



Noncommunicable Disease (NCD) Treatment, Prevention Strategies, and Risk Factors: A Philippine Situation

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ABSTRACT

Chronic diseases, which are often referred to as noncommunicable diseases (NCDs), are conditions that worsen over time gradually due to a combination of genetic, physiological, environmental, and behavioral factors. In the Philippine context, noncommunicable diseases (NCDs), which collectively include diabetes, hypertension, and chronic obstructive pulmonary disease, are accountable for all fatalities of Filipino people. Several articles have stated that 38.6% have been hospitalized with hypertension, 3.9 million cases of diabetes, and 27.7% of Filipinos suffered from Asthma-COPD in the Philippines. However, with these diseases indicated, there are several treatments, prevention strategies, and risk factors that have been developed throughout the years. People of all ages, living in all regions and nations are affected by NCDs. Poor diet, inactivity, exposure to tobacco smoke, problematic alcohol use, environmental factors (including air pollution), and other risk factors for NCDs can affect children, adults, and seniors. Finding and treating these problems is essential for controlling NCDs. The economy of countries, especially those with low and moderate incomes, are significantly impacted by the co-occurrence of health burdens in populations going through transition, particularly in certain socioeconomic and cultural contexts. Methods, programs, and regulatory policies significantly relevant to NCDs in the Philippines are reviewed in the article. The paper also discusses facilitating factors that contribute to the NCDs situation in the country, which may become matters of interest in developing and updating the NCDs management approach of the healthcare system. This review aims to focus on and understand the different treatment, prevention strategies, and risk factors of NCD across the Philippines.

Keywords: Noncommunicable diseases, Hypertension, Diabetes, COPD, Treatment, Prevention, Risk Factors

Introduction

The co-occurrence of health burdens in populations undergoing transition, particularly in certain socioeconomic and cultural contexts, has a significant impact on the economies of countries, particularly those with low and moderate incomes. Noncommunicable diseases (NCDs) also known as Chronic diseases, are conditions that occur slowly over time due to a combination of different variables such as genetic, environmental, behavioral and physiological. Globally, noncommunicable diseases (NCDs) are one of the main factors in mortality [1].

Large-scale changes in the burden of noncommunicable diseases are also currently happening, with 80% of noncommunicable disease deaths worldwide now taking place in low- and middle-income nations [2]. Middle-aged people were also found to be included in the high incidence of NCDs, notably in the age categories 50 to 59 years. A total of 50% casualties were estimated in Southeast Asia caused by NCDs, making it the highest percentage across all WHO areas [3].

According to WHO (2019), in the Philippines, noncommunicable diseases (NCDs) including cardiovascular disease, chronic respiratory diseases, diabetes, as well as associated risk factors, are becoming a greater issue for public health and development [4]. Based on a Philippine Heart Association report, hypertension was the cardiovascular disorder common in in-patients with the largest proportion in the country (38.6%) [5]. As reported by the International Diabetes Federation in 2020, there were around 3.9 million cases of diabetes in the Philippines which is seriously concerning [6]. Ischemic heart disease accounted for 91,152 deaths within the first nine months of 2021 or 18.5% total deaths in the nation. This marked a 16.9% increase from the 76,783 deaths, or 18.7% of all casualties, during the same period in 2020. [7]. In accordance to the Global Asthma Report, 1 in 10 Filipinos, or 11 million people, suffers from asthma, but 98 percent of these people are still not receiving the appropriate care. Furthermore, the World Health Organization (WHO) stated that around 12% out of the 90 million population of the Philippines are asthmatic [8]. As shown in Amir et al. (2015) study, which has published the currently largest ACO incidence rate, the Philippines has asthma and COPD overlap with a higher incidence rate (27.7%, $p = 0.000$) compared to (19.9%) globally [9].

