

Experiences with SARS-CoV-2 (Covid-19) in Trinidad and Tobago, a small island developing state: realities and opportunities

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Summary

The COVID-19 pandemic has exerted significant global challenges that are expressed in a variety of socio-politico-economic scenarios, depending upon individual countries' preparedness and resilience. The impact COVID-19 in Small Island Developing States (SIDS), most of which are categorized as Lower and Middle-Income Countries, has been pronounced. Furthermore, many of these SIDS possess specific vulnerabilities to global threats. This paper contextualizes the experience of Trinidad and Tobago from some perspectives of geoeconomics, healthcare, and international relations. In many ways, the experience is similar to that of other SIDS with the inherent nuances of a post-colonial world. Trinidad and Tobago was ranked number one by the Oxford University COVID-19 Government Response Tracker (OxCGRT) "Lockdown rollback checklist: Do countries meet WHO recommendations for rolling back lockdown?". Despite the significant political support to combat the disease, by the end of 2022, the country had recorded over four thousand deaths and just over 50% of the population is vaccinated. This paper seeks to discuss the successes and challenges faced by this twin island state.

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Geoeconomic context

Trinidad and Tobago (T&T), the southernmost island in the Caribbean archipelago, is located off the north-eastern coast of the South American continent. It has a land area of 5128 square kilometres and enjoys a tropical climate with an average temperature of 32 °C. In 2016, the population was approximately 1.4 million (Fig. 1).¹

Trinidad and Tobago is a full member of the United Nations (UN) and is recognised as a Small Island Developing State (SIDS). It is a signatory to the Paris Agreement, and multilateral treaties on Human Rights.³ The islands achieved Independence from Britain in 1962 and Republican status in 1976. The country enjoys relative political stability with peaceful elections held every five years.⁴

For many decades, T&T depended on the production of oil and natural gas to secure its energy safety as well as to deliver a measure of fiscal steadiness for the government. However, the collapse of the global energy markets, partly because of the pandemic, has mandated discussions on the need for ongoing economic diversification away from the hydrocarbon sectors.⁵

Healthcare services are provided free of charge in the public sector whereas the private sector functions are fee for service, sometimes indemnified by group health insurance plans.

Timeline of case burden (March 2020–December 2022)

A visual timeline of the case burden in T&T (the COVID-19 case rate per 100,000 people) is presented in Fig. 2, with four regional comparators. T&T recorded its first COVID-19 case on 12th March 2020, 11 days after the first recorded case in the Caribbean (an Italian tourist in the Dominican Republic) and three months after patient zero in China. By that time, there had been



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Fig. 1: Map demonstrating the geography of the Caribbean Region.²

