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“We did the best we could with what we had”: A Qualitative Study on the COVID-19 Pandemic Vaccine Response in Belize

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"We did the best we could with what we had": A qualitative study on the COVID-19 pandemic vaccine response in Belize

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Abstract

The COVID-19 pandemic had an unprecedented global impact, making the rapid development of vaccines critical. Belize, a small, middle-income country in Central America and the Caribbean, displayed COVID-19 vaccination rapidly. However, to date, no study has been conducted to understand in-depth actions, barriers and facilitators shaping vaccine implementation in this context. This study aimed to explore the experiences and perspectives of individuals involved in Belize's COVID-19 public health response, with a particular focus on the national COVID-19 vaccine introduction strategy, to generate insights that may inform ongoing health system strengthening efforts and future pandemic preparedness in the region. The methodology for this qualitative study comprised 29 semi-structured interviews with strategic actors held virtually and face-to-face, and ten ethnographic field observations in clinical settings, urban and rural public spaces, and vaccination points in four cities across Belize. Data collection took place in late 2024. Data were integrated into thematic analysis conducted by two independent researchers. Ethical approval was obtained from the corresponding Ethics Committee on July 11th, 2024. Four main results were obtained: government leadership and mobilization of international agencies were essential for COVID-19 vaccines access; multisectoral coordination was key in policy development and implementation; health system adaptability was critical amid limited human and financial resources; and communication and community-based strategies contributed to public engagement.

Keywords: vaccines, health systems, qualitative research, health inequalities, complex emergencies

Jel Codes: I18; O12; I15; O20

Ethical considerations: Belize's Ministry of Health and Wellness' Institutional Review Board revised and approved the study before its execution (Ref: GEN/147/01/24 (33) Vol. VI). All participants read and signed an online informed consent.

Competing interests: The authors declare that they have no competing interests. The entire study was conducted independently by the research team.

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This is an independent academic analysis within a broader project evaluation conducted by the IDB and the MOHW in Belize, focused on programs supporting the containment of COVID-19 (IDB 2024).

AI-assisted language editing software (Grammarly) was used for final language editing. The authors take full responsibility for the content of the manuscript.

Key messages:

- Small countries, despite limited resources and bargaining power, can strengthen preparedness for public health emergencies through adaptive policy practices, strategic governance, and partnership with international organizations.
- Belize's response reflected a commitment to "doing the best they could with what they had", an ethos that together with multi-sectorial coordination and community-level trust, contributed to outcomes that were notably more effective than anticipated.
- The Belizean experience underscores the importance of early engagement in pooled procurement mechanisms, flexible workforce arrangements, and sustained community-based communication in strengthening preparedness for future health emergencies.

1. Introduction

The COVID-19 pandemic had an unprecedented global impact, making the rapid development of vaccines critical to reducing cases and deaths (Graham 2020, Clemente-Suárez *et al.* 2021). By May 2023, over 765 million cases and nearly 7 million deaths were reported worldwide (World Health Organization - WHO 2023a). The approval of the first COVID-19 vaccine by the WHO in December 2020 marked a turning point in the global response (Zheng *et al.* 2022).

Beyond its direct health impacts, the pandemic placed extraordinary pressure on health systems, particularly in countries with limited resources and negotiation capacity (Bong *et al.* 2020, Iyengar *et al.* 2020, Arsenault *et al.* 2022). Evidence proves that effective COVID-19 vaccine deployment relied on leveraging existing immunization infrastructure, tailoring communication to local cultural contexts, and engaging community leaders (Kecojevic *et al.* 2021; Lun *et al.* 2022; Herry *et al.* 2023; WHO 2023b; Jimoh *et al.* 2024). However, qualitative evidence examining how COVID-19 vaccine strategies were implemented in low- and middle-income countries (LMICs), and particularly in Latin America and the Caribbean (LAC), remains limited.

In LAC, structural inequalities and underinvestment in public health contributed to higher relative morbidity and mortality (Schwalb *et al.* 2022). Delays in vaccine access further exacerbated preexisting vulnerabilities (Taylor 2022). Health and vaccination policies varied across countries due to differences in infrastructure, socio-political dynamics, and cultural contexts (Cabieses, Espinoza, and Obach 2024).

Belize, a small middle-income continental Central American country with a population of approximately 400,000, faces unique challenges and opportunities in the organization and delivery of health care. The health system is primarily public, with persistent challenges including limited health infrastructure, workforce shortages, and disparities in access for indigenous and linguistically diverse populations (Ministry of Health & Wellness 2025). Despite these constraints, Belize delayed the entry of COVID-19 through border closures and movement restrictions, and intersectoral coordination mechanisms (Pan American Health Organization – PAHO 2020, Rios-Zertuche *et al.* 2023, Mathieu *et al.* 2025). Continuous support from international organizations facilitated the mobilization of resources to respond to the pandemic (PAHO 2021b). Despite challenges in COVID-19 vaccination coverage, Belize secured early vaccine access through the COVAX Facility and initiated vaccination in March 2021 (Gavi 2020, PAHO 2023, Jimbo-Sotomayor *et al.* 2024).

