

Type 2 diabetes mellitus: A public health problem in Mauritius

Main Paper

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First Commentary

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Second Commentary

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Abstract

Background:

Type 2 diabetes mellitus is a contemporary public health issue in Mauritius which was the runner-up of all countries in the world in 2003.

Setting:

The population of Mauritius is composed of different ethnic groups. One reason put forward for the high prevalence of diabetes in Mauritius is the Asian genetic background of the population. However, its prevalence among groups of varying genetic background provides support for environmental components in the etiology of the disease.

Question:

As Mauritius is one of the countries with the highest prevalence of diabetes in the world, can we consider that the diabetes issue has been correctly addressed at a national level?

Methods:

This paper critically evaluates the current status of Type 2 diabetes mellitus as a public health issue in Mauritius. The various steps in place to tackle the problem are critically analyzed and actions required to better address the issue of diabetes are formulated.

Results:

The prevalence of diabetes and its burden is alarming in Mauritius. Screening facilities for diabetes have been decentralized but the follow-up of diagnosed cases is poor. Health promotion programs have been strengthened but the adoption of healthy lifestyles is not feasible in the absence of supportive environment. Moreover, the barriers to delivery of quality diabetes care are numerous in Mauritius. The launching of the National Service Framework for Diabetes in 2007 was the latest strategy to combat diabetes and its complications in Mauritius.

Conclusions/Discussion:

Mauritius has to draw lessons from its own experience. There is need for primary prevention of diabetes, thus the strategic importance of developing healthy settings for the development of a healthy island!

As Mauritius is a multi-ethnic society with a mosaic of cultures, its experience can guide policy makers of developing countries which are facing the rising tide of diabetes.

Key messages

Mauritius has to draw lessons from its own experience. The absence of a supportive environment in Mauritius contributes to the weak impact of the health awareness campaigns.

There is need for primordial prevention of diabetes by the provision of supportive environment. The healthy settings approach is the recommended strategy for the development of healthy schools and workplaces.

This critical analysis of the situation of diabetes calls for multi-sectoral collaboration for the provision of supportive environment and for healthy public policies in Mauritius.

As Mauritius is a multi-ethnic society with a mosaic of cultures, its experience and the lessons drawn can guide policy makers of developing countries which are facing the rising tide of diabetes.

Why this matters to me?

As University of Mauritius representative, I have collaborated with the Ministry of Health and Quality of Life of Mauritius for the past years in various health awareness campaigns. The Government and NGOs are putting much effort in health education and secondary prevention of the diabetes in Mauritius. How-

ever, there is need for primordial/primary prevention of the disease, whereby there is a lack of policy decision.

The Ottawa Charter for Health Promotion makes it clear that health is influenced by a wide range of policy decisions. The goal of a healthy public policy is health promotion, that is, to enable people to increase control over and to improve their health. It is also essential to create supportive environments, strengthen community action, develop personal skills and reorient health services.

With the publication of this critical analysis of the current status of Type 2 diabetes mellitus as a public health issue in Mauritius, I want to make a call for supportive environments in Mauritius. This is in line with previous work “A need for healthy canteens in secondary schools in Mauritius.” and “The school food environment in Mauritius: An urgent call for action”. My aim is to advocate for healthy schools, workplaces and settings in Mauritius.

This critical analysis aims at laying the basis for policy makers to ponder and reflect on the experience of Mauritius over the past twenty years. Lessons need to be drawn from this experience so as to curb the rising tide of diabetes in Mauritius. This paper calls for healthy public policies for supportive environments. The healthy settings approach is the recommended strategy.

Type 2 diabetes mellitus: A public health problem in Mauritius

INTRODUCTION

Mauritius is a small multi-ethnic island in the Indian Ocean which has gone through an epidemiological transition from communicable to non-communicable diseases (NCD) in recent decades. Type 2 diabetes mellitus has become a key public health issue in Mauritius as this chronic disease impairs the quality of life of its people and impacts on its economy. Mauritius currently has the World's second highest diabetes prevalence in the adult population ¹. The prevalence of Type 2 dia-

betes increased significantly from 12.8% in 1987, to 15.2% in 1992, and 17.9% in 1998 ². Moreover, the incidence rate of Type 2 diabetes was higher between 1992 and 1998 than between 1987 and 1992 ³. In line with this rising trend, the prevalence of Type 2 diabetes in 2004 was 19.3% ⁴.