Tobacco usage is a serious problem given that 12% of school-aged teenagers (13 to 15 years old) and 40% of men are current smokers. A quarter of adults (19%, or 13.1 million) smoke every day, with 34% of men and 4% of women. Men smoke more than women (40% versus 5%) among adults. According to the Global Adult Tobacco Survey, secondhand smoke is still a problem in the Philippines. A report of 3.6 million persons (or 22% adults)

had recent exposure to cigarette smoke in confined spaces at work [10]. On the other hand, four out of ten Filipinos (40.1%) reported consuming alcohol within the preceding 30 days, showing that alcohol harm among Filipinos was considerable. The products and operations of the alcohol industry in the Philippines are threatening the health of the people. Six or more alcoholic beverages consumed in one sitting are considered high-risk and excessive alcohol use, which was reported by one-third (33.1%) of Filipinos. [11]. The chance of experiencing a cardiovascular event is greatly increased by high levels of metabolic factors like blood pressure, body mass index, or blood lipid levels. An estimated 20% of men and 18% of women over the age of 18 have high blood pressure. Over the past 20 years, there has been an increase in the prevalence of elevated total cholesterol among adults (20 years of age and older) [12]

The gravity of noncommunicable diseases in the country calls for a continuous effort to address gaps, stress out measures of prevention and management, and review its situation in a holistic perspective. The review covers treatment, prevention strategies, risk factors, and related issues that picture an overview of NCDs in the Philippines.

Methodology

The review article about noncommunicable disease treatment, prevention strategies, and risk factors was from data gathered by using Google Scholar, Pidswebs, ScienceDirect, PubMed, and ResearchGate. Some articles, data, and publications were also retrieved from official sites such as those of government agencies and non-government organizations. Articles included are those that were determined to be timely published and relevant to the topic. This paper focuses on the treatment, prevention strategies, and risk factors of noncommunicable diseases particularly in the Philippine setting. Since there are many NCDs in the country, the article only focuses on three main NCDs: Cardiovascular Disease (Hypertension and Ischemic Heart Disease), Diabetes, and Chronic Obstructive Pulmonary Disease (COPD). One of the search keyword parameters includes “noncommunicable diseases”, “hypertension”, “diabetes”, “COPD”, “treatment”, “prevention”, “risk factors”, and “management”. Any appropriate literature that is relevant to the topic was assessed, including in-depth reviews in order to address suitable information about treatment, prevention strategies, and risk factors of NCD.

Results and Discussion

This section of the review article is divided into three main topics: treatment, prevention strategies, and risk factors. The topic of treatment is split into two subtopics that tackle Traditional, Complementary, and Alternative Medicine (TCAM) and the modernized approach to medicine that utilizes scientific research also referred to as Conventional Medicine. TCAM reviews beliefs and practices observed in cultures either owned by the country or adapted from foreign cultures. Conventional treatment covers pharmaceutical medications, physical rehabilitation, surgery, and other related modern medicine.

Prevention Strategies are further divided into two, namely: programs and control. Programs refer to existing programs that are used in the Philippine healthcare system including those implemented by the government and those by non-governmental organizations. Control encompasses laws applied nationally and managed by agencies including those outside the health sector.

The third topic which talks about risk factors as presented in Table 3 describes all pertinent risk factors related to each specified noncommunicable disease.

Table 1.1. *Traditional, Complementary, and Alternative Medicine as a treatment for NCDs*

NON COMMUNICABLE DISEASE (NCD)	AUTHOR/SOURCE & YEAR	TRADITIONAL, COMPLEMENTARY, and ALTERNATIVE MEDICINE (CAM)	NOTABLE REMARKS BY THE AUTHOR/S
Hypertension	(Palileo-Villanueva et al., 2022) [13]	Natural and biologically-based treatments: <ul style="list-style-type: none"> • <i>Ammonia muricata</i> [guyabano (sour sop)] • <i>Cymbopogon</i> sp [lemongrass] • <i>Rauvolfia serpentina</i> [serpentina] • <i>Blumea balsamifera</i> [sambong] Manipulative and body-based systems: <ul style="list-style-type: none"> • Massage 	A relatively small, but not insignificant, number of affected residents in low-income communities utilize TCAM to manage their hypertension.
Diabetes	(Fabellar, A. 2015) [14]	Philippine plants with Therapeutic Value for Diabetes <ul style="list-style-type: none"> • <i>Momordica charantia</i> Linn (ampalaya) • <i>Lagerstroemia speciosa</i> (banaba) • <i>Pongamia pinnata</i> (bani) • <i>Anacardium occidentale</i> L.(cashew) • <i>Syzygium cumini</i> (duhat) • <i>Solanum nigrum</i> (lubi-lubi) 	According to the author these medicinal plants are known to lower blood sugar levels, which is why it is considered in the Philippines to be a cure or remedy for diabetes.