Whereas epidemiological figures describe overall outcomes, understanding how the response was experienced by those directly involved in its design and implementation remains critical. Belize's vaccination rollout occurred amid limited financing capacity, a small population size, constrained bargaining power, and national elections in 2020.

While a growing body of literature examines COVID-19 in LAC, it focuses on national-level

policy responses, or quantitative outcomes (Talukdar and Tripathi 2021, Umakanthan *et al.* 2021, Arsenault *et al.* 2022, Herrera *et al.* 2023, Gutiérrez-Murillo, Krieger Grossi, and Kuhl Svoboda 2024). Qualitative evidence documenting field-level experiences from smaller countries from Central America, the Caribbean or Small Island Developing States (SIDS) remains scarce. This study aimed to explore the experiences and perspectives of individuals involved in Belize's COVID-19 public health response, with a particular focus on the national COVID-19 vaccine introduction strategy, to generate insights that may inform ongoing health system strengthening efforts and future pandemic preparedness in the region. The analysis is intended to inform ongoing efforts to build resilient health systems, particularly in relation to governance, workforce capacity, immunization delivery, and preparedness for future public health emergencies.

2. Material and Methods

2.1 Design

This is an exploratory study that used a qualitative approach to examine the experiences and perceptions of Belize's COVID-19 public health response and vaccine introduction, using semi-structured interviews and ethnographic field visits.

2.2 Recruitment and selection

Selection and recruitment for semi-structured interviews

The study targeted individuals directly involved in the design or implementation of Belize's COVID-19 response. Eligible individuals were identified through formal discussions with key stakeholders involved in Belize's COVID-19 response and vaccine implementation. These discussions were conducted as part of the preparatory phase of the qualitative evaluation to identify relevant participant profiles and facilitate recruitment of individuals directly involved in the response. Initial stakeholders also acted as recruitment seeds, helping identify additional eligible participants through a convenience and snowball sampling approach. Eligible participants were individuals with at least three months of direct involvement in the COVID-19 response.

Formal email invitations were sent to potential participants up to three times over a three-month period. Individuals interested in participating contacted the study coordinator between June and September 2024.

Selection of sites for ethnographic observations

Ethnographic sites were selected based on study objectives, and feasibility criteria, aiming for

heterogeneity across clinical settings; public spaces in urban and rural areas; and vaccination points. The selection was agreed upon with personnel involved in the COVID-19 vaccine and response.

2.3 Sample size

Participants of semi-structured interviews

An initial sample of 20–24 participants was estimated, with flexibility to assess data saturation during analysis (Patricia, Ph, and Ness 2015, Guest, Namey, and Chen 2020). The final sample included 29 participants aged between 27 and 62 years, with a predominance of female participants. Participants represented diverse institutional sectors and professional roles involved in Belize’s COVID-19 response and vaccine implementation, including healthcare workers, Ministry of Health personnel, National Health Insurance representatives, international organizations (e.g. PAHO officials), and civil society actors. They were anonymized and coded by institutional sector, sex, and region.

Table 1. Targeted participants for interviews

Institution	Targeted number of participants	Roles/Profiles
MOHW	6	Experts involved in COVID-19 program design, implementation, or monitoring (e.g., regional managers).
Local health facilities & Community Platform	16	Health professionals and administrative staff from urban and rural areas, primary and hospital care.
National Health Insurance	2	Experts in inter-institutional coordination and COVID-19 response.
United Nations Agencies & International Organizations (IDB, PAHO, UNICEF, World Bank)	3	Experts supporting the design, implementation, and follow-up of COVID-19 programs.
Civil society	2	Civil society leaders, municipal authorities, community actors.

Ethnographic observations

Ten ethnographic observations were conducted between 2020 and 2024 in sites where the COVID-19 response was implemented, with particular attention to clinical settings, public social spaces in both urban and rural areas, and vaccination points. Observations were conducted in Belmopan (n=2), Orange Walk (n=3), Belize City (n=2), and Corozal (n=3), and included clinical settings (n=4), public spaces (n=3), and vaccination points (n=3).

2.4 Data collection

Semi-structured interviews

Interviews were held virtually and face-to-face during a field visit to Belize in late 2024. Each interview lasted approximately an hour and followed a semi-structured guide. Insights from the broader response were included for contextual understanding. Topics covered perceptions of the response, implementation, perceived impacts, lessons learned, and COVID-19 vaccination and preparedness plans (Section B of S1 Appendix). The guide was informed by WHO's COVID-19 Strategic Preparedness and Response Plan Monitoring and Evaluation Framework (SPRP)(WHO 2022) particularly its ten core pillars (see Box 1 of S1 Appendix).

