

## National diabetes prevention programmes in LMICs are now a necessity



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The prevalence of diabetes is increasing rapidly globally and most of this increase is seen in low-income and middle-income countries (LMICs), where 80% of people with diabetes currently reside. Indeed, China and India alone contribute nearly 40% of the global diabetes burden.<sup>1</sup> Type 2 diabetes has a long natural history, with a stage of prediabetes that provides a good opportunity to prevent diabetes. In many countries, the number of people with prediabetes is even higher than the number of people with diabetes. For example, the recent Indian Council of Medical Research–Indian Diabetes national study found that in India there were 101 million people with diabetes, but 136 million people with prediabetes.<sup>2</sup>

Large diabetes prevention programmes, such as the Diabetes Prevention Program in the USA,<sup>3</sup> the Finnish Diabetes Prevention Study in Finland,<sup>4</sup> and the Da Qing study in China,<sup>5</sup> have shown that up to 58% of individuals with prediabetes can be prevented from developing diabetes through intensive lifestyle modification. However, in the Indian Diabetes Prevention Programme, prevention of diabetes was achieved in 28.2%, probably due to lower obesity rates.<sup>6</sup> Notably, all the above studies only included individuals with impaired glucose tolerance.

The Diabetes Community Lifestyle Improvement Program (D-CLIP)<sup>7</sup> and the Kerala Diabetes Prevention Program<sup>8</sup> showed that in people with impaired fasting glucose, prevention of diabetes was less effective. Thus, in the D-CLIP trial, diabetes was prevented with intensive lifestyle modifications (with additional metformin when indicated) in 31% of people with impaired glucose tolerance, but only in 12% of individuals with impaired fasting glucose.<sup>7</sup> Therefore, different approaches might need to be tried to prevent diabetes in people with impaired fasting glucose.

Nevertheless, given the large numbers of people with prediabetes in LMICs, unless large scale national prevention programmes are urgently implemented, the number of people with diabetes could become unmanageable. Furthermore, if even a quarter of people with diabetes go on to develop diabetic kidney disease or other complications, the health-care costs could push people into poverty. Dialysis and renal transplantation,

the only effective treatments for end-stage renal disease, are affordable for less than 5% of people in LMICs, and the majority of people pay out of pocket for their medical expenses.<sup>9</sup>

With this background, the study by Nicholas Errol Rahim and colleagues<sup>10</sup> in *The Lancet Global Health* is of great interest. The authors report a cross-sectional analysis of nationally representative data in 145 739 adults across 44 LMICs. They included all participants older than 25 years and at high-risk of developing diabetes, who did not currently have diabetes and were not pregnant. High risk was defined as the presence of impaired fasting glucose or overweight or obesity. The authors looked at whether four diabetes prevention activities (physical activity counselling, weight loss counselling, dietary counselling, or blood glucose screening) were included in nationally representative surveys and whether people at high-risk of diabetes received any of these prevention activities. They reported that less than half of individuals in LMICs who are at high risk of diabetes reported receiving diabetes prevention activities.

The authors are to be congratulated on compiling such a large dataset evaluating diabetes prevention activities for individuals at high risk of diabetes in LMICs. However, one could argue that the mere inclusion of diabetes prevention counselling activities in national surveys would not really constitute a diabetes prevention programme. The authors do state that 39 of the 44 LMICs included in the study have implemented health systems programmes that include a diabetes prevention component, but I would have liked to see more details of such programmes. Moreover, the authors themselves mention several barriers in the implementation of national diabetes prevention programmes in LMICs, not the least of which is the sheer magnitude of the task, given the huge population of some of these countries.

Despite these formidable challenges, it is important to start diabetes prevention programmes that are appropriate to each country. Such efforts would require a multisectoral programme that involves availability and affordability of healthier food choices, promotion

of physical activity, and help with weight reduction in individuals with obesity or overweight. Investing in diabetes prevention programmes would be worthwhile and should be done without further delay as non-communicable diseases, such as diabetes, have already overtaken communicable diseases as the major cause of mortality in most LMICs.

I declare no competing interests.

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