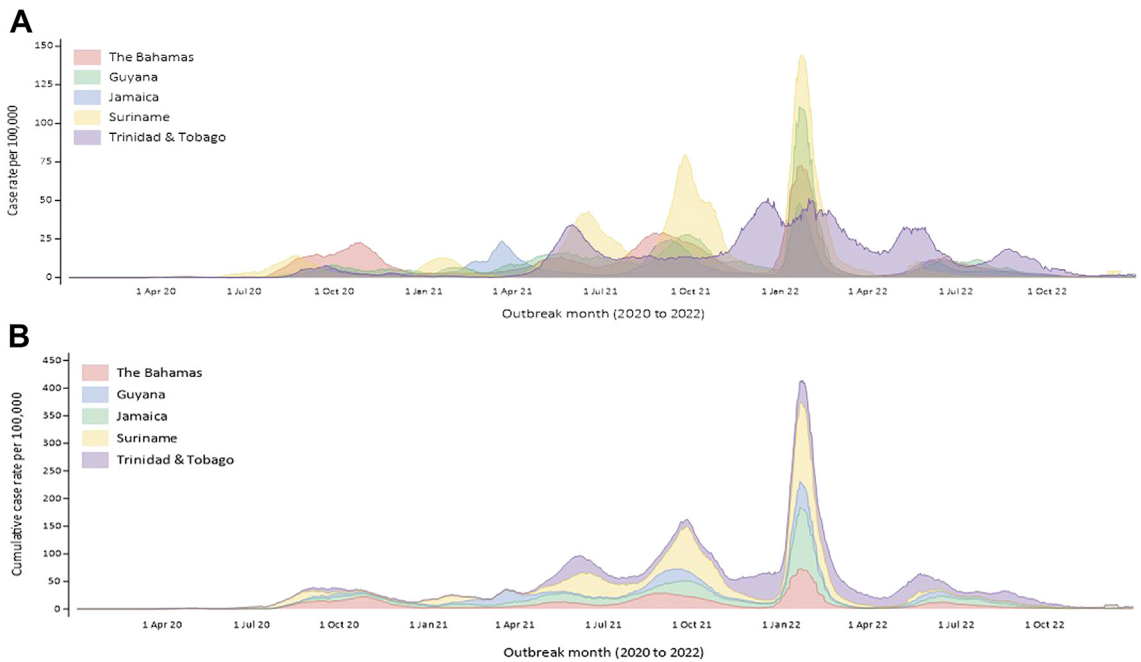


Fig. 2: (A) COVID-19 case rate (per 100,000) in Trinidad & Tobago, and in 4 CARICOM comparator countries, between April 2020 and December 2022. (B) COVID-19 cumulative case rate (per 100,000) in Trinidad & Tobago, and in 4 CARICOM comparator countries, between April 2020 and December 2022. Note: Case rate was calculated as the number of daily new cases, divided by the country population ($\times 100,000$), and presented as 14-day smoothed average. Data source: The Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) (<https://github.com/CSSEGISandData/COVID-19>). This cases & deaths dataset is updated daily. The number of cases or deaths reported by JHU on a given day does not necessarily represent the actual number on that date. This is because of the reporting chain that exists between a new case/death and its inclusion in statistics. Negative case and death values can sometimes appear when a country corrects historical data. Reference—Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. CSSEGISANDDATA/covid-19: novel coronavirus (COVID-19) cases, provided by JHU CSSE [Internet]. [cited 2023 June 4]. Available from: <https://github.com/CSSEGISandData/COVID-19>.

125 thousand confirmed cases among 117 countries; and the Caribbean region, whose economies are heavily dependent on European tourist arrivals, was on high alert. On 21st March, T&T reported a jump in cases when 68 nationals were repatriated from a stranded Caribbean cruise with a presumed outbreak of COVID-19, and 40 of these subsequently tested positive. This prompted swift action from the government, with the closure of borders on 22nd March 2020. Border closure was followed in late March by a package of government interventions to encourage social distancing, including a stay-at-home order for non-essential workers. The closure of borders led to many nationals having to endure long wait time before returning home.⁶

By early May 2020, confirmed cases had increased to around 100, and the initially stringent government measures to encourage social distancing were eased in stages throughout May and June. This gradual easing and the resulting increase in social contact may have catalysed the first significant outbreak across the nation. By the end of July disease rates began to rise, reaching a peak of 10 cases per 100,000 in mid-September. Community transmission was declared for the first time by the World Health Organization in the third week of August. This first national outbreak tailed off gently in the Autumn months, with rates hovering around 3 per 100,000 at the end of November.

Through the winter months, rates were low, generally around or below 1 per 100,000 for the 4-months between December 2020 and April 2021. In early April 2021 however, daily cases crossed 100 per day for the first time since September 2020, pushing the case rate higher. By the end of April, the case rate was above 10 per 100,000, exceeding the Autumn 2020 rate, with new daily cases showing no sign of slowing. This second outbreak has been ascribed in part to the arrival of the more transmissible Gamma disease variant, first identified in Brazil in November 2020. The following weeks saw a dramatic national outbreak. At the end of May 2021, the case rate reached a peak approaching 40 new cases per 100,000—a rate that at the time was exceeded by only a handful of countries in the world, most of these in Central and South America. Stringent Government measures were reintroduced, and by the end of June rates had dropped to around 15 per 100,000, and through to November 2021 the rate remained steady at between 10 and 15 per 100,000.

