCDS risk factors are the main cause of the death and disability burden in all countries, regardless of their economic development status (Riley *et al*., 2016) [31, 35]. The leading risk factor globally for mortality is raised blood pressure (responsible for 13% of deaths globally), followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%) (Sandhu *et al*., 2015) [33].

Harmful effect of alcohol

The consumption of alcohol is highly responsible for disability and premature death in the worlds it also increase the risk of heart disease, cancer, respiratory problem and mental disability (WHO, 2018) [86]. When the consumption of alcohol is light to moderate it may protect from ischemic heart disease and heavy amount of drinking which is also known as "binge drinking", or drinking more than of 4–5 glasses on one occasion it increases the chances of ischemic heart disease (Wakabayashi *et al*., 2015) [100]. The amount of alcohol when taken in larger quantity it causes elevated the chances of other type of NCDs such as cancers, injuries, and a wide range of social problems (Ferreira-Borges *et al*., 2016) [11]. Recent studies show that alcohol associate with an increased risk of road traffic accidents and HIV infection (Kabwama *et al*., 20 16) [12]. Consumption of alcohol during pregnancy developed fetal alcohol syndrome (FAS), which is the most prevalent conditions occurring within the congenital malformations, deformities, and chromosomal abnormalities (43%) and mental and behavioral disorders (Popova *et al*., 2017) [101].

Lack of physical activity

Physical activity is more important because of covid-19 pandemic situation causes insufficient physical activity that is global health problem and has itself been called a pandemic (Haseler *et al*., 2022) [106]. At the time of Lockdowns people are do less physical activity and their sedentary activity is increased both of which are associated with risks to health (Cross*et al*., 2021) [103]. Time spent sitting (sedentary time) is the only reason of risk factor for all cause mortality, cardiovascular disease, cancer, and type 2 diabetes (WHO 2020) [103]. There are varying types of physical activities, mainly classified by their effect on muscles and rate of heart and also based on the effort required by the subject, Activities that require more physical effort and cause a significant increase in heart rate, such activity include running and playing football, in others words know 'vigorous intensity activities', Where as activities, that require moderate or less effort and cause a small increase in heart rate, such as brisk walking and swimming, also known as 'moderate intensity activities'(Mandil *et al*., 2016) [13].

The benefits of physical activity are broad and include improve mental health, a lower the chances of cardiovascular disease, help in better sleep, and a lower risk of some cancers (Crooke *et al*., 2020) [104]. Physical inactivity is a major risk factor in promoting obesity, which itself is a risk factor for the other chronic diseases (Sandhu *et al*., 2015) [33]. WHO always active to promote a minimum of 150-300 minutes of moderate intensity physical activity or 75-150 minutes of vigorous intensity physical activity weekly, and encourages people to increased these targets (Fiona *et al*., 2020) [105].

High intake of sodium

Sodium is essential part which play important role in fluid balance and cellular homeostasis and the amount of sodium needed to maintain homeostasis in adults is exceedingly low (<500 mg) compared with the average intake of most Americans (>3,200 mg) (Farquhar *et al*., 2015) [107]. High intake of sodium is responsible for different types of diseases such as high blood pressure, and cardiovascular disease (CVD) (Grosso *et al*., 2019) [14]. Bad dietary habits in which insufficient water intake creates a challenge that demands the kidneys to conserve water but dispose of excess salt (Ferreira-

Pêgo *et al*., 2015) [17]. In order to conserve water kidney play major role in retain extra Na^+ (and urea) to strengthen the intramedullary hypertonicity and during this mechanism, extra amount of Na^+ is being store because of this The amount of body-fluid Na^+ raises osmolality and stimulating AVP release (Christ-Crain *et al*., 2016) [16]. It is considered that the combined effects of high-salt and low-water intake create different types of NCDs chronic diseases including Hypertension (HTN) and chronic kidney disease (CKD) (Qian *et al*., 2018) [18].

