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HEALTH

Tika Utsav and Vaccine Maitri: Finding the right balance

67% medicines produced in India are exported to developing countries

By Abhinav Mehrotra, Biswanath Gupta
Published: Wednesday 14 April 2021



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Adapted Mind

As the second wave of the novel coronavirus disease (COVID-19) takes its toll in India, a plethora of questions are being raised by the opposition parties regarding the feasibility of Vaccine Maitri (vaccine friendship), an initiative taken up earlier this year. The initiative is in accordance with the 'Neighbourhood First' policy enunciated by Prime Minister Narendra Modi at the beginning of his first term in 2014.

Under the initiative, neighbouring countries Bhutan and Maldives received 550,000 and 312,000 vaccines; Bangladesh received 10,300,000, Nepal 2,448,000 and Myanmar 3,700,000. Brazil and Morocco also received 4,000,000 and 7,000,000 doses, respectively.

This is something that India has done in the past as well, inspired by its ancient philosophy *Vasudeva Kutumbakam* that means the world is one family, especially in times of disaster and distress.

According to *Medicine sans Frontier*, 67 per cent of medicines produced in India are exported to developing countries. Moreover, out of total tourists arriving in India in 2019, 6.4 per cent come for medical treatment in India.

The prime challenge that Covid-19 has thrown to the civilisation is the restriction over travelling from one part of the world to another. The modern economy depends more on people's movements. The globalisation of economy is under serious crisis due to restriction of our movements.

One of the ways we can restrict the virus from spreading is to develop herd immunity. Herd immunity can be developed if much of the population has either been affected by COVID-19 or if maximum people develop immunity through vaccines.

The second option is obviously better for any country. Therefore, speedy vaccination is essential for saving our life and economy.

But the Indian economy has close connections with its neighbouring countries. Therefore, unless herd immunity develops there as well, it is very difficult for us to restrain this virus.

At present, when the country is running short of vaccines, the government must invest more on infrastructure to develop more vaccines. Regulatory mechanisms must allow a greater number of vaccine candidates to enter and roll out their vaccines in the Indian market. Therefore, it is essential to rethink the vaccination process and COVID-19 management in the country.

Coming back to Vaccine Maitri initiative, India not only exported doses of vaccines but also collaborated with its neighbours on vaccine trials by making its medical and public health expertise and capacity available to the entire South Asian region.

For example, under the Indian Technical and Economic Cooperation programme, the country provided e-training to medical professionals of the South Asian countries. These initiatives signify that if help could be extended to other countries, then such benefits must reach the citizens of the country as well.

There have been doubts regarding the effectiveness of vaccines. These doubts have been based on the assumption that the government is trying to hide, through advertisements and other means, that many who have taken vaccines do not exhibit side effects.

There are also doubts regarding the durations between vaccine doses. Though, the government came out with clarifications, this direction of the government, somehow, is not clear in the mind of the people. Such assumptions assume significance due to the fact that the written undertaking by individual recipients exonerates the vaccine-producing companies from responsibility.

What needs to be understood is how to find the balance between exporting vaccines as a common good, as well as avoiding the negative repercussions of the Vaccine Maitri initiative on the **vulnerable Indians**.

It cannot be emphasised enough that the vaccine diplomacy will work well if India produces adequate doses for its citizens.

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Seen in this light, the central government needs to assume the role expected from it to ensure that COVID-19 appropriate behaviour is followed by wearing masks and maintaining social distancing.

Further, the government must ramp up medical infrastructure and intensify vaccination drives by supplying adequate vaccines to the state governments. It should also help people overcome vaccine hesitancy and ensure long-term benefits of "Tika Utsav".

Views expressed are the author's own and don't necessarily reflect those of Down To Earth.

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HEALTH

We're on the hunt for novel ways to assess the risk of type 2 diabetes

How well can miRNA expression analysis perform in identifying prediabetes and full-blown diabetes?

By Cecil Jack Weale
Published: Wednesday 14 April 2021



Type 2 diabetes is characterised by elevated blood glucose levels. This can cause complications that lead to damage to the kidneys, nerves, and the retina in eyes. Other complications can lead to heart diseases and diabetic foot ulcers, which eventually require amputation.

Until fairly recently type 2 diabetes was considered a major health issue only in developed countries. But there's been an increase in prevalence in developing countries. This has been attributed to rapid urbanisation, increased fast food consumption and general lack of exercise.