The Omicron disease variant emerged in early Autumn 2021 and quickly arrived in the Caribbean. From November 2021, rates in Trinidad and Tobago climbed again, with rates exceeding 50 per 100,000 in December, and still above 30 per 100,000 at the start of March 2022 (Fig. 2). This surge in Trinidad and Tobago—based on confirmed cases alone—has been less pronounced but longer lived than in neighbouring Caribbean nations; a difference that may partly reflect levels of population testing. A sharp peak in daily deaths—

above 25 per day in late December—suggests that the December 2021 peak may have been partly undetected.

By the end of December 2022, in the 33-months since the arrival of COVID-19 in T&T there had been 186 thousand confirmed COVID-19 infections and 4283 coronavirus-related deaths. The deaths have broadly tracked the case burden, with 21% of all deaths occurring between April and July 2021 (the second national outbreak) and 62 percent since November 2021 (the third national outbreak). Although community transmission probably persists, similar to many countries, COVID-19 testing has decreased nationally, reducing the accuracy of national estimates in 2023.

Economic experience and vulnerabilities

GDP expenditure on health

It is estimated that 6.9% of total GDP is spent on health in T&T, having increased from 4.3% in 2004.⁵ Historically, the resources allocated for the different sectors of healthcare have been limited, seemingly skewed towards tertiary care. Trinidad & Tobago has traditionally been heavily reliant on petrodollars relying on income from two 'oil-booms' during the 80s and 2000s, although the overall allocation of budget for healthcare has been considered as within acceptable limits (PAHO).⁷ However, in recent times, even before the pandemic, there had been some economic contraction and challenges to generate foreign exchange. The government withdrew funds from its Heritage and Stabilization Fund (HSF) to bolster the healthcare services in the face of the pandemic, such Fund representing the island's savings for future generations.⁸

Fiscal agility

Financial allotments were distributed to the Ministry of Health and the Regional Health Authorities (RHAs). In June 2020, the Development Bank of Latin America (CAF) signed two loan agreements (US \$100 Million and US \$50 Million) with T&T in response to the COVID-19 health emergency and to ameliorate its economic and financial effects.⁹ Previously, CAF had donated US \$400,000 to the Ministry of Finance on April 3 2020, to strengthen the country's emergency response and to boost the medical personnel working in the care of patients affected by the COVID-19 pandemic.⁹

Supply chain influence

The vulnerability of SIDS was directly manifested in the worsening of supply chain availability for equipment and medical supplies. The small population of SIDS, relatively lower consumption rates and only modest supplier profits are factors which may be attributable to the inertia to provide equipment and medications. In addition, supply from the usual sources was curtailed since they themselves faced lock-downs and closure of factories.¹⁰

The impact

There have been strengths and weaknesses in the overall resource allocation for the management of COVID pandemic in Trinidad & Tobago. The strict institution of public health regulations including lockdowns, mandatory masks, and continuing campaigns to ‘flatten’ the curve did achieve their goals to a reasonable level but the corresponding hidden costs on the economy are yet to be fully determined. Additionally, the necessary bolstering of expenditure on the healthcare system required intermittent but significant injection of capital, political will, evidence based science, coordinated response mechanisms to become resilient.¹¹ Compounding the above, the pandemic caused economic challenges in many islands and Trinidad & Tobago was not an exception. Closure of small and medium-size businesses during lockdowns, closure of borders with inability to order and buy materials created an environment of ambiguity in the islands. Income of non-essential workers was drastically affected and left this group in serious economic plight.¹² Online platform teaching highlighted teachers and students who lacked training, equipment and connectivity.¹³ Likewise, many challenges were encountered within the healthcare system relating a rapidly increasing need for numbers and training.¹⁰