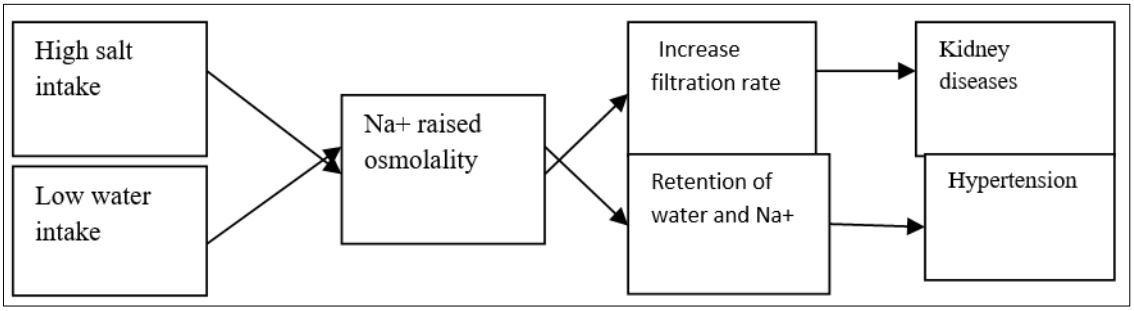

Fig 3: Impact of high salt intake and low consumption of water and their link to HTN and CKD

Excessive use of tobacco

Tobacco is a major global public health problem which is affecting both smokers and non-smokers (Lee *et al*., 2019) [111]. Tobacco product use include as current use of cigarettes, cigars, hookahs, pipe tobacco and bidis (Jamal *et al*., 2017) [110]. In 2016 at global level it is found that 34% and 6% of woman aged 15 years were current smoker of tobacco (WHO, 2018) [86]. Smoking is the main risk factor among working age population because it increased healthcare problem and it reduced productivity due to discontinuation of work from illness (Matayoshi *et al*., 2018) [15]. Some studies describe that maternal cigarette smoking during pregnancy is associated with reduce birth weight or increased the chance of lower birth weight (Rogers *et al*., 2019) [108].

The Framework Convention on Tobacco Control (FCTC) is a unique kind of global health response in which WHO play a major role to negotiate an international treaty that resulted in binding international commitments (Wipfli *et al*., 2016) [48] with this it allowed a specific type of governance mechanism to be developed for reducing one of the main type NCDs risk factors (Heller *et al*., 2019) [50]. The global tobacco control, consist different community members that include tobacco control scientists, civil society groups and individual tobacco control advocates, and policy makers and bureaucrats within the WHO and national governments, which are helpful in maintaining complementary functions of research, advocacy and policy-making (Gneiting *et al*., 2016) [49].

High blood pressure

High blood pressure (BP) is the one of the most single risk factor that contributing to the global burden of disease and also global mortality with an estimate of 10.4 million deaths attributed to raised BP in 2017 (Beaney *et al*., 2020) [122]. The high blood pressure is causes of stiffer blood vessels, impaired renal function, poorer thinking functions, increased risk of depressive symptoms, imbalance of the autonomic nervous system and diabetes (Zhou *et al*., 2020) [124]. Some Research show that the increase in body mass index (BMI) and increase in age are main causes of rising blood pressure and can lead to hypertension and obesity (Writes *et al*., 2017) [24]. Control blood pressure has been associated with reduction in the chances of death that are related to diabetes and this is also helpful in decreasing CVD, stroke and microvascular complications (Bhanpuri *et al*., 2018) [123]. Different type of diet is effective in decreasing hypertension such as such as potassium, calcium, proteins and magnesium (Burnier *et al*., 2019) [125].

Required intervention to tackle NCDs

To tackle NCDs which is global health problem, in 2013, the World Health Assembly the decision making body of the World Health Organization (WHO) adopted a Global Monitoring Framework for NCDs with 25 key indicators to track progress in prevention and control of NCDs (Riley *et al*., 2016) [31, 35]. The World Health Assembly also agreed on a set of global voluntary targets linked to the Global Monitoring Framework to prevent and control NCDs by 2025, including a target to reduce premature mortality from the 4 main NCDs by 25%, and targets for the main behavioral and metabolic NCD risk factors and 2 health systems targets (de Souto Barreto 2015) [114]. Furthermore, in 2015, the 2030 Agenda for Sustainable Development recognizes the importance of addressing NCD issues with the inclusion of a similarly ambitious target to reduce the number of premature deaths from NCDs by one third by 2030 (United Nations 2015) [20, 34].