Ethnographic field visits

An ethnographic form (Section C of S1 Appendix) captured key aspects of the physical environment and interactions, and general questions were asked to individuals about the COVID-19 response and vaccination. Researchers adopted a "moderate" participation, balancing between "insider" and "outsider" roles to combine close involvement with necessary detachment for objectivity (Schwartz and Schwartz 1955). This approach enabled them to engage actively with participants and gain rich, contextualized insights into everyday practices and meanings, while simultaneously maintaining sufficient analytical distance to systematically observe, document, and interpret the data. Moderate participation was achieved by: (i) establishing clear boundaries regarding their level of involvement in the setting before observation, (ii) keeping detailed field notes that distinguished between direct observations, participants' accounts, and the researchers' own interpretations, (iii) rigorous note-taking and coding based on a pre-defined ethnographic form.

2.5 Data analysis

Audio recordings and observation forms were transcribed verbatim, and unique participant codes were assigned to preserve confidentiality and avoid participant identification in the presentation of findings and quotations. Quotations were minimally edited to keep grammatical

consistency. Thematic analysis (Patton 2002) was conducted combining deductive categories derived from the interview and inductive categories that emerged from the data. Two senior researchers independently coded data, compared codebooks, resolved discrepancies, and finalized a shared framework, enhancing analytic rigor. The analysis was supported by Atlas.ti 8 software.

Thematic analysis resulted in four overarching themes related to: (i) government leadership and mobilization of international agencies for COVID-19 vaccine access; (ii) multisectoral coordination in policy development and implementation; (iii) health system adaptability amid limited human and financial resources; and (iv) communication and community-based strategies that contributed to public engagement.

2.6 Ethical considerations

This study adhered to the Declaration of Helsinki and national research guidelines involving human participants. Ethical approval was obtained from Belize's Ministry of Health and Wellness' Institutional Review Board revised and approved the study before its execution (Ref: GEN/147/01/24 (33) Vol. VI) on July 11th, 2024. All participants received an information sheet explaining the study objectives, procedures, confidentiality measures, voluntary participation, and their right to withdraw at any time. They provided informed consent prior to participation. All transcripts and observation notes were anonymized, ensuring that no personally identifiable information was included in analysis or dissemination. As mentioned earlier, to preserve analytical traceability while maintaining confidentiality, each interview and observation record was assigned a unique participant code that identified general participant characteristics (e.g., institutional affiliation, territory, and sex) without revealing personal identities.

3. Results

3.1 Ensuring access to COVID-19 vaccines

Interviewees highlighted Belize's early agreement with COVAX as enabling the country to establish better processes and agreements for purchasing vaccines, and catalyzing Belize's vaccination plan (Quote #1). Participating in COVAX required complying with strict conditions, such as committing to purchase a certain number of doses, making downpayments, developing a COVID-19 vaccine plan, and providing financial guarantees. International organizations' support was referenced repeatedly in this regard, particularly about financial guarantees, downpayments, and funding to secure initial vaccine shipments. This support was perceived as one of the first injections of funds into Belize' COVID-19 response (Quote #4).

It was also noted that Belize's small size posed challenges during international negotiations for vaccine procurement, as larger nations were being prioritized by donors and partner countries. International organizations were critical in advocating for Belize's inclusion, emphasizing principles of equity and the country's legitimate need for timely vaccine access despite its limited population size (Quote #2). In this regard, some interviewees said they did not expect the vaccine to arrive in Belize so early, but, to their surprise, it did. This achievement brings in the authorities' good management of the crisis (Quote #3).

Overall, international organizations played a key role through global logistics network that ensured timely vaccine delivery to small countries like Belize. Participation in international mechanisms, along with coordinated financial, logistical, and technical support, enabled timely procurement and preparation for the national COVID-19 vaccination campaign despite limited resources.

3.2 Collaboration for policy development and implementation

The Government of Belize established a National Technical Committee for the COVID-19 response, facilitating multisectoral planning and decision making, shared responsibilities and broader acceptance of decisions (Quote #5, Quote #6). The Committee also provided continuity during the political transition in late 2020 and guided major policy decisions and resource distribution (Quote #7). One key outcome of the Committee was the development and approval of the COVID-19 Vaccine Introduction Plan, an intense and fast-moving process that required legal and policy adaptations and high-level political support (Quote #8). Despite these complexities, the plan was finalized before the arrival of vaccines in early March 2021, enabling immediate deployment.