Table 1.2. *Conventional Medicine as a treatment for NCDs*

NON COMMUNICABLE DISEASE (NCD)	AUTHOR/SOURCE & YEAR	CONVENTIONAL MEDICINE	NOTABLE REMARKS BY THE AUTHOR/S
Cardiovascular Diseases: Hypertension & Ischemic Heart Disease	(Lazaro, V., 2016) [15]	Lifestyle Modification and Treatment for Risk Factors <ul style="list-style-type: none"> • Avoid smoking • Healthy diet • Engage into physical activity Pharmacologic Therapy to Improve Prognosis: <ul style="list-style-type: none"> • Statins • Beta-blockers • ACEIs • ARBs 	Clinicians frequently overlook crucial aspects of high-quality care in favor of concentrating on contemporary technologically advanced diagnostic and therapeutic procedures. Among these are the treatment of risk factors and counseling for a lifestyle adjustment. A good diet lowers the risk of CAD, and diet has a significant impact on CAD risk.
	(Ona, D. et al., 2021) [16]	Recommended Non-Pharmacologic approaches for hypertensive patients: <ul style="list-style-type: none"> • Lifestyle modification • Aerobic physical activity • Abstinence from alcohol intake • Weight loss for overweight or obese • Smoking Cessation • Dietary Approaches to Stop Hypertension (DASH) meal plan Preferred medication for the treatment of hypertension among adult Filipinos: <ul style="list-style-type: none"> • ACE inhibitors & ARBs • RAAS blocker • Calcium channel blocker • Thiazide/Thiazide-like diuretics • Beta-blockers 	The first-line medications are ACE inhibitors, ARBs, CCBs, and diuretics based on data from extensive clinical research. In order to lower the residual CV risk, the therapeutic approach must include a change in lifestyle, effective risk factor management, and intensive BP control to reach target levels.

	Philippine Heart Association. (2014) [17]	<p>Lifestyle Modification for Ischemic Heart Disease:</p> <ul style="list-style-type: none"> • Healthy diet • Quitting smoking • Physical activity <p>Pharmacologic Therapy to Improve Prognosis:</p> <ul style="list-style-type: none"> • Low-dose aspirin (80 to 160 mg/day) • Clopidogrel (75 mg/day) in the case of aspirin intolerance • Statins, regardless of LDL cholesterol levels • Beta blockers after MI • ARBs or ACEIs (especially in patients with concomitant HF, hypertension or diabetes) 	Prognosis improvement through pharmacologic therapy focuses on reducing the occurrence of acute thrombotic events and the emergence of ventricular dysfunction.
Diabetes	Department of Health [18]	<p>Non-pharmacologic treatment options for diabetic patients:</p> <ul style="list-style-type: none"> • Diet Therapy • Regular exercise • Control weight (if overweight or obese) • Quit smoking • Maintain a normal blood pressure <p>Drug therapies:</p> <ul style="list-style-type: none"> • Sulfonylurea (Gliclazide, Glipizide, Repaglinide, Glimepiride, Glibenclamide) • Alpha-glucosidase Inhibitors (Acarbose4) • Iguanid (Metformin) • Thiazolidindione (Rosiglitazone, Proglitazone, Troglitazone) 	<p>If the person experiences any of the classic signs and symptoms of diabetes, they should:</p> <ul style="list-style-type: none"> • To check your blood sugar, see a doctor. • Eat a lot of vegetables to start your diet and stay away from sweets like cakes and chocolates. • Consume fewer fatty foods. • Workout frequently <p>If a person is obese:</p> <ul style="list-style-type: none"> • Aim to reduce your weight • Decrease your alcohol intake. • Quit smoking. <p>If they are hypertensive:</p> <ul style="list-style-type: none"> • Consult a physician for treatment
Chronic Obstructive Pulmonary Disease	Philippine Health Insurance Corporation. (2015) [19]	<p>Pharmacologic Treatment:</p> <ul style="list-style-type: none"> • Antimicrobials • Systemic corticosteroids • Short-acting Bronchodilators • Other drugs <ul style="list-style-type: none"> ◦ Mucolytics ◦ Methylxanthines (aminophylline, theophylline) 	Exacerbations of COPD are commonly preventable. Smoking cessation, influenza and pneumococcal vaccination, current therapy knowledge including inhaler technique, and treatment with long-acting inhaled bronchodilators, with or without inhaled corticosteroids, and treatment with a phosphodiesterase-4 inhibitor are therapies used to lower the number of hospitalizations and exacerbations.

