

Diabetes Care in the Philippines

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Abstract

The global burden of diabetes and its accompanying risk factors is upon us. Asia is the focus of this burden, owing to huge population numbers and increasing prevalence rates. The Philippines National Health and Nutrition Survey (NNHeS) of 2013, has provided the latest health and disease score with prevalence rates of the major risk factors among adults ≥ 20 years of age: diabetes (5.4%), hypertension (22.3%), dyslipidemia, low HDL (71.3%), obesity, BMI > 25 kg/m² (31.1%), and smoking (25.4%). Metabolic syndrome as of the 2008 survey reports a 27% prevalence rate (unpublished data). Efforts have to be directed to achieve improvement in prevention, survival, and quality of life for all diabetics. The health infrastructure under the leadership of the Department of Health, in partnership with governmental and non-governmental organizations has to provide a cohesive plan engaging all partners in various aspects of care. Strategies to enhance outcomes include: 1) a national screening program, 2) implementation of practice guidelines that will elevate the quality of care for all, 3) access to healthcare, medications, 4) development of an environment for research in institutions to allow a better understanding of these conditions among Filipino patients and 5) enhancement of training, education and service to benefit the Filipino diabetic. Indeed, the challenge is upon all of us as a nation, and we need to stand up and move forward with an organized and accessible system of care, as we aim to combat the epidemic of diabetes and its complications.

Key words: diabetes care, chronic care model

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is a chronic disease characterized by hyperglycemia brought about by defects in insulin secretion (beta cell dysfunction) and insulin action (insulin resistance). Diabetes is the leading cause of devastating complications such as cardiovascular events, strokes, end stage renal disease, blindness and lower extremity amputation.¹ The global burden of diabetes with its accompanying risk factors and complications, is upon us.² Asia is the focus of this burden, owing to huge population numbers and increasing prevalence rates.³ The Philippines is an archipelago consisting of 7,100 islands. As of 2015, the projected population is 102,965,300.⁴ The challenges presented to us relate with increased Westernization of diets and decrease in physical activity, leading to obesity. Lifestyles of majority of Filipinos revolve around food. Celebrations and gatherings put emphasis on a bountiful table of food. Physical activity generally consists mostly of house work for the women and a few meters of walk and work-related activities as form of usual exercise for working men and women. Sadly in the Philippines, while under-nutrition continues to be a major health problem, obesity is an emerging concern.⁵

Burden of Disease and Etiology

The latest Philippines' National Health and Nutrition Survey (NNHeS) 2013⁶ as compared to 2008⁷ has provided the health and disease score with identification of the major risk factors among adults ≥ 20 years of age, respectively: diabetes (5.4%, 6% using OGTT); hypertension (22.3%, 24.6%); dyslipidemia, low HDL (71.3%, 72%); obesity, BMI > 25 kg/m² (31.1%, WHR of 0.85 in females 65.6%); smoking (25.4%, 31%) and metabolic syndrome, IDF Harmonized Criteria, Alberti et al, 2009 (27% in 2008, unpublished data). The trends are steady for most except for smoking. This reduction in smoking habits may be attributed to the legislative measure, the Sin Tax bill, which has recently been passed.⁸

With regards to gestational diabetes (GDM), the reported prevalence of gestational diabetes was 14% among 1203 pregnant women using the AFES Study Group on Diabetes in Pregnancy (ASGODIP) criteria.⁹ Uniformly across various hospital and clinic settings, follow up after gestational diabetes for re-classification using OGTT post-partum is low. Limited data from a private university hospital among 124 women with previous GDM revealed

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that the prevalence of diabetes and pre-diabetes 6-12 weeks post-partum is 7.3% and 34.7%.¹⁰ Although there has been no study on the financial cost of the diagnosis of GDM to the Filipino family, this is probably significant given that gestational DM increases the risk of primary CS (OR=1.79, 95% CI: 1.02-3.16, $p=0.041$) and infant admission to the Neonatal ICU (OR=2.66, 95% CI: 1.3 -5.44), $p=0.007$). A trend for higher risk of LGA, pre-eclampsia, preterm delivery and congenital anomalies was observed in those with GDM, was also found but these did not reach statistical significance.¹¹ The local guideline advocates routine screening of all pregnant women for GDM using 75-gm OGTT, as well as follow up after delivery to determine glycemic status.

What characterizes diabetes among Asians, among Filipinos?