The deployment of the vaccine considered planning at national and local levels, with national strategies broken down into monthly and weekly plans. While this breakdown enabled targeted actions, communication, and follow-up, providing support in rural districts was not always easy (Quote #9). Within this framework, prioritization of vulnerable groups was widely accepted and reinforced the perception of a well-planned strategy, consistently highlighted as a key strength (Quote #11). Challenges in vaccine uptake led to mandates and incentives, including vaccination requirements for individuals working outside the home and raffles. Acceptance of these measures was mixed, as some perceived them as restricting freedom. However, they were also considered necessary given the uncertainty at different stages of the pandemic (Quote #10).

3.3 Health System Adaptability

Structural challenges in Belize's health system were exacerbated during the COVID-19 pandemic. Interviewees identified three key issues requiring rapid adaptation: human resource shortages; inadequate infrastructure; and limited budgets.

To address the shortage of human resources, health authorities implemented adaptive strategies including task-shifting and multitasking, training of non-healthcare staff for non-clinical tasks, and hiring temporary healthcare personnel (Quote #13, Quote #14). Health professionals also noted a shift toward a focus on quality over quantity in patient interactions and increased the use of media and phone-based communication (Quote #15). Workforce commitment and resilience was a major strength (Quote #16), however, this led to some overburdened staff, as too much responsibility was placed on public health nurses, leading to fatigue and reduced effectiveness. Regarding infrastructure, cold chain management, staff training, and vaccine administration were considered effective. However, real-time monitoring of vaccine coverage was limited by data entry backlogs and uncoordinated systems between public and private providers (Quote #17). Within this context and budget limitations, existing funding mechanisms were rapidly adapted to meet urgent needs and facilitated cross-sector collaboration (Quote #18, Quote #19). These adaptive and resilient measures allowed the pandemic to act as a catalyst for addressing long-standing structural issues. It enabled increased recruitment and investment in the health workforce, as well as expanded infrastructure for immunization delivery, which otherwise may not have occurred (Quote #20). Furthermore, the perspective on immunization beyond COVID-19 shifted and became a higher priority, leading to increased investment in the area (Quote #21).

3.4 Communication and community-based strategies

Effective communication was essential in addressing vaccine hesitancy caused by misinformation, fear, and anti-vaccine movements. A communication strategy aimed at building trust, dispelling myths, and promoting vaccine uptake was implemented. Achievements included broad media coverage, increased trust in health authorities, and the important role of frontline health personnel in overcoming hesitancy and raising public awareness. However, perceptions of the strategy's effectiveness were mixed. Those with positive perceptions noted that the public embraced the vaccines and adhered to health protocols, partly due to vaccination campaigns and health education strategies (Quote #25). Yet, others felt that efforts to educate specific population groups were insufficient to counteract vaccine hesitancy. Health workers described situations in which individuals with underlying conditions were hesitant due to misinformation and required personal reassurance to accept vaccination. Interviewees noted that factual information could have been reinforced more effectively (Quote #26). Some others recognized the efforts made in communication but still felt that these were not aggressive or context-specific enough. Another issue raised was that communication about the COVID-19 vaccine was not delivered early enough, allowing misinformation to take hold and reduce vaccine uptake. Similarly, ongoing engagement and regular reminders of vaccine benefits were considered essential to maintaining public trust (Quote #27, Quote #28).

Despite such mixed perceptions, it was highlighted that community-level communication strategies matured over time, such as improving messages addressing hesitant communities (Quote #29).

4. Discussion

Four key dimensions emerge from the findings: ensuring access to COVID-19 vaccines; collaboration for policy development and implementation; health system adaptability; and communication and community-based strategies. Our findings align with qualitative research on COVID-19 vaccine implementation in similar settings. Studies across various LMICs revealed that leveraging existing immunization platforms, engaging community-based systems, and integrating planning and financing mechanisms were key for success. (Tupps *et al.* 2025) Evidence from Ghana and Bangladesh underscores the role of Expanded Program on Immunization (EPI) structures, community influencers, workforce capacity expansion, and culturally sensitive communication in addressing vaccine hesitancy and logistical constraints (Tagoe *et al.* 2021). In the Philippines, qualitative research emphasizes political commitment and tailored strategies to address geographic and socioeconomic disparities in vaccine access (Zhao *et al.* 2024). This literature reinforces the value of context-specific, participatory, and equity-focused approaches for effective vaccine rollout in LMICs. Taken together, these unique findings add value to existing evidence and suggest that lessons from emergency vaccine deployment remain relevant for health systems currently seeking to institutionalize preparedness capacities.

4.1 Ensuring access to COVID-19 vaccines

Belize exemplifies how small States can navigate global health challenges. The country leveraged diplomatic networks and fostered multisectoral coordination to secure COVID-19 vaccines amid constrained supply. Consistent with other literature, access to vaccines in resource-limited settings depends not only on domestic preparedness but also on proactive engagement with international partners (PAHO 2021b; WHO 2023b). Structural limitations, such as reduced bargaining power posed challenges; however, international collaborations and flexible financing mechanisms enabled the timely procurement and efficient deployment of vaccines. These findings align with broader evidence showing that effective emergency responses in small or resource-constrained nations are contingent upon strategic external engagement and adaptable funding models (Herry *et al.* 2023, Ogar *et al.* 2023). This experience highlights the importance of early participation in pooled procurement and global coordination mechanisms as part of preparedness planning for future pandemics.