Table 2.1. Prevention Strategies for NCDs: Programs

NONCOMMUNICABLE DISEASE (NCD)	GOVERNMENT PROGRAMS	NGO-led PROGRAMS
Cardiovascular Diseases: Hypertension and Ischemic Heart Disease	<ul style="list-style-type: none"> • National Hypertension Awareness Month (May) [20] <ul style="list-style-type: none"> ◦ Proclamation No. 1761 • National Heart Month (February) [21] <ul style="list-style-type: none"> ◦ Proclamation No. 1096 	<p>Philippine Heart Association (PHA) [22, 23]</p> <ul style="list-style-type: none"> • Council on Hypertension • Council on Coronary Artery Disease

Diabetes	<ul style="list-style-type: none"> • The National Diabetes Prevention Program (National DPP) [24] • Insulin Medicine Access Program (InMAP) under Medicine Access Program (MAP) [25] 	<p>Diabetes Philippines, Inc./ Diabetes Philippines Association [26]</p> <ul style="list-style-type: none"> • Gimik Diabetes (World Diabetes Day) <ul style="list-style-type: none"> ◦ Proclamation No. 1042, s. 2009 • Annual Convention & Scientific Sessions Philippine Center for Diabetes Education Foundation, Inc, or Diabetes Center Philippines [27] • Intensive Training Course For Diabetes Educators • Camp COPE (Children Overcoming Diabetes Problems Everywhere) • Diabetes Awareness Week • National Assembly of Diabetes Educators (NADE)
Chronic Obstructive Pulmonary Disease	<ul style="list-style-type: none"> • Lung Center of the Philippines COPD Support Program [28] <ul style="list-style-type: none"> ◦ Presidential Decree No. 1823 • National Lung Month (August) [29] <ul style="list-style-type: none"> ◦ Proclamation no. 1761 s. 1978 	<ul style="list-style-type: none"> • Webinars by Philippine College of Chest Physicians (PCCP) through #GalingLungs [28] • BREATHE initiative (Broadening Reach, Enhancing Awareness, and Transforming Health Education) by Novartis Healthcare Philippines and PCCP [30]

Table 2.2. Prevention Strategies for NCDs: Control

LAWS	AGENCIES INVOLVED	OBJECTIVES
Republic Act No. 10643 The Graphic Health Warnings Law [31]	Department of Health (DOH), Inter-Agency Committee on Tobacco (IAC-T), Bureau of Internal Revenue (BIR), Department of Trade and Industry (DTI), Department of Education (DepEd), Implementing Rules and Regulations (IRR) Committee: <ul style="list-style-type: none"> - DOJ, DOF, DENR, DOST, DepED, National Tobacco Administration (NTA), DA 	<ul style="list-style-type: none"> • An act to successfully raise health awareness through the use of graphic health warnings on tobacco products. • To remove inaccurate or misleading figures or phrases like "low tar," "light," "ultra lights," or "mild," which imply or tend to infer that a product or version is healthier, less harmful, or safer • Promote the right to health and information.
Republic Act. No. 8191 National Diabetes Act of 1996 [32]	Department of Health (DOH)	<ul style="list-style-type: none"> • An order prescribing measures for the prevention and control of Diabetes Mellitus in the Philippines, establishing a National Commission on Diabetes, allocating money for that purpose, and for other matters. • Adoption of cost-effective and appropriate diabetes screening and detection procedures in the early or presymptomatic phases
Republic Act No. 8749 Philippine Clean Air Act of 1999 [33]	Department of Environment and Natural Resources (DENR), to be complied by all government agencies	<ul style="list-style-type: none"> • Legislation establishing a comprehensive air pollution control policy, among other matters. • Put greater emphasis on pollution control than prevention, and develop a comprehensive air pollution management plan.
Republic Act No. 9003 Ecological Solid Waste Management Act of 2000 [34]	National Solid Waste Management Commission under the Office of the President, 14 government agencies, NGO for recycling and the protection of air and water quality, representatives from the recycling and the manufacturing/packaging industry	<ul style="list-style-type: none"> • An act creating an ecological solid waste management program, providing the necessary institutional procedures and incentives, banning specific actions and enforcing punishments, distributing funds for such goals, and other purposes.. • Includes a prohibition on the open burning of solid trash.