Data from our region shows emerging data describing an Asian phenotype, somewhat different from our Caucasian counterparts.¹² Asian populations have differing demographic and socio-cultural characteristics in the setting of a genetic susceptibility impacting the development of diabetes. In Asia, India and China will account for the highest numbers (79.4 M and 42.3 M, respectively) by 2030, but South East Asia will have the highest rates worldwide. This increase will affect developing countries substantially as these countries including the Philippines, often have limited resources to cope with the disease. T2DM is seen to develop at a younger age, usually a decade earlier than Caucasians; young onset diabetes is increasing at alarming rates. As diabetes starts early in life, this brings with it an associated increase in morbidity and mortality and a lifetime risk of cardiovascular disease. This was clearly shown in the CANDI Manila study where newly diagnosed adult T2DM patients (mean age of 50 years) showed high prevalence of diabetic complications and cardiovascular risk factors, at the apparent onset of their DM diagnosis. Electrocardiographic findings demonstrating myocardial infarcts and ischemic changes were seen in 5% of study participants, 42% had proteinuria by urinalysis and 12% had retinopathy. Hypertension was present in 42% of individuals (mean BP of 144/88 mm Hg), and dyslipidemia was predominant (80% with LDL ≥ 100 mg/dL, with another 38% with elevated triglyceride ≥ 150 mg/dL).¹³

Characteristics are heterogeneous with high rates of clustering of cardiovascular risk factors. Indeed, metabolic syndrome is manifesting even at a young age. Young onset diabetes in children is common. Both thrifty genotype and phenotype may occur in Asian groups. Several distinctive features are apparent in the pathogenetic factors, ranging from epigenetics, such as maternal imprinting, genetic susceptibility markers to unhealthy lifestyle changes leading to high rates of obesity.¹⁴

What drives the continued increase in these major risk factors?

Diabetes among Filipinos is not exclusively mediated by obesity per se, as increased rates are seen in relatively lower BMI, as compared to Caucasians. Philippine data show that despite an obesity prevalence that is less than 10%, visceral adiposity as measured by waist-to-hip ratio is 65.6% in females.⁷ Clearly, the risk is driven by visceral adiposity. Data from Araneta et al revealed excess visceral adipose tissue accumulation¹⁵ with low adiponectin levels among Filipino-Americans in San Diego, California, USA.¹⁶ The low adiponectin levels were likewise demonstrated among diabetics, as compared with non-diabetic controls from the population based study in the Philippines (NNHeS 2008).¹⁷ In the same survey, lipid profiles among Filipinos revealed a remarkably low HDL, comprising 70% of the population, a consistent finding from surveys as early as 1998.⁷

Despite early studies on genetics of T2DM and its complications¹⁸⁻²⁰ among Filipinos, there is a need to more comprehensively elucidate this relationship. Relevant questions on distinctive lifestyles, food choices and other preferences have to be clearly understood to form the framework for prevention strategies. The geography of the country led to regions separated by bodies of water, and has created regional preferences and lifestyles. These refer to food preferences for choices that are abundant in the region, as well as activities that are part of the daily chores.

Goals of long-term care for diabetes, a chronic disease

The bottom line is improved survival rates and quality of life for all Filipino diabetics. Chronic care models from various developed countries²¹ have demonstrated benefits in reduction of outcomes through an organized system of care.

Prevention is the best investment, as it limits diabetes rates and complications that eventually take its toll on the financial status of families. Diabetic breadwinners have reduced work opportunities and earning capacities. Complicated diabetes is an expensive disease, worsened by lack of government funding support or subsidy for medications, hospitalization and other services. Concurrent coordinated efforts should be directed towards early detection through aggressive nationwide screening and diagnosis of diabetes, obesity and the components of the metabolic syndrome. To date, there is no national screening program for non-communicable disease (NCD) in the Philippines. Efforts by various groups include random screening activities conducted by several health facilities, employers, religious groups and medical organizations. Obesity prevention should begin with children, as this alarming increase in rates will translate to adult diabetes.

Comprehensive and optimal treatment requires strategies that will allow multi-factor risk control involving hyperglycemia, dyslipidemia, hypertension, weight and smoking cessation. After an initial control, sustainability is an essential goal, that is, to effectively maintain risk control, to reduce complications and outcomes and improve survival and quality of life of all affected individuals.