Role of Sustainable development goal

Sustainable development goal is adopted by all United Nations Member States in 2015, it is a blueprint for peace and prosperity for people and the planet and it consist 17 Sustainable Development target (SDGs), which are an urgent call for action by all countries - developed and developing in a global partnership (United Nations; 2015) [20, 34].

NCDs are a barrier to achieving SDG 1 (reducing poverty), SDG 2 (zero hunger), SDG 4 (education), SDG 5 (gender equality), and SDG 10 (reduced inequalities), Productivity gains from preventing and managing NCDs will contribute to SDG 8 (decent work and economic growth), SDG 11 (sustainable cities and communities) and SDG 12(sustainable production and consumption) offer clear opportunities to reduce the NCD burden and to create sustainable and healthy cities (Nugent *et al*., 2018) [19].

Sustainable Development Goal (SDG) 3 (health and well being) includes target 3·4 and 3.8 to reduce premature NCD mortality by a third by 2030 (Minas *et al*., 2015) [21]. SDG goal 3.4 says that "By 2030, reduce by 1/3rd preventable mortality from non-communicable diseases (NCDs) through prevention and treatment in full according with the WHO Global Action Plan for the Prevention and Control of Non-Communicable Diseases and it also promote mental health and well-being in full of accordance with the WHO Mental Health Action Plan 2013-2020"; (Bertram, *et al*., 2018) [23].

SDG goal 3.8 focus on "Achieving universal health coverage for physical and mental disorders, that includes financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all" (Royston *et al*., 2020) [22].

Prevention

For prevention Primary care is important which generally include cardiovascular risk assessment and management to prevent heart related problems and strokes by using hypertension and diabetes as entry points, detection, and follow up of diabetes to prevent diabetes complications such as chronic renal disease, smoking cessation for counseling to prevent progression of chronic respiratory disease (Feigin *et al*., 2017) [116].

Through these primary care models, decentralized of clinics are happened that allowed rapid and massive scaling up of human immunodeficiency virus (HIV)/ tuberculosis (TB) services, it allowing greater access to care primarily for patients in rural locations by reducing travel time and costs (Kane *et al*., 2017) [25]. In July 2017, the food drug and administration (FDA) plan that it would create a new comprehensive action plan for tobacco and nicotine product for their proper regulation in the United States that are mainly focuses on the central role played by nicotine in all tobacco products and the growing potential for changing smokers either entirely reduce tobacco products or when necessary to those tobacco products that pose the lowest risk (Apelberg *et al*., 2018) [117]. WHO want to help those smokers who have the desire to stop using tobacco products and create a smoking free environment (Rogge *et al*., 2018) [26].

Table1-Global targets for the prevention and control of NCDs.

Target	Global target	Reference
Reduce risk of premature mortality from CVD, cancer, diabetes, or chronic respiratory disease	Reduce by 25%	Sacco *et al*., 2016 [112]
Reduce alcohol use, as appropriate, with the national context	Reduce by 10%	WHO 2019
Reduce prevalence of lack of physical activity	Reduce by 10%	de Souto Barreto *et al*., 2015 [114]
Reduce mean population intake of salt/sodium	Reduce by 30%	Vineis *et al*., 2021 [115]
Reduce prevalence of tobacco use in persons 15 y or older	Reduce by 30%	WHO 2015
Reduce prevalence of high blood pressure	Reduce by 25%	Zhou *et al*., 2017 [119]

Leadership

Leadership is important factor for greater investment in legal capacity within World Health Organization and other different type of agencies that are working in health development and careful assembling of a legal workforce and according to available data there are two main areas where global leadership could strengthen legal capacities (Magnusson *et al*., 2019) [39]. First main area contain professional exchanges and mutual support that are provide by WHO among those who use legal knowledge in key practice areas and Fostering such a transnational network could be achieved online, with support for legal practitioners working in key thematic areas, countries and regions, and in different languages and when provide appropriate support, these communities of practice will improve and engaged, it gives expert evidence in case (by filing of amicus briefs), and helpful in developing technical resources in areas of need (Marks-Sultan *et al*., 2016) [38]. PH- LEADER is a 1-year training program that are focusing on implementation of research and leadership capacity among mid-career health professionals, researchers, and government public health workers from Low- and middle-income countries (Galaviz *et al*., 2019) [79].