Republic Act No. 9241 [35]	Department of Health (DOH)	<ul style="list-style-type: none"> • An act establishing a national health insurance program for all Filipinos, through the Philippine Health Insurance Corporation • Controlling noncommunicable illnesses includes part of Public Health Services.
RA 9502 Universally Accessible Cheaper and Quality Medicines Act of 2008 [36]	Department of Health (DOH) and Department of Trade and Industry (DTI)	<ul style="list-style-type: none"> • Adopt necessary measures to encourage and guarantee everyone has access to high-quality and affordable medications. • All pharmaceuticals and medicines prescribed for the treatment of chronic illnesses and life-threatening conditions such as endocrine disorders, cardiovascular diseases, pulmonary diseases, and others are included in the <i>List of Drugs and Medicines Subject to Price Regulation</i>.
RA 11223 Universal Health Care Act (UHC) [37]	Department of Health (DOH)	<ul style="list-style-type: none"> • Requires Health Technology Assessment be formalized (HTA) for fair and transparent priority setting which will advise the DOH and the PhilHealth in policies and programs • HTA serves as an advisory body that assesses drugs, medicines, pharmaceutical products, procedures and other related technology, in which the outcome becomes a basis of inclusion and non-inclusion in the Philippine National Formulary (PNF) [38]

*List of laws is retrieved and modified from Lifestyle-related diseases: Department of Health Website. (2018). [39] and Disease Prevention And Control Bureau: Department of Health Website. (n.d.). [40]

Table 3. Risk Factors of NCDs

NON COMMUNICABLE DISEASE (NCD)	AUTHOR/SOURCE & YEAR	RISK FACTORS
Hypertension	World Health Organization (2021) [41]	Modifiable risk factors: <ul style="list-style-type: none"> • Unhealthy eating habits (excessive salt consumption, a diet high in saturated fat and trans fats, a poor intake of fruits and vegetables), • Physical sedentism, • Cigarette smoking, • Alcoholism and • Being overweight or obese
Diabetes	Department of Health (2022) [42]	<ul style="list-style-type: none"> • Diabetic children • Obese people • Hypertensive individuals • Individuals with high cholesterol levels • People who lead inactive lives
Chronic Obstructive Pulmonary Disease	Novartis Philippines (2017) [43]	Risk factors include: <ul style="list-style-type: none"> • Secondhand tobacco smoke, • Pollution of the atmosphere • Vapors produced by the combustion of fuel for cooking and heating.

Discussion

The Philippine Traditional and Alternative Medicine Act (TAMA) law (Republic Act 8423) mandates the development and utilization of traditional and alternative medicine and calls for its integration into the national healthcare system [44]. Table 1.1 illustrates the abundance of organically available medicine in the country that can be used for managing NCDs. The authors acknowledge its significance in low-income communities wherein access to medication and healthcare services is limited. However, for COPD, the authors are yet to find literature regarding TCAM for the said disease. In Asia, patients with COPD are often handled by primary care physicians, and those who utilize alternative and conventional medicine fail to distinguish between COPD and asthma, which leads to underdiagnosis of COPD [45] — this may be one of the reasons that result to the lack of research regarding traditional, conventional, and alternative medicine (TCAM) for COPD. In fact, the latest document of the Summary of Consensus Statements on the Diagnosis and Management of COPD in the Philippines in 2021 does not mention any use of TCAM for COPD in the country [46]. The last Philippine clinical guideline document for COPD published was in 2009, wherein its authors recommended developing indigenous interventions for managing COPD [47]. As of date, no literature was found to fill the said gap.