DiabCare Philippines 2008, a survey on glycemic control among diabetic patients seen by both general practitioners and diabetes specialists showed that less than 20% have good glycemic control (HbA1C of >7%). Mean duration of diabetes was 10 years with the age of onset of DM in the early 50's. Mean BMI was between 24.7- 25.7 kg/m². About 10% had some form of nephropathy (6-7% with serum creatinine values greater than 2 mg/dL) and more than 40% of patients already had neuropathy.²² Future surveys with more strict selection to represent the national average should be conducted to chronicle and plan for the burden of diabetes and its complications on families, the healthcare system, and the economy.

The Infrastructure for Healthcare Delivery in the Philippines

The national healthcare system of the Philippines consists of a three-tiered system similar to other countries. Until 1991, all levels of healthcare delivery from primary to tertiary were under the direct control of the central government through the Department of Health (DOH). Following the implementation of the Local Government Code of 1992, the Philippine government devolved or delegated the management and delivery of health services from the national DOH to the local government units (LGU's). There are currently six "facility levels" managed by different political and administrative units that include: barangay health units (managed by barangay and municipal governments); rural health units (managed by municipal governments); city health offices (managed by city governments); municipal or "district" hospitals (managed by the provincial government); provincial hospitals (managed by the provincial government); and regional hospitals and medical center levels (managed by the DOH). Following the District Health System (DHS) model of the World Health Organization (WHO), facility levels 1-3 correspond to the primary level of care, facility 4 to the secondary level of care and facilities 5-6 to the tertiary level of care.²³ In this decentralized set-up, the DOH serves as the governing agency, and both LGUs and the private sector provide services to communities and individuals. The DOH is mandated to provide national policy direction and develop national plans, technical standards and guidelines on health. The LGUs have autonomy and responsibility for their own health services, but are to receive guidance from the DOH through its regional centers for health and development (CHDs).

In the current system, provincial governments are primarily mandated to provide hospital care through provincial and district hospitals, and to coordinate health service delivery provided by cities and municipalities of the provinces. City and municipal governments are charged with providing primary care including maternal and child care, nutrition services and direct service functions through public health and primary healthcare centers called the city health offices or (municipal) rural health units (RHUs).²⁴ These city and municipal health centers are linked to the smallest unit of the health delivery that are the peripheral barangay health centers or stations (BHS).

A major share of the national expenditures on health, approximately 60%, goes to a large private sector that also employs over 70% of all health professionals in the country. The private sector consists of for-profit and non-profit providers, which are largely market-oriented. Healthcare is paid through user or professional fees at the point of service, or subsidized by official aid agencies or philanthropy. This sector provides services to an estimated 30% of the population who can mostly afford to pay these fees out of pocket. Although the private health sector is regulated by the DOH and the national health insurance system called the Philippine Health Insurance Corporation, health information generated by private providers is generally absent in the information system of the DOH.²⁴ Organizational structure and accountability in the Philippine healthcare system is shown in Figure 1.

Health Program for Diabetes in the Philippines

A National Diabetes Prevention and Control Plan has been drafted by the Philippine DOH since the late 1990's, in order to curb the mortality and morbidity from this chronic disease. The management of diabetes subsequently became part of the Integrated Community-Based Noncommunicable Disease (NCD) Prevention and Control Project which were rolled out in the various cities and municipalities of the Philippines. This included the "Healthy Lifestyle (HL)" campaign to increase awareness and consciousness regarding diet, exercise and healthy lifestyles such as smoking cessation.

Other aspects of the integrated NCD program were the development and conduct of training modules for healthcare workers. There is now systemic change through legislation which includes the "Clean Air Act" which prohibits smoking in public buildings, or enclosed public spaces including public vehicles. The country has its own Food Pyramid Guide to curb overweight and obesity among Filipinos, and in 2014, the Food and Nutrition Institute also launched the "Pinggang Pinoy" or the Filipino Plate which is similar to the MyPlate concept of the US Department of Agriculture. It uses a locally adapted way to show Filipinos what a healthy balanced diet should look like, complimenting the food pyramid.