4.2 Collaboration for policy development and implementation

Belize's response to the pandemic demonstrates how centralized coordination, supported by strong technical leadership, can facilitate intersectoral planning and decision-making, consistent with evidence-based public health emergency practices (PAHO 2021a). Government oversight of external partners prevented duplication of efforts and enabled the strategic utilization of limited resources, underscoring the importance of leadership in orchestrating multilateral support (Herry et al. 2023; WHO 2023b). Challenges at the subnational and local levels, such as communication gaps and fragmented follow-up, revealed structural vulnerabilities (Ogar et al. 2023). These findings highlight the need to strengthen subnational governance, communication channels, and capacity building for local implementers. Overall, our findings suggest that successful pandemic responses require not only robust national coordination but also mechanisms that address the operational realities of local health system capacities. Institutionalizing such coordination structures beyond emergencies may strengthen routine system functioning and crisis readiness.

4.3 Health system adaptability

The health system adapted by implementing task-shifting, hiring temporary personnel, and training non-clinical staff to support essential functions. These measures, and the renewed emphasis on person-centered care, underscore the critical role of workforce flexibility and resilience. However, staff overburden and burnout were also a challenge (WHO 2021, Herry et al. 2023). Operational strengths were largely preserved; however, fragmented information systems and delays in data entry hindered real-time monitoring of vaccine coverage (Ogar et al. 2023). Previous evidence and this study indicate that flexible funding mechanisms and external support were key in enabling rapid workforce expansion and infrastructure enhancement (WHO 2023b). These adaptations resulted in structural improvements in the immunization system and expanded outreach capacity. These improvements may contribute to long-term health system resilience and preparedness in Belize. These adaptations suggest that crisis-driven investments can serve as entry points for long-term health system strengthening when sustained beyond the emergency period.

4.4 Communication and community-based strategies

Effective communication was essential in Belize, particularly amid widespread misinformation and vaccine hesitancy. Evidence indicates that public briefings by trusted authorities and direct engagement by frontline health workers were instrumental in fostering public awareness and trust in vaccines. (Hoffman et al. 2023) Community-level outreach, especially by rural health staff, was crucial in addressing vaccine hesitancy and facilitating access (Puri et al. 2020).

Despite these outcomes, linguistic challenges and insufficient targeted education campaigns were noted (Lee and Bissell 2024). Qualitative findings emphasize that necessity of timely, continuous, and context-sensitive communication is essential to sustain public trust, counter misinformation, and ensure equitable vaccine uptake (Puri *et al.* 2020). These reflections highlight the importance of tailoring communication to local or group-specific contexts to enhance the effectiveness and equity of immunization programs in resource-constrained settings. This lesson remains central to future pandemic responses and to strengthening routine risk communication capacities in health systems.

4.5 Implications for Policy and Practice

Despite limited resources and bargaining power, our findings suggest that small countries can prepare for public health emergencies through policy practices, adaptive measures, and partnerships with international organizations. For example, intersectoral coordination demonstrated that collaborative governance frameworks are particularly effective in complex public health challenges and resource-constrained settings (Bianchi, Nasi, and Rivenbark 2021). Trust-building, reinforced by the involvement of health authorities, community health workers, and rural health personnel, fostered community awareness and engagement (Elvegård, Andreassen, and Badu 2024). Although access to vaccines was initially foreseen as a critical challenge, it was ultimately achieved through global efforts and collaboration with international organizations. Belize's response reflected a commitment to "*doing the best they could with what they had.*" This ethos, combined with strategic governance and community-level trust, contributed to outcomes that were notably more effective than anticipated. These findings highlight concrete policy priorities for future preparedness, including sustained investment in immunization systems, workforce surge capacity, interoperable data systems, and institutionalized coordination mechanisms.

4.6 Study limitations and future research

The findings of this study should be interpreted within the scope of qualitative inquiry, which prioritizes depth over generalizability (Wu and Brennan-Ing 2023, Fuller *et al.* 2024). Given the context of the research, limitations relate to sample size, selection, and timing of data collection. The small sample size may not fully reflect the diversity of experiences across population groups in Belize (Villalobos Dintrans *et al.* 2020). Snowball sampling and retrospective data collection may have introduced selection and recall bias (Villegas *et al.* 2022, Fuller *et al.* 2024). Despite these limitations, this study represents one of the first qualitative analyses of the COVID-19 vaccine implementation in Belize and potentially in all the Caribbean, offering valuable groundwork for culturally responsive interventions in settings with limited resources (Jesus De

and Castañeda 2025). Future research should consider longitudinal and participatory designs to inform public health policy and the implementation of vaccination strategies in constrained health systems in LMICs.