Reduce environmental risks

Acting on environmental risks can reduce health inequity, as women and the poor are disproportionally affected and some Women and children are more exposed to harmful smoke caused by cooking, heating, and lighting with unclean fuels and inefficient technologies (Prüss-Ustün *et al*., 2019) [47]. Environmental risks to health can to some extent be influenced through personal choices (vegan diet, transport choice) but are likely to be more affected by policy measures (incentivizing clean technologies, carbon and fuel taxation) necessary to deliver on the Paris Agreement on climate change (Campbell *et al*., 2019) [46]. Implementing wide ranging policy changes may be more equitable than acting on individual behavior for example the NCDs Alliance briefing paper "Nutrition, physical activity and NCD prevention" lists one of the 3 steps to controlling NCDs in which first one is "Create and maintain activity-friendly built and second step is external environments that encourage physical activity and 3rd promoting other healthy behaviors" (Smit *et al*., 2016).

During Olympics in Beijing, air pollution has been reduced by employed measures strategic plan such as traffic control, shutting down highly polluting companies and replace old small coal-fired boilers to natural gas and this are helpful in decreasing the rate of mortality due to cardiovascular diseases (Su *et al*., 2015) [36]. Some study suggest that government policies are more focus on compact cities that support a modal shift away from personal motor vehicles towards walking, cycling, and low-emission public transport that show significant effect on decreasing the rate of diseases (Stevenson *et al*., 2016) [37].

Government policy and program

Government action is required to increase the healthiness of environments and reduce obesity, diet-related non-communicable diseases (NCDs) and other type of inequality (Laar *et al*., 2020) [85, 120]. Youth engagement in sport supports positive youth development, building self-esteem, collaboration and kinship (Holt *et al*., 2017) [41]. Youth engagement in sport also supports short and long-term health benefits, including reduction in non-communicable diseases (NCDs) and mental health concerns (Chekroud,*et al*., 2018) [42]. The National Youth Policy for India, focusing the value of sport for health and development (Roy*et al*., 2019) [121]. Since then, investments by national and state governments have been made to improve sports infrastructure, including the building and maintenance of sports facilities and coaching in both rural and urban areas through programs such as the khelo India Scheme and the National playing fields association of India (Bhadra *et al*., 2019) [43]. Recently stepping forward to mainstreaming health promotion and

engaging the general public to mitigate the epidemic of NCDs, the World Non communicable Disease Federation (WNF) has launched its global health and wellness endeavor named PLAY, LAUGH, and GROW. In India, the campaign has been launched as KHELO, HASSO AUR HASAO, BADHO AUR BADHAO India (Thakur *et al*., 2021) [44]. Some initiatives of Government of India including poshan abhiyan, Fit India, Eat Right India and National Mental Health Program, National Program on Prevention and Control of CVDs, Diabetes, Cancer, Stroke (NPCDCS), National Multisectoral Action Plan etc are those covering the specific risk factors or social determinants (Mohanty *et al*., 2020) [45].

Nutritional intervention

Nutrition plays an important role at all life stages before and during pregnancy, lactation, infancy, and childhood as well as during adult life (Alabduljabbar *et al*., 2021) [51]. The flow of the food system in today's modern society has broken down because they are unable to deliver nutritious, safe, affordable, and sustainable diets, getting a good nutrition during pregnancy is very important but they are highly aggressive impact on marketing of formula and baby foods compromise breastfeeding and feeding practices in early childhood (Branca *et al*., 2019) [52]. Good quality of diet is required because bad quality of food are risk factor for malnutrition including: stunting, wasting, micronutrient deficiencies, overweight, obesity and non communicable diseases and according to recent study two thirds of the world's children are not eating the recommended minimum number of food groups and only one in six children is receiving a minimum suitable diet (UNICEF 2016) [53]. Billions of dollars are spent on foods that contain high amount of calories, fats, sugars, and salts and their consumption continues increased in low-income group countries (Guthold,*et al*. 2018) [54]. Poor diet is a group of dietary risk factor which is the main cause of death and it is 1st or 2nd biggest contributor to non communicable diseases (IHME. 2016) [55].