The health systems experience

Parallel system

One of the major modalities adopted by the Ministry of Health, Trinidad & Tobago to manage the pandemic was the establishment of a so-called ‘parallel healthcare system’ designed to isolate the routine healthcare services from the COVID patients. The governing body was preparing its administrative subunits to manage the pandemic at different levels. There were separate centres/hospitals which managed such patients at the general ward, High Dependency Units and Intensive Care Units. New staff were recruited to manage these patients; personal protective equipment and support staff were supplied consistently with oxygen, drugs and ICU equipment.¹⁴

However, during the second and third waves, which started in April 2021, because of the sudden increase in the number of patients requiring hospitalization, the parallel system became saturated with many COVID patients managed in bio-containment areas within the major hospital. These biocontainment care areas did face many expected challenges, including staffing ratios and capacity.¹⁵ The country also benefitted from the donation of field hospitals from the Government of the United States to increase the capacity of the parallel service.¹⁶

Vaccines

The Government of Trinidad & Tobago was one of the earliest nations to enter into the COVAX arrangement

of WHO, with the expectation that the vaccine-manufacturing countries would have been able to distribute and share vaccines to small states such as Trinidad & Tobago.¹⁷ However, contrary to the expectations, the distribution of vaccines was delayed and the Government sourced donor nations such as India and China as well as African Medical Council. Over time, the Ministry of Health was able to effectively deploy vaccines developed by AstraZeneca, Sinopharm, Johnson and Johnson and Pfizer to the population with over 53% of the population fully vaccinated.¹⁸

The so-called vaccine apartheid is indeed a real phenomenon and the Caribbean nations were placed in a unique situation. Many CARICOM nations do have a high Human Development Index, with the prevalence of NCDs surpassing that of the infectious diseases. However, with global inequity of the distribution of vaccines for COVID, Trinidad & Tobago did face the challenge of the inadequate supply during the early months of vaccination efforts in the world.¹⁹ Although the supply did increase after July 2021, the proportion of citizens who are vaccinated remains low due to many reasons. Despite vaccines being free of charge to all persons including the migrant population, there have been challenges with vaccine hesitancy in the country, which is reflective of the region (Table 1).²⁰

Healthcare workers

The resilience of the healthcare workers in T&T dealing with an unfamiliar foe is a credit to them. These workers have traditionally faced multiple challenges that are typical of SIDS, such as limited infrastructure and resources, operational inflexibility and ‘brain drain’.²¹ These factors fostered the fear that health systems

Country	Percentage of country population receiving one (1) vaccine (%)
St Kitts and Nevis	63.5
Antigua and Barbuda	66.7
Barbados	57.0
Dominica	45.8
Trinidad and Tobago	53.9
Guyana	63.0
Suriname	45.7
Belize	62.4
Grenada	39.3
St. Lucia	32.8
Bahamas	44.3
St Vincent	33.8
Jamacia	28.8

Reference-Understanding Vaccination Progress by Country [Internet]. Johns Hopkins Coronavirus Resource Center [cited 2023 March 10]. Available from: <https://coronavirus.jhu.edu/vaccines/international>.

Table 1: Individuals getting one (1) vaccine in various Caribbean nations (Period December 20th, 2020–10th March 2023).

would collapse under the pressure of utilization surge that was typified by this pandemic.²² It is well documented that the pandemic has eroded the wellbeing of healthcare workers across the globe and that there should be a mandate on building the resilience of the affiliated professions in health.²³ The National Medical Association championed this cause and embodied representation at levels ranging from hospitals through supporting staff to governmental administrative planning meetings in 2020. The most concrete contribution to the response from the Association's specialists came in the form of public advocacy for public health measures and the coordination of vaccination drives across the country in 2021.^{24,25} In spite of these efforts there was still some vaccine hesitancy among healthcare workers.²⁶