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S1 Appendix. Supplementary materials.

This appendix contains WHO's COVID-19 strategic preparedness and response plan core pillars, quotes from the interviews cited in the results section (Section A), the full interview guide (Section B), and ethnographic forms (Section C) used in the study.

Box 1. WHO's COVID-19 Strategic Preparedness and Response Plan (SPRP): ten core pillars.

1. Coordination, planning, financing, and monitoring
2. Risk communication, community engagement (RCCE) and infodemic management
3. Surveillance, epidemiological investigation, contact tracing and adjustment of public health and social measures
4. Points of entry, international travel and transport, mass gatherings and population movement
5. Laboratories and diagnostics
6. Infection prevention and control and protection of the health workforce
7. Case management, clinical operations and therapeutics
8. Operational support and logistics and supply chains
9. Strengthening essential health services and systems
10. Vaccines research, policy and strategy

Section A: quotes from interviews

Quote #	Dimension	Quote	ID
Quote #1	Ensuring Access to COVID-19 vaccines	"What they [Gavi/COVAX] did was pool resources; it wasn't free. They agreed on a specific unitary price per vaccine because, at the time, they didn't know which of the global vaccine developments would be successful. In September 2021, we still didn't know if Pfizer or AstraZeneca would work... That agreement with manufacturers helped secure an early, fixed price and ensured vaccine delivery to the country."	E24-International organization-F-C
Quote #2	Ensuring Access to COVID-19 vaccines	"The only challenge or so that comes with the size... some donor countries, they're telling you, Belize, all that fuel and it is small... So, you really had to be very good to put Belize's case on the table and justify very well that... we believe in issues of equity and the service should be given"	E28-International Organization-F-C
Quote #3	Ensuring Access to COVID-19 vaccines	"I think it [the response to COVID-19] was very good. It was well controlled, because when the cases started to go down, the vaccine came in quickly. We thought like, we are third, fourth world countries, we would not get the vaccine, but Belize got the vaccine, so we started vaccinating and the cases went down. Thanks God."	E13 – HW – F – N
Quote #4	Ensuring Access to COVID-19 vaccines	"The [International Organization project] was basically to help us cover the initial costs to access COVID-19 vaccines. At the time, the vaccines were new, and we had to pay a commitment fee to COVAX. We used funds from that project for that purpose. Each country was assigned a number of doses based on its population, and we were able to mobilize the resources quickly."	E23 – MOHW – F – C
Quote #5	Collaboration for policy development and implementation	"I think that the National Committee was an excellent response because all parties, including the opposition, and government institutions were represented. That gave the response more strength. I would say it was pretty tough, with little or no information on the virus at the beginning. As more information became available, the government had to make decisions that were not always friendly, and maybe not the best—but they were considered necessary at the time."	E25 – MOHW – F – C1

Quote #	Dimension	Quote	ID
Quote #6	Collaboration for policy development and implementation	"They [the committee] determined whether to close schools or borders, shut down certain health facilities, or reassign roles and responsibilities across departments. The tourism sector, which was significantly affected, also had to coordinate with other committee members."	E29 – MOHW – F – C
Quote #7	Collaboration for policy development and implementation	"I suppose having a national response technical group helped a lot in the [political] transition, especially with a new government coming on board... It also helped establish surveillance teams and manage border closures and entry-point monitoring. Not the best response, but with what we had, those were key actions under the guidance of the committee."	E29 – MOHW – F – C
Quote #8	Collaboration for policy development and implementation	"We had to work even on weekends to get the documentation done... The public health law had to be adjusted, because it didn't include such viruses. So we revised most of the documents, and they were passed through Cabinet, and approved for the new vaccine to be introduced."	E28 – International Organization – F – C
Quote #9	Collaboration for policy development and implementation	"We can plan, but when it comes to passing on that information to other areas... we are not very good. We send documents, but we don't do follow-up... So, we need to do a better job not only planning but going to other levels, explaining the rules."	E21-NHI-F-C
Quote #10	Collaboration for policy development and implementation	"I would say that some of the mandates were acceptable at the onset, given how little was known. When the vaccines came about, it was mandated for healthcare workers to take the vaccines; we had to get the vaccine in order to work. Later, if members of the public wanted to access services in certain areas, they had to present a vaccine card. So, to some extent, I think the pandemic took away some of our rights as citizens, because we didn't have a choice when it came to the vaccine."	E23-MOHW-F-C