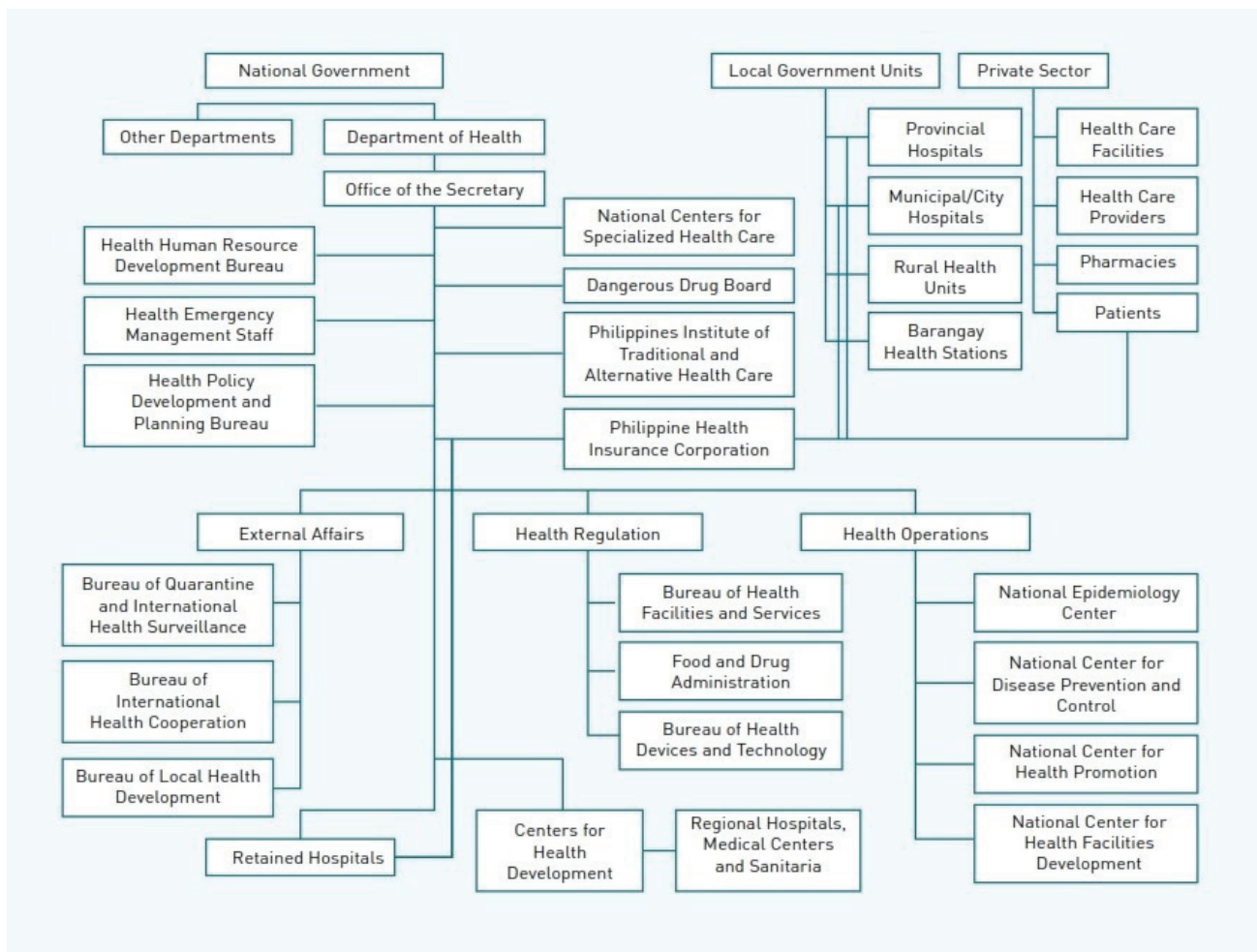


Figure 1. Organizational structure and accountability in the Philippine healthcare system.²⁴

Other programs of the DOH include the provision of low cost medications (metformin and sulfonylureas) to the CHO's and RHU's for distribution to indigent diabetic individuals, together with statins and some anti-hypertensives. Access to insulin of indigent patients is also now being expanded through the Insulin (Medicine) Access Program which is active in select DOH-retained hospitals.

Comprehensive strategies to curb the epidemic of diabetes and obesity

The prescription for lifestyle modification is complex. "Reduce intake and increase physical activity" is easier said than done. Proper food choices are a daily challenge for the diabetic and the pre-diabetic, as fast food choices at cheaper prices abound. Fish, fruits and vegetables are not readily available and are often beyond the budgets of ordinary working individuals. Advertising has enticed many to prefer high fat delectable choices. Simple walking as exercise is not readily doable in a busy metropolis where sidewalks have been converted to vending stalls. Gyms and the like with structured exercise programs with equipment are costly and not within reach by many. Proposed strategies include use of designated walking and cycling only streets, walking paths (indoor track) in office buildings, malls; designated exercise rooms and half

basketball court at office buildings for lunchtime and end of day exercise classes; keeping the stairways clean and well-lit and encourage exercise breaks. Government has to invest in efficient mass transit systems to reduce traffic and reduce commute (and sitting times) and provide incentives to workers/teams who reach exercise goals.

