

# Diabetes and other Lifestyle-related Noncommunicable Diseases in Vanuatu and the Pacific Islands

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## Introduction

One of the authors (Kumi Kobayashi) worked for prevention of noncommunicable diseases (NCDs) through school health activities in Vanuatu and noticed several cases of people with amputated legs due to diabetes. This seems to be a phenomenon not seen in the past and is considered one of the manifestations of the negative influence of developed countries on developing countries. Here we would like to discuss the problem of increasing NCDs in developing countries, specifically those of the Pacific Islands.

## Current Status of Noncommunicable Diseases (NCDs) Worldwide

NCDs are a global health issue, with 41 million people diagnosed each year, accounting for 71% of all deaths worldwide. Cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes are the leading NCDs, and while they were once the health issues of high-income countries, their prevalence and mortality rates have been increasing in low- and middle-income countries over the years. Among NCDs, those accounting for more than 80% of all premature deaths are cardiovascular diseases (17.9 million deaths per year), cancer (9 million), chronic respiratory diseases (4.1 million), and diabetes (1.5 million), with 77% of NCD deaths occurring in low- and middle-income countries. NCDs, also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental, and behavioral factors. People of all ages, regions, and countries-children, adults, and elderly persons-are affected by NCDs, and unhealthy diet, lack of exercise, exposure to tobacco smoke, and abuse of alcohol are risk factors for NCDs. These diseases are caused by rapid and unplanned urbanization, the globalization of unhealthy lifestyles, and the aging of populations. Unhealthy diets and lack of exercise can lead to hypertension, hyperglycemia, hyperlipidemia, and obesity, which are called metabolic risk factors and can lead to cardiovascular disease, the leading cause of premature NCD death. The WHO has been promoting early detection, screening, treatment, and palliative care for the increasing number of NCDs in low- and middle-income countries as a common global policy. For sustainable development, the goal is to reduce premature mortality from NCDs through prevention and treatment by one third by 2030 (SDGs: Sustainable Development Goals 3.4) [1].

## Status of Lifestyle-related Diabetes and other NCDs in Vanuatu and Other Pacific Islands

The Pacific Islands comprise three geographic region groupings in the Pacific Ocean: Melanesia, Micronesia, and Polynesia [2]. The countries in this region have the 10 highest obesity rates in the world, and about 75% of deaths are due to NCDs. Moreover, countries in the region are among the 10 countries in the world with the highest number of diabetics; as a result, in some Pacific Islands countries, diabetes care

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accounts for around 20% of annual government health expenditure, in comparison with the global 12% average [3,4]. Although sanitation has improved and communicable diseases have decreased, NCDs have increased with economic development, urbanization, and globalization because of reduced physical activity and increased consumption of processed foods and beverages with low nutritional value. These changes in the structure of disease are contributing to the rising prevalence of obesity and diabetes [5]. A report shows that changes in the lifestyles of aboriginal people in Australia and in Nauru, Papua New Guinea were associated with a rapid increase in diabetes (35%-40%) and obesity prevalence. Additionally, in Papua New Guinea, there is a large discrepancy between diabetes prevalence in urban and rural areas that reflects the effects of rapid urbanization [6]. Each country is addressing diabetes through prevention and treatment, with treatment including diet, exercise, obesity reduction, and, where appropriate, pharmacotherapy. However, as is the case in other developing countries, the lack of nearby medical facilities, inadequate metabolic control, and lack of health education and awareness of health behaviors are also challenges in the Pacific Islands countries, and measures against diabetes are not sufficient. In particular, the geographic remoteness of the Pacific Islands makes it difficult for medical equipment and supplies, including medication, to be transported and for medical services to reach the populations. That has led to delays in early detection and treatment, making primary prevention even more important. In the Melanesian region (Fiji, Solomon Islands, Papua New Guinea, Vanuatu, etc.), foot sepsis is a notable complication of diabetes. It is the most common manifestation of diabetes mellitus to be diagnosed in Fiji and is found in many other Pacific Islands countries as well. As such, foot sepsis is a high priority for diabetes prevention programs in Fiji [5], but these foot care programs have not been fully implemented owing to challenges such as lack of funding and specialist personnel.

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Figure 1: NCD booklets developed by the Ministry of Health, Vanuatu.



Figure 2: Nutritional poster of three kinds of foods (tri kaen kakae in Bislama).

### Current Status and Challenges of Diabetes Control in Vanuatu

It is estimated that NCDs account for 74% of all deaths in Vanuatu as in other Pacific Islands countries, and the prevalence of obesity (BMI  $\geq 30$ ) is increasing. This growth is projected to progress to, over 30% prevalence in women and 20% in men by 2025 [7]. In 2040, the mortality burden of diabetes is predicted to be higher than that of cardiovascular diseases, which at 38% are currently the leading causes of death in the country [8]. The increase in diabetes has also led to an increase in diabetic limb amputations, from 22 in 2016 to 57 in 2017 and 74 in 2018 [9]. The government of Vanuatu has made efforts to

prevent diabetes by conducting health checkups and health education for the population to ensure early detection [10]. However, despite the urgency of the situation, there has not been sufficient improvement.

Although diabetes treatment is inadequate in the region largely because the geographic and economic challenges have led to lack of access to insulin and to medical services such as regular checkups, diabetes in the area is treated with the distribution of NCD booklets that contain health information about topics such as consultation records, diet and exercise, regular checkups, and other health guidance (Figure 1). In terms of diet, tri kaen kakae (in Bislama, three food groups should be eaten in a balanced way) is a nutritional guideline with a pie chart showing carbohydrates as “food for power,” vegetables as “food to prevent disease,” and proteins as “food to build the body” (Figure 2), which many people know, not just individuals with diabetes. However, compared with dietary guidance, exercise guidance is less promoted and seems to be limited to the information contained in the booklets. Physiotherapy is essential for treating diabetes, but there are several challenges to its advancement in Vanuatu, for instance, shortages of physiotherapists and prosthetists; there are few health facilities with physiotherapists, and there are no Vi-Vanuatu prosthetists [11,12]. In the area of prosthetics for lower limb amputees, the Vanuatu Amputee Association (VAA) was established in 2015 and has since been working to produce orthoses in the country, but at the time of an interview with representatives, they had only made about 90 orthoses for about 4,500 diabetic limb amputees. The VAA is also working to train the first Vanuatu prosthetist, although there is currently a shortage of sufficient orthoses, prosthetists, and funds [12]. Another challenge is the lack of organizational structures.

Future directions of diabetes policy will include introducing comprehensive foot care education programs in addition to prevention education, early detection, and early treatment. It will also be important to work together with physiotherapists and other specialists in the care of diabetic patients and to organize their treatment. Efforts could contribute to reducing bed occupancy and medical expenses for diabetic patients, as well as reducing the number of amputations and subsequent disabilities.

### Competing Interests

The authors declare that they have no competing interests.

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