The population of Mauritius is composed of groups with different ethnic origins: African, Chinese, European and Indian. One reason put forward for the high prevalence of diabetes in Mauritius is the Asian genetic background of the population ⁵. However, the high rates of Type 2 diabetes among groups of varying genetic background provide strong support for the importance of environmental components in the etiology of the disease ⁶. There has been a major change in the lifestyle of the population, mainly due to the rapid economic development of the country in the 1980s. Thus, traditional ways of life in Mauritius have shifted to

a western lifestyle with an increased consumption of carbohydrate-rich, high-calorie ready-made fast foods. This nutritional transition is leading the population to consume increased amounts of fat, sugar and salt in the diet along with reduced amounts of fiber in processed foods.

The prevalence of overweight or obesity (Body Mass Index > 25 kg/m²) increased over a five-year period from 26.1% to 35.7% in men and from 37.9% to 47.7% in women⁷. Body Mass Index, abdominally distributed fat, and physical inactivity are important independent risk factors for both Impaired Glucose Tolerance and Type 2 diabetes in diverse ethnic groups of Mauritius⁸.

The incidence of diabetic retinopathy in Mauritius is high with one in five newly diagnosed patient developing retinopathy over 6 years⁹. Diabetes is the most common cause of blindness in the country, more than 80% of the limb amputations done in the country are due to diabetes, more than 50% of those on kidney haemodialysis are type 2 diabetes patients and also, more than 50% of diabetic patients die of ischaemic heart disease⁵. The burden of Type 2 diabetes in Mauritius is thus alarming.

This paper critically evaluates the current status of Type 2 Diabetes mellitus as a public health issue in Mauritius. The experience of Mauritius and the lessons to be drawn can guide policy makers, especially those of developing countries which are facing the rising tide of diabetes.

STEPS IN PLACE TO TACKLE THE DISEASE

NCD Prevalence Surveys are carried out every five years

With the emergence of NCD as major threats to public health in Mauritius, a first NCD Prevalence Survey was carried out in 1987. This study confirmed the high rates of diabetes and cardiovascular risk factors and recommended the undertaking of an evaluation and monitoring exercise every five years. In light of the results and recommendations of this first survey, a NCD Office was set up in 1988. A NCD Intervention program was implemented to address the main issues pertaining to diabetes, cardiovascular diseases and their risk factors in the population. Subsequently, NCD Prevalence

Surveys were carried out in 1992, 1998 and 2004 [4]. The NCD Office was converted in 1998 to NCD and Health Promotion Division¹⁰.

Decentralization of NCD activities

Since 2001, a number of measures for the prevention and control of NCD have been undertaken. These include decentralization of NCD activities, establishing structured NCD clinics, introduction of health caravans and strengthening of health promotion programmes⁴. Health caravans were introduced with the aim of screening for disease and risk factors in the population⁴. As health caravans go into the community, they provide screening facilities for diabetes, obesity and hypertension as well as a consultation with a medical officer and a counseling session with a health education officer. Any person detected during the screening exercise is referred to the nearest health centre or hospital for treatment and follow-up. This screening service has been extended to workplaces as well as tertiary education institutions and secondary schools in 2007⁵.

Strengthening of health promotion campaigns

Health promotion interventions to prevent NCD, reduce risk factors and foster healthy lifestyles have been strengthened. A series of talks and cooking demonstrations have been organized across the island. Health clubs have been set up in various regions and facilities for physical exercise are being extended to various community points¹⁰. A national website was also created to provide information on various aspects of diabetes in a user friendly way⁵.