Research and development

The pandemic presented T&T, and the region by extension. With the opportunity to integrate itself within the larger global body that was confronted with a public health emergency not seen in this generation. The country's positioning of research started strongly because of the existing academic communities in the University of the West Indies and the University of Trinidad and Tobago. The universities promoted their academic achievements and held conferences to highlight the work of their lecturers.^{27,28} The regional medical journals reinvigorated themselves during the pandemic and innovated means through which the research and stories of healthcare workers could be disseminated. In addition to a complete clinical series on the pathophysiology and management of SARS-CoV-2 infection, there was a spotlight on the mental health of healthcare workers and the struggles that were being experienced.²⁹ Above all else, the academic community worked assiduously and non-affiliated groups continued to perform large clinical and non-clinical trials some of which were aligned with large international studies³⁰ and others that focused on building the local body of research.³¹ The distinct realized opportunity from this was that it fostered the importance of research to practice and inculcated the need for evidence based driven interventions.

Trust in the system

While the majority of the population remained fairly confident with the clinical advice from healthcare personnel and the policy measures based on the international experience, like all other islands voices of dissent against the interventions were unavoidable. The legitimacy of the measures being adopted was questioned but ultimately the biggest defiance was vaccination hesitancy by those susceptible to social media influences.²⁰ Rebuilding the trust between the population and healthcare providers became a key drive from the advocacy groups and the Ministry of Health as they sought to engage in media campaigns to assume the

voice of an unbiased entity that held at its core a passion for the health of the people of the nation.³² This brought into the focus the need for healthcare providers and administrators alike to be cognizant of the importance of buy in at the level of end users of the healthcare system.

Innovation

The need for rigid social distancing as a means to disrupt viral transmission has led to evidence of social isolation as individuals struggled to maintain interactions even in the presence of others.³³ Digital solutions across the globe became an innovative cornerstone for the delivery of education, public services, personal communication and healthcare.³⁴ Trinidad and Tobago embraced a never before seen modus of online teaching coupled with the bolstering of access to accompanying technology to operationalize the evolving needs.³⁵ The experience in healthcare was found to lag behind in times as the financial priority of the pandemic response was held primarily by the clinical and operational needs of a parallel system that became more robust over time. The impetus of digital transformation brought into focus the need for the small island developing state to become more current with the global trends to allow students to remain competitive in global education markets. The age of digitalisation was upon the island regardless of the level of preparedness.

The international relations experience

Multilateralism

The Caribbean Community (CARICOM) is a regional body of Caribbean member states that promoted regional support for economic and cultural integration. There is significant focus in the organization on security, education, development and health but less so on political integration. Previous iterations of Caribbean integration which forged a supranational entity known as the West Indian Federation was short lived, but partnerships and regional bodies persist and are successful. The currencies are different, trading is determined by individual nations and hence there is minimal effort to streamline the supply of important healthcare resources (both human as well as material) even during the non-pandemic era.³⁶

Prior to the pandemic, the Caribbean has realized robust tangible and intangible resilience in meeting the unexpected socio-economic challenges. The pandemic has accentuated this effort through the ability of island states and the Caribbean Community (CARICOM) to negotiate as a bloc to make a multilateral response actionable. The Caribbean Public Health Agency was called into action early and has played a pivotal role in ensuring that all member states had access to information and quality testing with the ability to ramp up

according to need.³⁷ The GORTT and MoH in Trinidad and Tobago mandated that any expansion of testing services in both the public and private settings had as a basic requirement high levels of accuracy and in order to achieve this implemented a system of granting permission to operate only to those who met international standards.³⁸ The most poignant multilateral solutions utilized by Trinidad and Tobago was in the procurement of PPE and subsequently PPE from international suppliers at a time when the demand well outstripped supply, leaving significant gaps in accessibility at times. The engagement of COVAX through GAVI, the European Union and direct requests for donation and purchase of vaccines, Trinidad and Tobago at the time of writing has approved and large supplies of Pfizer/BioNTech, Oxford/AstraZeneca and Sinopharm with recent arrival of Johnson and Johnson.³⁹ At a time when high levels of nationalism had become mainstream, Trinidad and Tobago successfully maneuvered through diplomatic challenges to achieve the needs of a basic response to the health crisis.^{40–42}