To create healthy food environments proper investment is necessary in green transport, storage, and distribution infrastructure to give access to perishable, nutrient rich foods, such as fruits and vegetables (Meiklejohn *et al*., 2016) [56]. Supplementation of nutrition is effective in decreasing the risk of NCDs in specific ethnic groups or people with less intake of micronutrient from foods (Manson *et al*., 2019) [57]. The food and agriculture organization and WHO have play important function in underline the importance of nutrition and plant based phytochemicals to prevent from non communicable diseases (Amao *et al*., 2018) [58]. In the US and other countries, food fortification and enrichment such as the addition of nutrient in food like iodine in salt, vitamin D in milk, and B1 and B3 vitamins to refined flour have contributed to the effective elimination of deficiency of some diseases such as goitre, rickets, beriberi, and pellagra, respectively (Zhang,*et al*., 2020) [59]. Some nutrition like linolenic acid (omega 3), linoleic acid (omega 6) are important fatty acid that are required to maintain phospholipids membrane, vitamin such as B, C, A, D, E and K are required in minimum amount for most enzyme to work properly (Budreviciute *et al*., 2020) [60]. Nutrient that are especially present in plants are contain macro and micronutrients and special kind of bioactive compound that minimize the chances of non communicable diseases (NCDs) (Petroski *et al*., 2020) [75]. Plant seed contain phytic acid that store maximum amount of phosphorus and in low and middle income group countries (LMIC), diet are mainly based on phytate rich plant based food such as legumes, cereals, nuts, and seeds (Gibson *et al*., 2018) [76]. It is very important to use fortified some food product to meet essential micronutrient particularly iron and zinc which is complementary foods for infants and young adult children to maintain the level of nutrition in low and middle income country (LMIC) and some other at-risk populations (Cerf *et al*., 2021) [77].

Table 2- Essential Nutrient Their Sources And Their Effects On Non-Communicable Disease.

Nutrient	Reduce risk	source	References
Vitamin E	CVDs, hypertension, diabetes and obesity	Tomatoes, fruits	Raiola *et al*., 2015 [64]
Vitamin B	Immune related diseases and lung injury	Legume, seeds, nuts, dark leafy vegetables, banana and citrus fruit ,	Tastan *et al*., 2018 [61] and Alam *et al*., 2021 [62]
Vitamin C	Respiratory tract infection	Citrus fruit , tomatoes, papaya and broccoli	Ferreira *et al*., 2017 [65]
Vitamin D	Cancer and atropy	Fortified food, and production via exposure to UV rays	Elaine *et al*., 2017 [63]
Omega -3 (PUFA)	Lower blood pressure level	Fish and fish oil	Bruins *et al*., 2019 [66]
Vitamin K	osteoporosis and cardiovascular disease,	Green leafy vegetables	Hosseinkhani *et al*., 2021 [67]
Calcium	Osteoporosis and colorectal cancer	Milk and dairy products	Gil *et al*., 2019 [69]
Photochemical	Diabetes, heart diseases and cancer	Sweet potato, green leafy vegetables and oil	Lyons *et al*., 2020 [68]
Zinc	Type 2 diabetes and oral diseases	Nuts , sesame seeds, soya been and pumpkin	Velazquez-Salinas *et al*., 2019 [72] Ruz *et al*., 2019 [71] Agha-Hosseini *et al*., 2021 [70]

Conclusion

Non-communicable diseases (NCDs) and their different types like cardiovascular disease (CVDs), chronic obstructive pulmonary disease (COPD), cancer, diabetes and obesity which are leading cause of death worldwide. NCDS risk factors like high blood pressure, tobacco use, raised blood glucose, physical inactivity, and overweight and obesity are cause of the death and disability burden in all countries, regardless of their economic development status.

NCDs are the main causes of death worldwide and the resulting it is a major challenge in country , therefore specific concern are required to identify the disease and make strategic plan So that we can reduce the damage caused by it and create a good environment. In order to address NCDs in a comprehensive way, a multi-stakeholder approach that includes management of environmental risk factor, prevention, government policy, proper leadership and most important nutritional intervention is required.

Abbreviation

NCDs- Non -communicable diseases
WHO- World Health Organization
UN- United Nation
COPD -Obstructive pulmonary disease
CVDs -Cardiovascular diseases
CAD- Coronary artery disease
FEV_1- Forced expiratory volume
FVC-Forced vital capacity

SDG- Role of Sustainable development goal
FAS-fetal alcohol syndrome
FDA- food drug and administration
LMIC- low and middle income country

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