Policy in schools

In Mauritius, the Ministry of Education and Human Resources in collaboration with the Ministry of Health and Quality of Life introduced school canteen guidelines in 1995. One of the guidelines prohibits the sale of fried foods, high colored snacks and sweets¹¹. Moreover, at the beginning of 2007, the sale of soft drinks on school premises was banned¹². This ban was motivated by the increasing rate of obesity among school children⁴.

National Service Framework for Diabetes

The launching of the National Service Framework for Diabetes (NSFD) in March 2007 is the one of the latest component of the strategy to combat

diabetes and its complications in Mauritius. This document lays the foundation for the implementation of a ten-year program. The targets of the NSFD are to reduce new cases of blindness due to diabetes by at least one third, to reduce end-stage diabetic renal failure by at least one third, to reduce limb amputations for diabetic gangrene by one half and to reduce morbidity and mortality from coronary heart disease. Fourteen standards have been identified to form the basis for improving the quality of care for people with diabetes¹⁰.

Public Health Policies

The latest step taken by the Government of Mauritius in favour of the fight against diabetes and its complications is the implementation of the Public Health (Restrictions on Tobacco products) Regulations 2008 and the Public Health (Prohibition on Advertisement, Sponsorship and Restriction on Sale and Consumption in Public Places, of Alcoholic Drinks) Regulations 2008. In fact, Mauritius which ratified in 2004 the WHO Framework Convention on Tobacco Control is implementing the treaty with effect from March 2009. The Framework is an evidence-based treaty that reaffirms the right of all people to the highest standard of health.

DISCUSSION

As Mauritius is one of the countries with the highest prevalence of diabetes in the world, can we consider that the diabetes issue has been correctly addressed at a national level? This question has been answered objectively with due consideration to all major steps to tackle diabetes in Mauritius and all the data available. There may be, as limitation, an oversight on certain minor aspects which would be incidental.

The continued upward trend in prevalence since 1987 suggests that Mauritius has failed in its attempt to decrease the prevalence of diabetes. The NCD Prevalence Surveys are an objective and effective way of monitoring trends in the prevalence of diabetes in Mauritius. They highlight the ineffectiveness of measures taken so far and demonstrate a failure of policies to encourage people to adopt healthy lifestyles. There is a need for a more holistic approach to put in place healthy public policies to tackle the problem. The Ottawa Charter for Health Promotion makes it clear that health is influenced by a wide range of policy

decisions¹³.

The Mauritian government has played a major role in carrying out health awareness campaigns to address the issue of diabetes. However, one of the weaknesses of the health awareness campaigns carried out in Mauritius is that the interventions have been intermittent and isolated. Communication needs to be continuous and intense for the population to respond positively and to start the behaviour change. The health caravans have been instrumental in the screening of patients and the health promotion programmes have been able to sensitize Mauritians on the disease to some extent. However, these measures are not enough to prevent the disease and its complications. This is because whatever awareness raised by intermittent health promotion campaign gets easily dissipated by the absence of supportive policy or environment for healthy lifestyle in Mauritius.

The absence of a supportive environment in Mauritius contributes to the weak impact of the health awareness campaigns. So far, the campaigns for the promotion of physical exercise have been able to increase the percentage of men who practice adequate leisure time physical activity from 11.8% in 1987 to 24.5% in 2004 and that of women from only 1.4% in 1987 to 9.5% in 2004 [4]. Most Mauritians are still in the Pre-contemplation stage of the trans-theoretical model of change¹⁴. While Zimmet et al. (1991) put forward that promotion of exercise should become an important strategy in the prevention of NCD in Mauritius, Hodge et al. (1996) highlight the difficulty of reversing the adverse effects of lifestyle change in rapidly modernizing populations^{15,7}.