Transnational & non-governmental organizations

Philanthropy, both internally and externally provided support to the multilateral efforts. There were small and large-scale drives for PPE and vaccine distribution since large quantities were obtained from wealthier countries who are historically sound trading partners of the country. India, the USA and Canada were vaccine donors to T&T. At a time of serious economic difficulty for the people of Trinidad and Tobago, the government embarked on a series of measures to assist the most vulnerable in the society through grants and support of religious organizations.⁴³ This was coupled with tax-relief strategies to create more disposable income for those who had lost regular earnings and support for rural government and agriculture.⁴⁴ The efforts of SEWATT, a local branch of SEWA international cannot be understated in the delivery of relief to the persons affected by the pandemic. The ability of this organization to coordinate supplies, volunteers and assistance to those in needs by leveraging their international partners was an exquisite show of efficiency and dedication.⁴⁵

Conclusion

Recognition of inequity

The health gap, as described by Professor Sir Marmot, predated the current pandemic and described how social and economic determinants are inherent to quality of life and in turn, these conditions are reflected as inequalities in access to health.⁴⁶ Similar to the worldwide experience, COVID-19 affected all domains of society in T&T as described by the WHO; and specifically, impaired economic systems, development agendas, social norms and even political systems.⁴⁷ In practice, this had a profound effect on fuelling and furthering inequitable access to

service and prioritization of health needs as families struggled to meet the requirements for daily living. This brought into focus a reinvigorated effort to protect individuals and communities deemed to be vulnerable.

The pandemic has clearly illustrated the knock-on effect of social inequity being materialised in health inequity on the global scale. The reality of small island states like Trinidad and Tobago accessing vaccines for instance was vastly different from larger countries in the same hemisphere. Further to equity creation, the pandemic raised awareness of the need for the consideration of health in any policy formulation.⁴⁸ It is a well-documented phenomenon that policy inertia hampers the implementation of changes because of end user acceptance, and often global health has been the victim of stagnation.⁴⁹ With an understanding of the transmission of SARS CoV2, health became the driver for rapid social policy changes in T&T in an attempt to curb the acceleration of the global case burden. This necessity brought into focus the possibility of moulding policy and therefore public behaviour driven by health needs.⁵⁰ As the world seeks to become carbon neutral and tackle the burden of non-communicable diseases, the precedent of policy is in the open view of legislators.

Future projections

Pandemic-related challenges in Trinidad and Tobago are undoubtedly a reflection of the global experience. Health systems are clearly only as resilient as their financial backing from the Governments that support them. The case of Trinidad and Tobago demonstrates the response when there is early and sustained buy in and advocacy by leaders. The recovery period is likely to be more difficult for SIDS as global inequities have been deeply exposed and continue to hinder the pandemic response in many parts of the world. From both a health and economic point of view, it is imperative that the larger nations are responsive to the needs of weaker ones to ensure that some degree of normalcy in the world is again possible.

Contributors

Dr. Maharaj, Dr. Kareema Ali and Mr. Dave Dookeeram were involved in the conceptualization of this topic from professional experience in the subject area. These authors were responsible for the development of the original draft and review of relevant literature in the subject matter. Professor Seetharaman Hariharan and Professor Ian Hambleton were involved in the statistical development of the paper including the development of graphs and the formal analysis of subject matter. Professor Surujpal Teelucksingh and Professor Samuel Ramsewak were involved with the critical review of the drafts and editing. All authors reviewed and were extensively involved in the editing of the final drafts of the paper.

Editor note

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