Education is key to success. As Elliott P. Joslin, an American pioneer on diabetes stated, "The diabetic who knows the most, lives the longest."²⁵ Regardless of educational attainment, patients at risk for diabetes and the diabetics themselves require an adequate understanding of this condition, the chronicity of care and control and the discipline expected of them to maintain optimal control. Behavioral modification is essential; tailor-fit strategies have to be employed to direct the diabetic to improved lifestyles. For the Filipino, it is a "family affair." Food choices and activity schedules are led by family members; in this matriarchal society often determined by the mother.

Diabetes self-managed education (DSME) is a strategy that has been shown to reduce hyperglycemia and improve outcomes. A pilot study done in San Juan Batangas, an agricultural rural community south of Manila, utilized

locally modified educational materials and tapped support from peers and *barangay* health workers (BHW) as health educators. This study has shown that health education delivered by peer diabetic educators is effective in achieving important health outcomes for diabetics in the rural setting. Diabetics in the DSME group consistently had better blood sugar control (improved HbA1C levels and greater proportion of diabetics achieving HbA1c $\leq 7.0\%$ compared to the standard care group for up to the 6th month). More diabetics now perform foot examination after they have been taught on its importance. There are no consistent significant differences in the other anthropometric, biochemical and other health behavior outcomes in the short-term.²⁶⁻²⁷

Country specific clinical practice guidelines incorporating cost-effective care, appropriate use of oral hypoglycemic agents, insulin and other medications for multiple risk factor control should be widely disseminated. There is a need for partnership with various governmental and non-governmental agencies under the leadership of the DOH to deliver best practices with best use of meager resources to cover a greater number of the diabetic population.²⁸

Service for diabetics should also be integrated within in-hospital settings, as costly hospitalization is often not affordable to many. There has to be optimal in-hospital protocols for admitted patients, including insulin administration and patient education.²⁹⁻³⁰

Research is a tool that allows proper understanding of a condition for a specific population. For years, comprehensive epidemiological data in the Philippines was lacking. Practice guidelines and approaches are based on international, mostly American and European data. Our treatment options, drug doses and algorithms are derived from recommendations that are based on predominantly Caucasian populations; that differ greatly in genetic susceptibility, drug responses, as well as variable behaviors and preferences as it relate to nutritional and physical activity prescriptions. With successful collaboration of government with technical input from specialty organizations, there are now data from which Philippine health policy may be derived. The National Nutrition and Health Survey is one such effort that incorporated subspecialty expertise into the mandated Food and Nutrition Research Institute (FNRI) survey for nutritional parameters every 5 years. As a result, a variety of research outputs have been completed and some more awaiting publication. In addition, investigators in other countries studying Filipino populations contribute the needed information. There is also increased research interest from various academic institutions in the Philippines. Research funding for non-communicable diseases has become more readily available, mostly coming from the Philippine Council for Health Research and Development of the Department of Science and Technology (PCHRD) and the DOH with smaller amounts

received from other funding agencies such as medical organizations, the Philippine Society of Endocrinology, Diabetes and Metabolism, the Philippine Lipid and Atherosclerosis Society and others. Interest for research is increasing as awareness is seen among medical students and other trainees, initially as course requirement and hopefully, as a career path for many.

Telemedicine can be effective, given the high use of cellphones within the population. Smartphone use is however not as widespread, as cost is limiting. Physicians can network through internet facilities to link with specialists who can provide input to patient care, particularly in underserved areas. Social media through Facebook, Twitter and other platforms may be organized to provide education and links to various resources for a huge number of diabetics especially in remote areas.

It is essential to train others, by increasing subspecialty programs to provide key opinion positions in various regions of the communities. In this way, genuine subspecialty reach to communities may be realized, by providing links with grass-roots practitioners. It is envisioned that these links will provide the needed subspecialty inputs to difficult individual cases, as well as the over-all guidance in achieving improved outcomes in the barrios through feasible well organized programs.

CONCLUSIONS AND RECOMMENDATIONS

The epidemic is upon us. There is no room for complacency. National governmental health agencies should lead with contributions from subspecialist organizations to formulate comprehensive sustainable programs that will detect diabetes early, provide prevention programs, and assist every diabetic in maintaining health and quality of life. Truly we all have to put our act together with the overall aim of reducing the burden of diabetes and other risk factors for every Filipino.

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