Treatment of noncommunicable diseases differs from infection treatment, but there are numerous options for managing such conditions. Cardiovascular diseases generally call for lifestyle modification. Hypertension, among the many risk factors for most cardiovascular diseases, is addressed following the standard management as suggested by extensive clinical research. Published in 2021, a local practice guideline also known as the 2020 Philippine Clinical Practice Guidelines of hypertension holistically covers diagnosis, treatment with medications, and other management strategies for all Filipinos with varying comorbidities. The said guideline was designed to fit the Philippine situation, catering to issues, local realities, and the practice of Filipino physicians unique to the country [16]. Some antihypertensives are also utilized in the treatment of COPD. In managing COPD, the main goal is to use bronchodilators to relax the smooth muscle of the airways [48]. Using phosphodiesterase inhibition (e.g., theophylline), inhaled corticosteroids, ACE inhibitors, ARBs, RAAS blockers, calcium channel blockers, and other medications, inflammation is attempted to be reduced. Pulmonary rehabilitation, smoking cessation, a good diet, and exercise are all forms of non-pharmacologic therapy. The ultimate result is a better quality of life and survival rates for all Filipino diabetics. The best investment is prevention because it reduces the prevalence of diabetes and associated complications [49]. Diabetes medications must always be accompanied by lifestyle modifications, including modifications to food and exercise, to alleviate the symptoms of diabetes. Insulin, oral sulfonylureas (like tolazamide, glimepiride, and glyburide), alpha-glucosidase inhibitors (like acarbose), biguanides (Metformin), and thiazolidinediones are all examples of diabetes medications (such as Proglitazone, rosiglitazone, troglitazone).

Both government and non-government organizations in the Philippines partake in several awareness programs for the prevention of noncommunicable diseases (NCDs). As cardiovascular disease is one of the major NCDs in the Philippines, it is essential for Filipinos to gain awareness and acknowledge the importance of such programs. In pursuant to Proclamation No. 1761, which was signed by then President Gloria Macapagal-Arroyo on May 1, 2009, the month of May was declared as National Hypertension Awareness Month, which encourages various methods for prevention, treatment, and management of hypertension throughout the nation [50]. The current year's theme is "*Measure your blood pressure, control it, live longer*" — which aims to educate and empower individuals of all ages to have longer and healthier lives [51]. Furthermore, the month of February is proclaimed National Heart Month in accordance with Proclamation No. 1096. During this event, information on subjects like cardiovascular wellness and heart illness prevention is focused upon and promoted [52]. Moreover, the Philippine Health Association (PHA)-Council on Hypertension seeks to nurture excellence in hypertension research and education and raise blood pressure awareness among Filipinos at the same time [53]. On the other hand, the PHA-Council on Coronary Artery Disease aims to enhance patient care for those with coronary artery disease. [54].

In the Philippines, diabetes continues to be one of the most common causes of death. [55]. Since the late 1990s, the Philippine Department of Health (DOH) has been developing a National Diabetes Prevention and Control Plan to reduce mortality and morbidity caused by this disease. Diabetes management was incorporated into Integrated Community-Based Noncommunicable Disease (NCD) Prevention later on [56]. The Healthy Lifestyle (HL) campaign was included in this program to bring awareness regarding eating healthy, exercising regularly, and choosing healthy lifestyles such as smoking cessation [56]. In addition, Insulin Medicines Access Program (InMAP) is a DOH program that involves the participation of public-private partnerships to provide access to affordable insulin products via a consignment system [57, 58]. InMAP, under the Medical Assistance Program, is designed for indigent patients to counter the struggle of high-cost medication which results in high out-of-pocket expenses [57, 59]. Furthermore, the DOH advised Filipino citizens to adopt early preventative action against diabetes in collaboration with partners from non-governmental organizations including Diabetes Philippines, Inc. or Diabetes Philippines Association as well as the private sector. With this, pursuant to Proclamation No. 1042, it has been declared that every November will be considered World Diabetes Day (WDD) [14]. They would offer free diabetes risk screenings at barangay, rural, public, and other government health facilities; even those people with diabetes, get to receive free medications including insulin and oral anti-diabetes medicines [60]. Diabetes Philippines, Inc. or Diabetes Philippines Association would also conduct annual conventions and scientific sessions for healthcare professionals in regard to diabetes management in the Philippines [61]. Moreover, Diabetes Center Philippines, a group of Filipino physicians, seeks to educate diabetic Filipino patients regarding their condition. They also developed various programs such as Intensive Training Course for Diabetes Educators, Camp Children Overcoming Diabetes Problems Everywhere (COPE), Diabetes Awareness Week, and National Assembly Diabetes Educators (NADE) in order to achieve their goals.