The diabetes crisis is forecast to worsen. According to the International Diabetes Federation, African countries can expect an increase of up to 143 per cent in the number of people with diabetes by 2045. Its latest report shows that South Africa has the highest prevalence of diabetes on the continent, and the highest number of diabetes-related deaths. The country's diabetes-related expenditure — 23 per cent of the total health budget spent on the management of the disease in 2019 — is also the highest.

The rise in diabetes cases needs to be curbed to ease the demand on healthcare systems. To achieve this, new and innovative ways of assessing the levels of risk people face from diabetes are needed. These must be specific to populations on the continent.

My colleagues and I are involved in research aimed at integrating genetic mechanisms and risk factors associated with diabetes and its associated complications, specifically in an African setting. In particular, we have done research on diabetes diagnosis. Our research aims to shed light on new avenues for assessing diabetes risk.

Diabetes diagnosis and management

Conventional methods of diabetes diagnosis and management include the oral glucose tolerance test and the HbA1c test. But these have serious shortcomings.

The glucose tolerance test is cumbersome and time-consuming. It also requires a person to fast before having blood drawn. They are given a glucose solution and blood samples may then be taken at different intervals. The aim is to measure how well, or poorly, their body is able to return their glucose levels back to normalcy.

There are also concerns about the overall accuracy of these tests.

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For its part, studies have shown that the results of the HbA1c test may be compromised by factors such as age, ethnicity and anaemias.

All this points to the need for novel, and more sensitive approaches to diabetes diagnosis and therapy.

One area of research that appears to offer the promise of a solution is the booming field of epigenetics. This field of study looks at how our behaviours and surrounding environment may induce genetic changes that predispose us to certain diseases.

When it comes to diabetes, microRNAs (miRNAs) have been the "talk of the town" in the past decade. These molecules control which proteins are developed, and which proteins aren't. Abnormal expression of these miRNAs may result in reduced amounts of proteins involved in essential bodily processes, or an overproduction of proteins which may have adverse effects. The underproduction of a miRNA involved in insulin production ultimately leads to reduced insulin levels and uncontrolled glucose levels in the blood.

Emerging evidence suggests that altered expressions of these miRNAs may either precede or play a role in the development of diseases such as type 2 diabetes.

The study of genetic mechanisms such as miRNAs is known as epigenetics. This is an umbrella of various mechanisms revolving around genetic changes that may occur due to our habits and surrounding environment. These surounding genetic changes may subsequently result in increased risk of disease.

Our surroundings and how we live govern our predisposition to developing certain lifestyle-oriented diseases, such as type 2 diabetes. Research focus must shift towards understanding the complex interplay between our genetic make-up and the environments we live in. Doing this will redefine therapies and management of lifestyle diseases and curb their growing prevalence. One such avenue is research in miRNAs.

MicroRNAs in prediabetes and type 2 diabetes

In a recent study we identified miRNAs — specifically two, 30a-5p and 182-5p — which are associated with abnormal glucose levels. We screened three separate groups: a control group with normal glucose levels; a prediabetic group of people with intermediate glucose levels; and a group of people with newly diagnosed type 2 diabetes.

We observed higher levels of the miRNAs in the prediabetic and diabetic groups, in comparison to the normal group. There was more of an increase in the prediabetic group versus the normal group. This told us that for some reason, people with early-stage diabetes have higher levels of these miRNAs. This could indicate that this is either a compensatory response by the body to curb the disease progression, or a knock-on effect of disease progression.

Either way, our results showed that measuring the expression of these miRNAs could be used as a tool for potentially identifying people with prediabetes.

Our next question was: How well can miRNA expression analysis perform in identifying prediabetes and full-blown diabetes, in comparison to known and acknowledged tests?

To answer it, we statistically compared the use of the two miRNAs to that of the HbA1c test. The results showed that the miRNA 182-5p outperformed the HbA1c test in distinguishing prediabetes. This demonstrated that the miRNAs, in particular 182-5p, could be considered as potential novel biomarkers in identifying people at risk of developing diabetes early enough for interventions to be implemented.

In the light of advances in epigenetics research, doors are slowly beginning to open when it comes to personalised treatment regimens and disease management. Considering the influence our surrounding environment has on our health, scientists have begun exploring suggestions that treatment approaches specific to population groups in a particular region may be the future, particularly when it comes to lifestyle-oriented diseases.

Our findings are important because they underscore why personalised approaches and interventions offer potential solutions to designing innovative new breakthroughs in medicine. Identifying genetic trends that are specific to our population, such as these miRNAs, may improve overall diagnostics, therapy and management of type 2 diabetes.

This would, in turn, alleviate the pressure on healthcare systems.

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