Even in primary and secondary schools, where nutrition classes or clubs exist, students do not have healthy eating options on the school premises. Oogarah-Pratab et al. (2005) show that primary school children consume snacks rich in fat, sugar or salt¹⁶. Moreover, Subratty et al. (2003) highlight that there is a need for healthy canteens in secondary schools in Mauritius¹⁷. Lalsing et al. (2006) highlight that many unhealthy food choices are offered to Mauritian school children, thus undermining their nutritional status¹⁸. A survey carried out in all the 212 primary schools of Mauritius revealed that canteen guidelines about the prohibition of the sale of deep-fried foods are not enforced¹⁸. Mauritius needs to follow the United Kingdom healthy schools programme which encourages schools to foster better health in every-

thing that schools provide¹⁹.

Even though the destinations of the health caravans have been extended to schools and workplaces, their activities have remained unchanged and are restricted to the measurement of body mass index, random blood sugar and blood pressure. The health caravans neither screen for the other risk factors of the metabolic syndrome, nor do they screen for the complications of diabetes. The health caravans are not mandated for a follow-up of the diagnosed patients, who are normally referred to their respective primary care centres. How many of these diagnosed patients then benefit from a proper follow-up and support is to be questioned. The follow-up of diagnosed cases as well as the delivery of care remains insufficient in Mauritius, based on the poor control of diabetes and the high rate of incidence of diabetes complications^{4,5}. The critical evaluation of how the issue of diabetes has been addressed at national level is supported by the statement made by the Mauritius authorities:

“For too long now the threat from diabetes has not received the attention required. The threat is very real in terms of the immense human, social and economic costs and even more real in terms of its propensity to overwhelm our healthcare services in the near future if we remain complacent...^{5”}.

As a result of these findings twenty years after the first NCD report, the NSFD was launched in 2007 with the aim to reduce diabetes complications. The battle against diabetes can be won only if emphasis is put on primary prevention. The World Health Organisation (2003) states that Ministries of health have a crucial convening role bringing together other ministries needed for effective policy design and implementation²⁰. The various ministers of the Mauritian government will have to join forces for constructive mechanisms towards a national synergy to make long term changes happen in Mauritius. The recommended strategy is the settings approach which provides a supportive environment for healthy lifestyles. Commitment to the settings approach was strongly endorsed by the Jakarta Declaration²¹. As a member state of the World Health Organization, Mauritius will have to encourage initiatives to implement the settings approach.

CONCLUSION

Mauritius has to draw lessons from its own experience during these past twenty years: There is need for primary prevention of diabetes and thus the strategic importance of developing healthy settings in Mauritius. Sustained health behaviour change will occur in the Mauritian society only if comprehensive strategies from multi-sectoral collaboration at national level aim at the development of healthy schools, healthy workplaces, healthy cities and healthy villages. Mauritius could then aspire to establishing itself as a healthy island.

AUTHORS' CONTRIBUTIONS AND SIGNATURES

I declare that I participated in the literature review, data collection, data analysis and writing up of the article and that I have checked and approved the final version. There is no conflict of interest among the author of the *Perspectives* article and the authors of the commentaries.

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- Submitted 7 March 2009, comments to authors 2, 10 October 2009, revised 13 October, 11 December, accepted for publication 16 December 2009

FIRST COMMENTARY

Diabetes in middle income countries

Like many middle-income countries, Mauritius has seen a rapid increase in the prevalence of diabetes in recent decades. Changes in lifestyle, such as reduced levels of physical activity, dietary changes, and increases in car ownership, couple with a population with a high familial risk for diabetes, has led to an increase in the prevalence of risk factors for diabetes, such as obesity. Clearly, once people have diabetes, they need to be identified early and offered effective treatment, control of risk factors, and screening for complications such as retinopathy and kidney disease. However, this is an expensive strategy – in the UK, which has a much lower (although still increasing) prevalence of diabetes, the costs of treating diabetes and its complications has been increased rapidly, putting a strain on NHS finances. The key to tackling the epidemic of diabetes in countries such as Mauritius therefore lies in effective primary prevention.