On January 16, 1981, by virtue of Presidential Decree No. 1823, the Lung Center of the Philippines (LCP) was established. [62]. For the diagnosis and treatment of respiratory and chest disorders, it offers high-quality and advanced facilities, as well as for the promotion of lung health to each and every Filipino people [62]. They created a program called the Lung Center of the Philippines COPD Support Group, an individualized, diverse, and interactive program, in order to help patients with chronic bronchitis and emphysema to manage their symptoms and reach the optimum level of

functional capacity [62]. Also, in line with Proclamation No. 1761, which the late President Ferdinand E. Marcos signed in 1978, Lung Month is commemorated every August. This order was enacted in 1978 as a result of the fact that underprivileged Filipinos continue to die from respiratory diseases including pneumonia and TB. This statement sought to raise awareness of the aforementioned disorders among the general population. Additionally, the Philippine College of Chest Physicians (PCCP), established on April 25, 1973, is the leading specialty organization regarded as the top expert in pulmonary medicine in the country [63]. This group conducts several patient education webinars to provide information and give awareness to people concerned. Furthermore, PCCP together with Novartis Healthcare Philippines developed a program known as Broadening Reach, Enhancing Awareness, and Transforming Health Education (BREATHE), which is an initiative intends to increase the knowledge of local healthcare professionals in the diagnosis and treatment of such diseases as well as promote public awareness regarding avoiding or reducing COPD risk factors. Holding lay fora and running free clinics where medical services like spirometry are provided are some of the activities that are carried out under the BREATHE program.

Several Republic Acts serve in the area of noncommunicable diseases, including measures that aid in the inadequacies of healthcare financing. As shown in Table 2.2, implemented laws provide a safety measure that protects people from attributable risk factors as well as control the sectors involved in potentially harmful activities. Philippine Clean Air Act and Ecological Solid Waste Management Act regulate environment-associated factors particularly related to lung health, specifically air pollution largely attributed to the industrial sector. The Graphic Health Warnings Law targets tobacco use by reminding and warning users of the ill effects of smoking via graphic images and large-sized text. This bridges the gap in the dissemination of health information across the general population, providing adequate details to discourage its use. Diabetes has its own law wherein policies on preventive measures are established, and enforced by its own National Commission on Diabetes. Other laws as listed in the table concentrated their focus on funds and pricing strategies, ensuring a safeguard against the high costs of medications and services that come with diagnosis and treatment. The policies alleviate the economic struggle in healthcare, addressing the insufficiency in terms of financial capabilities, notably that of the susceptible population. Alongside the aforementioned InMAP is the Health Tech Assessment (HTA) under the Universal Health Care Act. The HTA process allows the inclusion and exclusion of certain drugs that will be posted in the Philippine National Formulary (PNF). Its council is responsible for assessing medications for cost-effectiveness, benefit-risk (safety and efficacy), and affordability to decide whether the drugs should stay in the formulary or should be pulled out.

Generally, risk factors are identified and especially highlighted when high prevalence is observed. As shown in Table 3, people of almost all ages are susceptible to the risk factors for NCDs, including poor diets, inactivity, exposure to tobacco smoke, and heavy alcohol use. The results suggest that the Philippines is no exception in the global issue of NCDs as these diseases are driven by multiple forces such as unplanned rapid urbanization, globalization of unhealthy lifestyles, and population aging. Unhealthy diets and a lack of physical activity can manifest in people with high blood pressure, high blood glucose, high blood lipids, and obesity. These are known as metabolic risk factors and can lead to cardiovascular disease, the leading cause of premature death among NCDs.

Conclusion

Noncommunicable diseases are still prevalent in the Philippines despite many treatments and preventions that have been developed over the years. However, there are still people who tend to do unhealthy lifestyles such as smoking and drinking alcohol which are among the major risk factors in noncommunicable diseases. Regardless of the benefits given by the different government agencies in the country, there are still low- and middle-income Filipinos who will not be able to support the cost of NCDs. With this, death reports are still increasing nowadays.

Conflict of Interest

All authors of the review article have no conflict of interest to disclose.

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