Quote #	Dimension	Quote	ID
Quote #11	Collaboration for policy development and implementation	"I believe that this strategy of the implementation of the vaccination was done appropriately with the phases, the different phases."	E20-MOHW-F-C
Quote #12	Collaboration for policy development and implementation	"Well, I think they did a good job because we did not have the exaggerated amount of deaths that other countries had and the people embraced the vaccine and I think we did very good in vaccination."	E12-HW-F-N
Quote #13	Health System Adaptability	"We started training social workers and community health workers to be able to assist in tasks like swabbing. Then we used the few labs, the few technicians, the few doctors that are in the country to handle the clinical part."	E28-International Organization-F-C
Quote #14	Health System Adaptability	"I called in all my staff, and I was glad when the [International Organization project] started because it allowed us to have a more stable and consistent workforce. With a clearer sense of how many people we had, we could plan better, allowing for shifts, and giving staff time to rest."	E2-HW-F-W
Quote #15	Health System Adaptability	"... I realized that my primary lesson was that quantity doesn't equal quality. I think that was good; I also learned the importance of having open communication with patients, throughout of media like Facebook or via phone. Having this kind of way of personalized approach meant that when they came in, they received care at a scheduled time, and the waiting time was not so long".	E16-HW-F-N
Quote #16	Health System Adaptability	"I think the healthcare workers were very resilient and provided care to the population. We did the best we could with the resources we had, and I believe they did a good job overall. Compared to other countries, our death rate was relatively low"	E23-MOHW-F-C
Quote #17	Health System Adaptability	"We were capturing the information, but we were not able to see it in real time. So from our end at a national level, we were not able to report what was the vaccination coverage per district."	E26-MOHW-F-C
Quote #18	Health System Adaptability	"The [International Organization] project interacted with all the different programs. It was cross cutting to every aspect of the response."	E25-MOHW-F-C1
Quote #19	Health System Adaptability	"We had to do some restructuring for our [International Organization] project, but that one dealt with providing funding for the socio-economic side... and the [International Organization] was very, very flexible, they supported the country, they allowed us to mobilize the resources very fast."	E23-MOHW-F-C

Quote #	Dimension	Quote	ID
Quote #20	Health System Adaptability	"It wasn't until COVID that we were able to get extra staff with the help of [International Organization]. And then after the pandemic, when things slowed down, the ministry was able to recruit more staff for us. So, the pandemic helped in terms of having some staff even today that were provided during the pandemic."	E2-HW-F-W
Quote #21	Health System Adaptability	"COVID vaccination gave opportunity for the country to invest in the immunization system. They procured new equipment, vehicles for outreach, and more workers were trained. It also created more awareness, not only about COVID vaccination, but routine immunization. I felt it contributed significantly to improving the investment in immunization significantly. If there was no COVID, I don't think the government would have thought about that." E27-International organization-C 1-2	
Quote #25	Communication and Community-based Strategies	"The vaccination campaigns, the advertising and health education were very important. Also, when it comes to the Belizean population, they're very receptive, they pay attention, they listen when the Ministry of Health is giving advice and recommendations. They would respect a lot of the protocols."	E10-HW-M-W
Quote #26	Communication and Community-based Strategies	"There was a lot of misinformation and misperceptions about the vaccines, like in many other countries... I think we did not do a very good job in being more aggressive in the public education campaigns and the education of the specific groups of the population."	E22-NHI-M-C
Quote #27	Communication and Community-based Strategies	"After the initial phases of the introduction of the vaccine, we continued with education campaigns, but by then people were already too comfortable with the negative information about the vaccines... You always need to be upfront, reminding people of the benefits..."	E20-MOHW-F-C
Quote #28	Communication and Community-based Strategies	I think one of the big lessons is that ongoing communication with your population is key. You lose the trust of your people when you stop communicating.	E29-MOHW-F-C
Quote #29	Communication and Community-based Strategies	"For the vaccination, I think they realized they [the MOHW] needed to understand hesitancy before developing communication messages. At the beginning, they used general messages, but later on, they formed groups to study the issue more closely and created new messages based on a better understanding of the hesitancy."	E24-International organization-F-C

Section B: Semi-structured interview guide

A. GENERAL PERCEPTIONS

1. How was the country at the time the pandemic started? Politically, economically, socially, in terms of population health? In terms of migration flows? In terms of the health system?
2. General characterization of the COVID-19 general response program (all policies) deployed in the country.
3. How did the Government of Belize implement the COVID-19 vaccine plan? What was unique about it, you think?
4. What do you generally remember about [the project] that supported the government's vaccine plan? (*Analyzed for contextual insights; not central to this study*)
5. Is there any interaction between the three of them? I.e., the general policies against COVID-19, the vaccination plan, and [the project]? Did they interact at all? How so?