Much of this primary prevention will require inter-sectoral collaboration, with different government departments – such as Health, Education, Transport and Employment – working together to ensure that both adults and children are offered appropriate advice and support to encourage them to adopt healthy lifestyles. Interventions need to start early in life by targeting pregnant women and young mothers so that children are encouraged to adopt health lifestyles from early in life. The next step is to ensure that schools and colleges offer healthy diets and adequate opportunities for exercise. Once children leave the education system and enter employment, the focus falls on work places to also support these strategies. In achieving this objective, collaboration between the public and private sectors is essential. A key role for health professionals and Ministries of Health is highlighting the benefits to employers of a health workforce in areas such as improved productivity and reduced sickness absence, coupled with lower spending on the treatment of diabetes.

Another key step in establishing effective primary

prevention is through the establishment of a strong primary health care system. Health care in many middle-income countries is focused on the specialist provision of services, with inadequate emphasis on primary prevention, the early detection of disease, and the encouragement of healthy lifestyles. The World Health Organization Report for 2008, published in October 2008, illustrates that countries with strong primary health care delivery systems are more likely to implement effective health promotion strategies and achieve better health outcomes than countries with systems more focused around the delivery of specialist medical care. Currently, the evidence on community-or population-based prevention strategies for diabetes in middle-income countries is limited. Research on what works in diabetes prevention in such settings and the effective implementation of effective strategies, are also key factors that will determine how successful middle-income countries are in reversing the rising prevalence of diabetes.

In conclusion, there are no ‘magic bullets’ in meeting the challenge of diabetes prevention in middle-income countries. Effective inter-sectoral collaboration, a strong primary health care delivery system, and the development of effective interventions, will all have important roles to play in diabetes prevention.

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SECOND COMMENTARY

Reducing the burden of diabetes through Health Promotion Strategy

The evidence for an effective health promotion strategy requires a whole system approach which involves all stakeholders working towards a common goal. It is generally accepted that no one strategy stands on its own as a clear success—they all need to act in conjunction with each other and require collaborative actions in order to be effective. In an ever increasing complex environment the WHO believes that this process is multi dimensional involving the application of good research evidence into policy and practice, as well as a robust framework involving legislation supported by an effective networking infrastructure. A pre-requisite factor for success is good leadership qualities.

Effective health promotion policies are those that are based on robust evidence which have been accumulated through sustained organic growth within a framework designed for continuity of purpose. The Government of Mauritius needs to be wary of focusing on developing short term health policy based on pure academic-based research. These are generally not effective. Translating research into practice requires an interactive transactional engagement of its stakeholders. Implementing health promotion research findings through an action-oriented approach using an incremental step-wise implementation process is more likely to be sustainable and successful. Through this iterative process knowledge can be developed, shared and owned with all the stakeholders.

Political commitment, funding and infrastructure for bedding health and social policy and health promotion actions remain a necessity. The Ministry of Health needs to consider introducing robust legislation if it wants to tackle effectively diabetes in primary care. The package should include not only regulatory measures such as tobacco control, no smoking rule or taxation of certain products (health risks) but also an operational plan involving a series of Health Impact Assessment and national public health audits programmes.

Any health promotion model should include a package that will provide education for health, efforts to mobilize people's collective energy, resources, skills towards the improvement of health, and advocacy for health. Health promotion outcomes represent those personal, social and structural factors that can be modified in order to change the determinants of health (i.e. intermediate health outcomes). Such an approach must consider a system that will enable whole person/family to seek health advice allowing them to say what they want to do and where they need help. It must include the development of long term programs with appropriate support and should link specific work to geographical areas and vulnerable groups identified in the local neighborhood strategy. It is important that such working is jointed up across service and organizational boundaries. This will require the need for outreach work and an integrated approach to healthy living.

Effective communication is a crucial process in health promotion and perhaps its most important element. Apart from bringing the health message to the people, health promotion requires need effective communication strategies. The approach need to capitalize on systems that will allow interactive sharing and learning within its communities. A good health promotion strategy must consider putting communication as its core element. It should strive to create social networks to enable a dynamic community that will share its experience.

Finally, both political and administrative acumen and skills are required to manage the various processes involved. The success of the system requires good stewardship to promote capacity building for health care professionals as well as a robust infrastructure to allow policy analysis, epidemiological surveillance, health literacy and other activities.

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