B. INDICATORS AND MEASUREMENTS USED TO ASSESS SUCCESS

1. How do you remember or think the country measured its success in terms of fighting against the COVID-19 pandemic? What are, in your opinion, the most significant ways of measuring success in Belize on this topic? Are those the same ones the country used? Has it changed over time?
2. How do you perceive the quality and relevance of these measures? Would you keep them for future pandemics? And as general measures of population health in Belize?
3. How do you think Belize's success in the fight against the pandemic was achieved? How did that happen? For all policies? For the vaccination program? For [the project]? What were the most significant activities that secured success? What were the most important changes or adaptations required during implementation?

C. ACTIVE INGREDIENTS, WHAT WORKS AND WHAT DOES NOT WORK, KEY ACTORS

1. In your general opinion, what are the essential active ingredients or components of all policies that couldn't be missed for success in the fight against the pandemic for COVID-19 in Belize? Why? How did they work? Can you give examples?
2. Was there any special ingredient or component for success related to the vaccination program? And related to [the project] itself? Why? Can you give examples?
3. And in your opinion, what did not work? Why? What should have been avoided to improve general success?
4. What do you think were the main barriers to the effective implementation of the COVID-19 general response (all policies)? Barriers related to the COVID-19 vaccine plan? And barriers to the [the project]? Can you give distinctive examples of barriers related to each one of them?
5. What do you think were the main facilitators for the effective implementation of the COVID-19 general response (all policies)? Facilitators related to the COVID-19 vaccine plan? And facilitators for the implementation of the BL-L1036 program? Can you give distinctive examples of facilitators related to each one of them?

6. In your opinion, who were the main actors involved in effectively implementing the COVID-19 general response, the COVID-19 vaccine plan, and [the project]? How relevant were the beneficiaries perceived? How so?
7. Were there any opportunities for participation and appropriation of the COVID-19 response policies in Belize among different key actors? How were the communities involved? How were the healthcare teams in local territories involved? In which way they became relevant to all these policies and implementation efforts in Belize?

D. PERCEIVED IMPACTS

1. In your opinion, what were the direct impacts of the vaccination program due to the execution of planned activities? Direct impacts related to the vaccine plan? And direct impacts related to [the project]?
2. In your opinion, what were the indirect impacts of the vaccination program due to the execution of planned activities? Indirect impacts related to the vaccine plan? And indirect impacts related to [the project]?
3. How do you think policies implemented in Belize to respond to the COVID-19 pandemic could be replicated in the future? And elsewhere? What would be, in your opinion, the key determinants to successfully replicate them?
4. Were any environmental and social safeguards impacted Belize's capacity to respond to the COVID-19 pandemic and the vaccination plan, separately?
5. Are you aware of any relevant knowledge or dissemination products resulting from Belize's response to the COVID-19 pandemic? How are they relevant?

E. LESSONS LEARNED

1. What lessons have been learned from this COVID-19 pandemic response in Belize? And for the vaccination program in particular? And for [the project] itself?
2. In your opinion, what are the most relevant recommendations for future pandemics in Belize? And for population health in general, aside from pandemics? What has Belize learned and recommended based on its unique experience?
3. Please describe some recommendations for (i) the technical sector, organizational and management teams, (iii) public actors, fiduciaries and risk management.
4. More globally, how is the country today? Politically, economically, socially, in terms of population health? In terms of migration flows? In terms of the health system? Any other?
5. More generally, what are the main challenges today in the country and why?

F. VACCINATION PLAN

1. Please share a detailed description of the COVID-19 vaccine implementation plan, identifying bottlenecks and lessons learned. As much as you may remember.
2. Should I know of any perceived recommendations for the country to adopt in the short, medium and long term in relation to the COVID-19 vaccination plan?

G. [THE PROJECT] *(These questions were included in the interviews for contextual insights. Analysis of this project is limited and not the primary focus of this paper).*

1. Please share a detailed description of [the project] implementation plan with me, identifying bottlenecks and lessons learned. As much as you may remember.
2. Are there any recommendations for the country to adopt in the short, medium, and long term regarding the COVID-19 vaccination plan?

H. WHO FRAMEWORK COVID-19 -10 PILLARS AND FIVE COMPONENTS

1. This is my last question, divided into a few parts. First, you may already know that the WHO developed -10 pillars and 5 core components- model for countries to deal with the COVID-19 pandemic in 2020 and updated it in 2022. It is called the COVID-19 pandemic preparedness and response -SPRP- Monitoring and evaluation Framework. Here they are. Please let me know what you think about them practically and what happened in relation to each of them in Belize during the pandemic.

Section C: Ethnographic form

GENERAL INFORMATION

Date:

Time:

Site:

District:

Clinical or general public space:

If clinical, which? Describe

DESCRIPTION OF THE CONTEXT

Where is it? How is it?

DESCRIPTION OF THE SITUATION

Who is there? What is happening?

RELEVANT INFORMATION ABOUT THE COVID-19 RESPONSE INCLUDING THE VACCINATION STRATEGY

ADDITIONAL NOTES, ANY RISKS INVOLVED